

Determinants of Sustainability Disclosure of Saudi Listed Companies

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Abstract

The objective of this paper is to examine the determinants of environmental sustainability disclosure of Saudi listed companies. Two main dimensions of the factors influencing sustainability disclosure were investigated: company characteristics (size, age, profitability, type of industry and leverage) and board of directors' characteristics (size, independence and annual number of meetings). This research study utilized the content analysis approach in order to collect data from annual reports of non-financial companies listed in the Saudi stock market between 2015 and 2017. The total number of annual reports that were covered in this research is 357, which pertain to 119 non-financial companies that were listed during the study period. The study focused on disclosure of environmental sustainability, which is one of the three branches of sustainability (social, economic and environmental). The Global Initiative Reports GRI (G4) issued by the United Nations in 2013 was used to examine these annual reports with respect to the disclosure of environmental sustainability. The findings of this paper reveal that the type of industry, company's profits, company size and company age are important determinants when it comes to the disclosure of environmental sustainability for Saudi non-financial companies listed in the period of 2015–2017. The elements of corporate governance except for board independence are not important factors, which might be due to the voluntary nature of disclosure of sustainability information. These results suggest that factors related to the identity of a group of companies might influence the disclosure for such type of companies, particularly when the disclosure is voluntary in nature. Therefore, the explanation provided by legitimacy theory with regards to voluntary disclosure is more influenced by bounded factors that reflect upon a group of companies. The results of this paper should help in evaluating the overall contribution of Saudi companies toward the achievement of Saudi Vision 2030, which intends to enhance the quality of life in Saudi society.

Keywords: Sustainability, Disclosure, Environmental report, Saudi companies, Accounting sustainability.

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1. INTRODUCTION

Sustainability is a global concern, and organizations and governmental agencies worldwide are continuously making efforts and attempts to find solutions for the mitigation, reduction and prevention of sustainability problems. In 1987, the General Assembly of the United Nations (GAUN) defined sustainability as “development that meets the needs of the present generations without compromising the ability of future generations to meet their own needs” (Rankin et al., 2012, p. 315). The theoretical framework for sustainable development has evolved through a series of international conferences and initiatives. Kutay and Tektüfekçi (2016) argued that, from the 1970's to the present, the concept of sustainable development has evolved into definitions that involve three pillars of sustainability, social, economical and environmental, which are interrelated and complementary. Economical development refers to the efforts that seek to develop the economic situation of the state and improve the quality of life in society. Environmental development constitutes activities that lead to the prevention or mitigation of environmental degradation. Social development focuses on humans as the cornerstone of development through teaching, training and treating all members of the society equally. Accordingly, sustainability is viewed as a delicate balance between the economic, environment and social health of a community, nation and the earth. This

paper is exclusively concerned with environmental sustainability, which is articulated in this paper as business corporations' responses to threats to the environment, which could influence the ability of future generations to meet their own needs.

The role of business corporations in preventing environmental degradation is grounded in two interrelated arguments. Theoretically, the legitimacy theory explains why companies should respond to the concerns of society. With respect to disclosure, it explains why organizations disclose their social and environmental performance in their annual reports. According to this theory, companies should exhibit their social responsibility by using social and environmental reports to communicate sufficient information about their activities related to protecting public interests in order to maintain their existence and growth (Rankin et al., 2012). Accordingly, legitimate existence and growth occur when the institution's outputs and objectives are aligned with society's expectations. Conversely, a legitimate gap emerges when there is a difference between what is required of the company and what is expected of the community. Thus, in order to reduce the legitimate gap, companies work to reconcile their environmental activities with the wishes of the community and disclose their efforts in their sustainability reports. The environmental information disclosure can permit us to focus on the role of information and disclosure in relationship(s) among organizations, the state, individuals (Rudzionienė et al., 2016).

Empirically, with the increased awareness of the role and contribution of business corporations to environmental problems, public demands for sufficient reactions and information from companies toward environmental problems have increased largely. This is particularly observed with regards to the environmental sustainability issues that Wilmshurst and Frost (2000, p. 16) define as "those disclosures that relate to the impact of company activities that have on the physical or natural environment in which they operate". Accordingly, through the publication of sustainability reports, companies seek advantages such as creating a positive image and reputation, securing a competitive advantage and gaining confidence and legitimacy in exercising its business. Companies can also avoid possible negative reactions from the society such as sanctions in the legal, economical or social form including boycotting of its product by customers, avoiding investment in the company by shareholders, difficulties in obtaining loans from banks, higher taxes (Alrazi et al., 2015).

Literature has reported mixed evidence when it comes to factors that could affect companies' attitude toward environmental disclosure. For example, several factors have been reported frequently, including the composition of the board of directors, board size (Helena, 2018; Hu & Loh, 2018; Aman & Bakar, 2018; Albassam & Ntim, 2017), board independence (Hu & Loh, 2018; Aman & Bakar, 2018; Rafique et al., 2017; Ortas et al., 2017), board meetings (Hu & Loh, 2018; Hussain et al., 2018), company size (Garg & Kumar, 2018; Garas & El Massah, 2018; Wang, 2017), company profitability (Elshabasy, 2018; Garas & El Massah, 2018; Hussainey et al., 2016), company leverage (Garas & El Massah, 2018; Wang, 2017; Hussainey et al., 2016), company age (Elshabasy, 2018; Nguyen et al., 2017; Hussainey et al., 2016) and type of industry (Garg & Kumar, 2018; Khalid et al., 2017; Hussainey et al., 2016).

My paper is organized as follows. Section 2 discussed statement of research problem. Section 3 discusses the research objectives. Section 4 discusses the importance of the research. Section 5 discusses the research context. Then section 6 discusses the literature review. Section 7 discusses hypothesis development. After that, the research methodology will discuss in section 8. Section 9 discusses the research model. Then in section 10 discusses results and discussion. Section 11 conclusion. At the end, limitations and recommendations in section 12.

2. STATEMENT OF RESEARCH PROBLEM

There is insufficient evidence in literature when it comes to factors affecting environmental disclosure, especially by Saudi companies after the adoption of Saudi Vision 2030. As Saudi Arabia is considered a global producer of oil, it is necessary to focus on the security and stability of the environment to protect its wealth of oil and consider the possibility of benefiting from renewable and alternative natural resources as key sources of income. Environmental sustainability is one of the main objectives of Saudi Vision 2030, which emphasizes the protection of the environment and the conservation of its resources through the adoption of many programs and plans aimed at reducing pollution levels and ensuring safety and sustained growth for future generations.

Moreover, from the view of the environmental and social challenges confronting Saudi Arabia due to population growth and industrial and economic progress leading to adverse effects on humans and the environment generally, one should question the real contribution of Saudi business corporations toward these challenges. This questioning has been supported by Saudi Vision 2030. It emphasized as one of its objectives all types of pollution (e.g., air, sound, water, soil) and stressed the necessity to safeguard the environment from natural threats (e.g., desertification)⁽¹⁾. It is important for Saudi Arabia to address environmental problems at the local levels in conjunction with the plan of sustainable development that has been adopted at the United Nations Sustainable Development Summit on 25th September 2015 and 1st January 2016, which is supposed to officially come into

⁽¹⁾ <https://vision2030.gov.sa/en/programs/NTP%202.0>.

force over the next 15 years⁽¹⁾.

3. RESEARCH OBJECTIVES

The objective of this research study is to identify factors affecting environmental sustainability disclosure by Saudi listed non-financial companies. More specifically, this study will examine the following:

A. The relationship between the corporate governance structure of Saudi companies (size, independence and number of meetings) and the disclosure of environmental sustainability.

B. The relationship between company characteristics of Saudi companies (size, profitability, leverage, age and type of industry) and the disclosure of environmental sustainability.

4. THE IMPORTANCE OF THE RESEARCH

Since there is insufficient research investigating the way Saudi companies disclose their participation in the sustainability of their society, this work of research is of significant importance to the Saudi context and other similar environments. First, to the best knowledge of the researcher, there are only a few studies investigating the disclosure of environmental sustainability by Saudi companies. Among the few available works, Habbash (2015) examined the environmental disclosure practices in Saudi Arabia. His study, however, is not sufficient, as it spanned a very short period and was conducted before the adoption of the Saudi Vision 2030. Two other studies have been carried out by Al-Janadi et al. in 2013 and Hussainey et al. in 2016. They suffered some limitations. For example, they had a broad interest in social responsibility in general instead of focusing on environmental sustainability. Also, they covered only around 1/2 of the currently listed companies and covered a very short time period. Moreover, since the time of the study, the Saudi stock market has undergone significant changes with respect to regulations and the number of listed companies.

Thus, the results of this thesis should be better at evaluating the overall contribution of Saudi companies toward the achievement of Saudi Vision 2030, which has been implemented to enhance the quality of life in Saudi society. This is very important for regulators, companies, academicians and society. Saudi regulators could use the results of this study to encourage public companies to fully participate in programs related to Saudi Vision 2030. Public companies could also use the results of this research work to improve their disclosure practices and maintain their legitimacy. Moreover, the results of this study could motive further research in the area of accounting for the environment. The results of this thesis will further be valuable to Saudi society in assessing the contribution of Saudi non-financial companies in the scope of sustainable development.

5. RESEARCH CONTEXT

Similar to others countries around the world, Saudi Arabia faces environmental challenges due to population and industrial growth, economic progress and production of waste that affects the environment. In addition to these challenges, the Saudi government needs to protect its natural resources to meet the requirements of development and achieve wellbeing to ensure sustainable development for future generations. The Saudi government has realized the importance to address environmental problems in its 2030 vision, which was announced in 25 April 2016.

In terms of statistics and numbers, Saudi Arabia is witnessing an industrial boom, an increase in population growth and a growth in the number of industrial cities, leading to increased pollution and waste rates. Saudi Arabia has a population of 29 million and produces more than 15 million tons of solid waste annually. The average per capita of daily production of waste is 1–1.5 kg (Zafar, 2015). Given the rapid population growth rate, especially in large cities, the Saudi government has developed standards to improve waste management systems and recycling. Moreover, Saudi Arabia is one of the signatories of the Paris Agreement, dated 12 December 2015, which aims to

- 1- Enhance global response to the threat of climate change by keeping global warming this century well below 2 °C above pre-industrial levels
- 2- Enhance the capacity of countries to deal with the impacts of climate change
- 3- Enhance transparency in work and support through a more robust transparency framework

According to the Paris Agreement, there will be a global assessment every five years to evaluate collective progress towards achieving the purpose of the agreement and to report further individual actions by signatories of the covenant.

The Saudi government adopted 2030 Vision as a methodology and plan for economic growth and development work in Saudi Arabia. The vision is based on three main axes: a vibrant society, a thriving economy and an ambitious nation. Each axis of vision contains a number of programs and initiatives that will help achieve national priorities consistent with the Vision. The vibrant society focuses on the cultural values of society and includes goals and commitments aimed at developing the established national identity of Saudi Arabia. The thriving economy focuses on diversifying the economy and generating jobs for citizens through the use of available

⁽¹⁾ <https://www.un.org/sustainabledevelopment/development-agenda/>

investment tools, allocating government services and improving the business environment. The ambitious nation focuses on the role of the government by enhancing efficiency, transparency and accountability. With respect to the issues of this study, the sector of environment, water and agriculture is one of the sectors that have witnessed remarkable progress due to continuous governmental support, especially in the field of achievement of water and food security in Saudi Arabia, thereby improving the efficiency of various services, preserving the environment and creating solutions to enhance the sustainability of these sectors.

At the end, it should be mentioned that these initiatives, programs and regulations accompany the fact that Saudi government has provided a number of benefits to industrial development and provided all means of support and encouragement, such as non-taxation and permission for the use of natural resources such as water, coal, oil and gas, leading to the development and expansion of industry. This full support creates burdens on business corporations as a result of their practices, which could result in damages to the environment and society, including pollution of air and water and the depletion of natural resources, which could affect future generations. Accordingly, companies have a social responsibility and should show sufficient efforts to find alternative renewable resources and create waste disposal systems without harming or polluting the environment. More importantly, business corporations should also provide sufficient information about their efforts to protect our environment.

6. LITERATURE REVIEW

In the last few years, sustainable development has become one of the dominant global discourses involving ecological concern. At the academic level, the attention of previous studies towards disclosure and the investigation of sustainability reports is extensive. A large number of previous studies and research works have dealt with sustainability reporting practices including the content, scope, structure of the reports as well as the factors affecting the quality of disclosure in sustainability reports (i.e., determinants of sustainability disclosure). Most of these research works and studies contribute to our knowledge and enhance awareness of the society in general and firms in particular, in order to improve performance and environmental practices for a better future.

For example, in the United States, the study by Giannarakis (2014) discusses the relationship between corporate governance and financial characteristics and the extent of disclosure of CSR in the United States. The study included many variables such as board meetings, board size, leverage, profitability and company size. The sample consisted of 100 companies from the Fortune 500 list for 2011. The researcher obtained many results. Some results indicated that the size of the company and profitability are positively correlated with the extent of disclosure of CSR, while leverage is negatively related to the extent of disclosure.

In the United Kingdom, the study by Brammer and Pavelin (2008) examined patterns in the quality of voluntary environmental disclosures. The sample included about 450 large British companies from a variety of sectors. The analysis distinguished five aspects of quality, including disclosure of environmental policies at the group level, environmental impact objectives and environmental audits. The researchers concluded that the disclosure is influenced by the size of the company and the quality of the industry. High-quality disclosure is associated with large corporations and those in the sectors that are most closely associated with environmental concerns. On the contrary, companies that have a small size and do not fall within sectors with environmental concerns where disclosure level is low.

In Australia, Ong's (2016) study discussed quality measurement and the determinants of sustainability reporting. Australia's sustainability reporting remains mostly voluntary, particularly with regards to social issues, as mandatory reporting applies only to environmental reports and is restricted to companies that are bound by environmental regulations. He reported that companies can benefit from voluntarily disclosing environmental information, as it creates a positive brand image and increases customer loyalty.

Further studies have been carried out in the European continent. For example, Dyduch and Krasodomska (2017) explored the determinants of CSR for the disclosure of listed companies in Poland. The researchers used several elements such as company size, profitability, financial leverage, industry's environmental sensitivity, board size, presence of women on the board, internationalization and reputation as independent variables in the study. They found that company size and industry's environmental sensitivity have a positive effect, while board size, presence of women on the board of directors, profitability and financial leverage do not influence the CSR disclosure of Polish companies. Moreover, they determined a negative relationship between CSR disclosure and reputation.

Moreover, the study by Persson and Vingren (2017) analyzed the factors impacting sustainability disclosures in Swedish organizations and found that state ownership and corporate size have significant effect on state-owned enterprises' sustainability disclosures. Fully state-owned enterprises disclose fewer sustainability indicators than partially state-owned enterprises, and big size firms disclose more amount of sustainability than the smaller ones do. Moreover, they reported that gender diversity affects the disclosures negatively, while the presence of state representatives on the board of directors and profitability concern affect the disclosures positively.

Hahn and Kühnen (2013) reviewed 178 research works during the period 1999–2011 in journals related to

management and accounting. Their aim was to identify the determinants of sustainability reporting examined in the literature as well as recognising the problems and opportunities for future research. The researchers found that the current literature is still far from becoming truly complete with regards to research on the three dimensions of sustainability. They noted a strong growth in empirical research, especially the content analysis method, concurrently with the growth in published sustainability reports. Moreover, the variables most analyzed were company size and type of industry, and these are associated with consistent results to draw clear conclusions.

Despite the rapid spread of the concept of sustainable development to the extent that it has become a global issue in most developing and industrial countries alike, there are limited studies investigating this issue in the selected region. Studies in Arab countries have investigated the issue of sustainable development from different angles, but only a few of them have considered the factors and determinants of the variation in sustainability disclosure from one company to another. Therefore, this study will add to the Arab studies, especially those carried out in Saudi context, by considering the impact of corporate governance and structural characteristics of the firms on the extent of disclosure of environmental sustainability, especially after the launch of Saudi Vision 2030.

Among these limited studies carried in the region is the study by Al-Hajj (2017), which aimed to develop a theoretical framework for sustainable development reports and to measure the performance of sustainability in its three aspects: economic, social and environmental. She relied on a mixed research methodology to achieve the objective of the study (i.e., deductive research approach and inductive research approach). The researcher concluded that sustainable development is a concept that has received attention with no reported information of sustainable development in the financial statements, leading to non-credibility. She further recommended increasing the disclosure of sustainable development by issuing a separate report that would cover these issues in the financial statements.

Albassam and Ntim (2017) examined the impact of Islamic values on the extent of voluntary corporate governance disclosure. The study sample is composed of 75 Saudi listed firms over a seven-year period. The researchers reported that corporations that exhibit a greater commitment towards incorporating Islamic values into their operations based on a Islamic values disclosure index engage in higher voluntary corporate governance disclosure than those that are not. Additionally, the authors found that audit firm size, board size, government ownership, institutional ownership and the presence of a corporate governance committee are positively associated with the level of voluntary corporate governance disclosure, whereas block ownership is negatively associated with it.

Hussainey et al. (2016) aimed at investigating three aspects that determine the level of voluntary disclosure in Saudi Arabia. They also aimed to compare this level with those of other Arab countries. They used a checklist to examine 54 items, in order to measure levels of voluntary disclosure. The study showed that the average level of voluntary disclosure is 18.38%, and it is the lowest rate among all the Arab countries. The independent variables for the study were industry type, state ownership, family ownership, auditor type, auditor specialization, independent directors, firm leverage, firm profitability, firm age and firm size. The results provide evidence of the positive significant association between firm size, firm age, firm profitability, auditor specialization, family ownership as well as industry type and the voluntary disclosure extent. Moreover, the study found a negative significant association between firm leverage and voluntary disclosure as well as no significant association between board independence, size of firms in addition to state ownership and the voluntary disclosure extent.

In 2015, Habbash's study investigated environmental disclosure practices and the potential influence of corporate governance in Saudi Arabia. He analyzed a sample of 267 annual reports covering the period 2007–2011, based on ISO 26000. The researcher dealt with audit committee score, board independence, family ownership, state ownership and institutional ownership as independent variables. Additionally, he used firm leverage, industry sensitivity, firm size and firm profitability as control variables. The researcher found that the average environmental disclosure practices in Saudi is 30%. Moreover, he found that the government and family ownership, firm size, and firm age are positive determinants of environmental disclosure, and firm leverage is a negative determinant. He reported no impact of board independence, role duality, institutional ownership, firm profitability and industry type on environmental disclosure.

7. HYPOTHESIS DEVELOPMENT

The theory of legitimacy is one of the accounting theories that are most widely used to interpret the environmental and social reports by business organizations (Cuganesan et al., 2007; Vitolla & Rubino, 2015; Hahn & Kühnen, 2013; Faisal et al., 2012; Mousa & Hassan, 2015). According to Gray et al. (1996, p. 45), the theory of legitimacy is “a systems-oriented view of the organization and society . . . permits us to focus on the role of information and disclosure in the relationship(s) between organizations, the state, individuals, and groups”. The legitimacy theory is among the positive theories and seeks to explain or predict particular managerial activities, which embraces a systems-oriented perspective and is often considered as being derived from political economy theory. The theory of political economy has been defined by Gray et al. (1996, p. 47) as “the social, political and economic framework within which human life takes place”. The perspective adopted by the theory of political economy and the theory

of legitimacy is that society, politics and economy cannot be separated, and economic issues cannot be investigated without taking into account political and social considerations (Deegan, 2002). The perspective of the political economy views accounting reports as social, political as well as economic documents and as a tool to legitimize businesses. Guthrie and Parker (1990) argued that the theory of legitimacy suggests that organizations exist to the extent that society considers them to be working for them and seeking the interests of their members.

Corporate governance is generally expected to have a positive impact on sustainability performance and disclosure. Disclosure of information and transparency is an integral part of corporate governance, as a high disclosure can reduce the asymmetric information that leads to conflicts of interest between shareholders and management (Rao et al., 2013). Previous studies have argued that there is a relationship between board effectiveness and disclosure, either mandatory or voluntary, including disclosure of sustainability. It further influences environmental performance, social equity and economic value.

7.1 Size of board of directors and the disclosure of environmental sustainability

Board size means the number of directors on a company's board. There is no explicit law dictating the number of members on the board of directors. Yamrali et al. (2017) argue that the board of directors is a group of 3 to 15 persons with different specializations and managerial experience and they are directly appointed by the shareholders to ensure that the management performs the most beneficial for the stakeholders. Mahmood et al. (2018) reported that the ideal board size varies between 5 and 16 members, depending upon the size, industry, complexity and nature of the organization. Thus, there seems to be no ideal board size that fits all companies (Lai, 2014). According to the corporate governance regulations issued by the Capital Market Authority of Saudi Arabia, the size of the board of directors should be between 3 and 11 members.

Some of the arguments suggest that larger boards can increase the quality of control and make decisions based on diversities of knowledge and expertise. On the other hand, others argue that smaller sized boards are considered more effective in making decisions and exercising closer monitoring (Tlireksani & Djajadikerta, 2016) and operate more effectively than large boards (Lai, 2014). Based on the above arguments, the first hypothesis is formulated as follows:

H1: There is an association between the size of the board of directors and the extent of environmental sustainability disclosure.

7.2 Independence of the board of directors and disclosure of environmental sustainability

The board of directors has control over the amount of information that will be disclosed. The role of independent board members is critical, as they are responsible for maintaining shareholders' interests. Bansal et al. (2018) argued that independent directors, by virtue of their independent nature, are able to better monitor the management. The board's independence is one of the main points that have been taken to reform corporate governance regulations and rebuild stakeholders' confidence after the financial scandals of some United States and European companies, as the analysis of these financial scandals revealed conflict of interest, not only at the company level but also at the level of external observers and auditors, to be one of the main reasons for their collapse. Based on the arguments above, the second hypothesis is articulated as follows:

H2: There is an association between the proportion of outside directors to the total number of directors on the board and the extent of environmental sustainability disclosure.

7.3 Number of board of directors meetings and the disclosure of environmental sustainability

The number of meetings of board of directors in a year is used as one of the indicators, as it denotes the effectiveness of the board in corporate governance. Boards with a large number of meetings are likely to handle business operations and disclosure in a manner that satisfies different stakeholders in an effective manner (Naseem et al., 2017). The number of board meetings is regarded as an indicator of the board's diligence and is also used as a measure to examine whether managers are performing their duties professionally or not.

Yusoff et al. (2015) mentioned that board meetings signify the commitment of the board members to strategize and make decisions, including those related to CSR matters. In accordance with corporate governance regulations in Saudi Arabia, there should be at least four board meetings yearly (Capital Markets Authority of, Therefore, in the present study, the next hypothesis is formulated as follows:

H3: There is an association between the number of board of directors meetings and the extent of environmental sustainability disclosure.

This research study also explores the relationship between the extent of disclosure of environmental sustainability and the characteristics of the company (age, size, profitability, leverage and type of industry). Some previous studies have dealt with these factors, either as determinant or controlling variables, which affect the company's sustainability reports. The factors above are supported by the theory of legitimacy, which indicates that companies respond to social expectations by providing more disclosure, in order to legitimize their activities.

7.4 Company size and the disclosure of environmental sustainability

The size of the company is usually measured by the value of the company's assets and investments. There is a general agreement about the impact of firm size on their social reports, particularly sustainable development reports. Hahn and Kühnen (2013) indicated that large companies, especially those with different stakeholder groups, are under pressure to be transparent in their activities, in order to ensure their legitimacy in society. Tajison et al. (2009) pointed out that company size is one of the key factors influencing sustainability disclosure, as larger companies have an increased influence on the society. Hence, the discussion above leads to the following hypothesis:

H4: There is an association between company size and the extent of environmental sustainability disclosure.

7.5 Company profitability and disclosure of environmental sustainability

Profit is the net income derived from the deduction of revenue generated by the business from all related expenses. In this study, it is measured by the return on assets (ROA), which is frequently used to indicate the company profitability, measuring the company's ability across the entire fund invested in the activities used by the operations of the company with the aim of generating profits (Ang, 2007). Tagesson et al. (2009) argued that if a corporation is profitable for its owners, it can afford to disclose more information. Moreover, the good performance of CSR enhances companies' reputation and lead to more opportunities. Based on the above argument, the following hypothesis is advanced:

H5: There is an association between company profitability and the extent of environmental sustainability disclosure.

7.6 Company leverage and disclosure of environmental sustainability

Leverage is an investment strategy of using borrowed money to increase the potential return on investment. In other words, it is the amount of debt the company uses to finance assets. Lassala et al. (2017) mentioned that the results of most previous studies show that companies with a high social responsibility have a lower level of debt compared to less socially committed firms. Gao and Connors (2011) pointed out that the relationship between company leverage and environmental disclosure is not clear due to the existence of conflicting theories and evidence regarding the impact of disclosure of debt capacity and the components of equity financing for leverage. They further emphasized that higher levels of environmental disclosure can be expected from companies that rely on external financing. Based on the above arguments, the following hypothesis is proposed:

H6: There is an association between the company leverage and the extent of environmental sustainability disclosure.

7.7 Company age and disclosure of environmental sustainability

Several studies dealing with the issue of disclosure of social reports have used the company age as one of the important determinants that may affect the level of disclosure, particularly when it comes to activities related to sustainability. The company age can be calculated based on the number of years for which the company has been operational. Roberts (1992) argued that well-established companies are more concerned with social expectations than younger company. Accordingly, company age is expected to be an important determinant of more disclosure of environmental sustainable development. Based on the discussion above, the following hypothesis can be formulated:

H7: There is an association between company age and the extent of environmental sustainability disclosure.

7.8 Type of industry and disclosure of environmental sustainability

The sectors to which companies belong to are diverse and different. For example, the energy and mining sector, consumer services sector, banking sector and food sector might have different attitudes toward environmental sustainability disclosure due to the fact that their operation and impact on environment differ. Therefore, their social responsibilities and activities differ accordingly. For example, some sectors face greater pressure from society and stakeholders seeking more activities to serve the community and protect the environment in order to maintain their legitimacy, such as the energy and mining sectors.

On the contrary, companies belonging to the service sector face less pressure from society due to the fact that these companies' activities might be affecting or harming the environment to a lesser degree. However, the latter group of companies might face different social expectations such as employments or social development. According to Trencansky and Tsaparlidis's (2014) study, manufacturing firms are the most disclosing firms when it comes to environmental sustainability, compared with other sectors. The discussion above leads to the following hypotheses:

H8: There is an association between the type of industry of the company and the extent of environmental sustainability disclosure.

8. RESEARCH METHODOLOGY

This study covers all non-financial listed companies in the Saudi stock market during the period 2015–2017. At the beginning, the total number of companies covered by this study was 134, with a total of 402 annual reports from different sectors. Later, 15 companies with 45 annual reports were excluded whether because these companies were new and were not listed during the whole period of the study or because they were delisted during some years of the study, thereby rendering them unable to publish their annual reports. This has resulted in a total of 119 companies with 357 annual reports covered by this study. Companies' annual reports are the source of the research data. Annual reports usually have two main sections: financial statements and report of board of directors. In Saudi Arabia, there is no particular form, templates or guidelines for delivering sustainability information. However, most often, companies provide information about its sustainability activities and programs in the board of directors' report. The annual reports of listed companies were collected from Tadawul at www.tadawul.com.sa.

The study relied on the content analysis approach in analyzing the annual reports of companies based on GRI(G4). A bulk of research using the content analysis approach relies on the quantity of words or the meaning of paragraphs to evaluate the extent of sustainability disclosures, in addition to the number of sentences (Hackston & Milne, 1996) or the number of words (Neu et al., 1998; Velte, 2017). According to Cuganesan et al (2007), the number of sentences is more suitable than the number of words in drawing conclusions from narrative reports. In addition, the calculation method of sentences (rows) is preferable when converting diagrams, tables and pictures to equivalent rows, and this makes encoding more reliable than words (Cuganesa et al., 2010).

In this thesis, the researcher relied on the meaning of the words for several reasons: reporting about sustainable development is new in the Saudi market and there is no model or form for how it is prepared, which made it difficult to merely rely on specific words. Reporting on environmental sustainability might be explicit or implicit, which can be understood from the context of the sentence and so it is difficult to limit this research to specific words. Moreover, there is no appropriate software to analyze Arabic documents by using and accounting the meaning of the word. More important is that this method is well established in the literature examining disclosure of social responsibility in general and of environmental sustainability in particular (e.g., Issa, 2017; Habbash et al., 2016; Kansal et al., 2014).

9. RESEARCH MODEL

The study model reflecting the expected relationship between the dependent variable and the independent variables has been developed based on the review of the literature and in light of the research interests. Table (1) describes the dependent and independent variables. The study model is as follows:

$$ED_{it} = \beta_0 + \beta_1(BS_{it}) + \beta_2(BI_{it}) + \beta_3(BM_{it}) + \beta_4(CS_{it}) + \beta_5(CP_{it}) + \beta_6(CL_{it}) + \beta_7(CA_{it}) + \beta_8(TI_{it}) + U_{it}$$

where, for sample firm *i* and year *t*, *U* is the percentage of error in the study.

Table(1):The Study Variables' Definitions and Measurement

Symbol	Definition	Measurement
ED	Disclosure of environmental sustainability	The average score of the reported items for environmental sustainability disclosed by a firm <i>i</i> for the year <i>t</i>
BS	Board Size	The total number of directors for the firm <i>i</i> during the year <i>t</i>
BI	Board Independence	The proportion of outside directors to the total number of directors on the board for the firm <i>i</i> during the year <i>t</i>
BM	Board Meetings	The number of board meetings for the firm <i>i</i> during the year <i>t</i>
CS	Company Size	The logarithm of the company's assets for the firm <i>i</i> and period <i>t</i>
CP	Company Profitability	ROA refers to return on assets and is measured as the ratio of net income to total assets for the firm <i>j</i> and period <i>t</i> .
CL	Company Leverage	Measured as total debts divided by total assets for the firm <i>i</i> and period <i>t</i>
CA	Company Age	The number of years from the establishment of the company until the date of annual report
TI	Type of Industry	A dummy variable that equals 1 if the firm is from the industrial sector and 0 otherwise

10. RESULTS AND DISCUSSION

10.1 Descriptive analysis

Descriptive analysis is used to provide a general picture of the study variables. The dependent variable is the extent of the environmental disclosure (ED). It is presented as an average (percentage) and measured as the average items disclosed by the company to the total items that should be disclosed according to GRI (G4) indicators. As shown in table (2) Saudi listed companies have an average disclosure of 0.098, indicating that only 10 % on average of

all the environmental disclosure index items are actually disclosed by Saudi companies listed on the Saudi stock market. This percentage is lower than the voluntary disclosure rate (18.38%) reported by Hussainey et al. (2016) which examined the determinants of the level of voluntary disclosure in Saudi Arabia based on a self-constructed disclosure. The difference between the result of this study and the result of Hussainey et al.'s (2016) study might be due to the broader concepts and items used by Hussainey et al. (2016). In the other side, this result is higher than the results reported by Persson and Vingren (2017) who carried out a study to explore the extent of the sustainability reports in Swedish State-Owned Enterprises using GRI (G4) it was (4.93 %).

Table(2): Descriptive statistics of dependent variable and independent variable

Variable	Mean	Median	Maximum	Minimum	St. Deviation
ED	0.098	0.030	0.880	0.000	0.126
BS	8.408	9.000	15.000	5.000	1.621
BI	0.505	0.444	1.000	0.142	0.167
BM	5.212	5.000	17.000	1.000	2.036
CS	21.702	21.530	26.823	16.764	1.599
CP	0.027	0.036	0.382	-5.815	0.321
CL	0.387	0.383	0.889	0.001	0.214
CA	30.621	29.000	67.000	2.000	14.843
TI	0.369	0.000	1.000	0.000	0.483

10.2 Correlation analysis

To understand the relationship between the independent variables themselves and with the dependent variable, a correlation analysis was employed. Also, the test is conducted to identify any possible multicollinearity. Multicollinearity exists when the variables have a high intercorrelation. High intercorrelation can distort the results of the regression analysis and the variables with a high correlation may be sorted out to ensure a valid result. Bryman and Cramer (2001) argue that the correlation between the independent variables is not harmful if it does not exceed 0.80 or 0.90. The value equals to or greater than 0.90 correlation between any pair of independent variables indicates a probability of multicollinearity between the independent variables. Others argue that a correlation of larger than 70% does represent a correlation risk (Habbash et al., 2016). Accordingly, multicollinearity between the independent variables is not the case in this data as all the independent variables have correlation coefficients much less than the given value of 0.7 where the highest correlation in this study is 0.57 between environmental disclosure and type of industry as the most important and influential factor in the disclosure of environmental sustainability.

The results of the correlation analysis are depicted in the table (3). It shows that the highest correlation between the independent variables is 46.9%. This is between the firm size and the board size variables. The next highest correlation is 37.1% between firm size and company leverage. As far as these considered, there is no other high correlation found among other independent variables. Hence it can be concluded that there is no chances of multicollinearity.

Table(3) Correlation matrix- Pearson test

	ED	BS	BI	BM	CS	CP	CL	CA	TI
ED	1								
BS	0.206	1							
BI	-0.054	-0.161	1						
BM	-0.042	-0.037	-0.059	1					
CS	0.417	0.469	-0.399	0.072	1				
CP	0.025	0.073	-0.028	-0.210	0.176	1			
CL	0.041	0.068	-0.256	0.025	0.371	-0.089	1		
CA	-0.107	-0.062	-0.089	0.131	-0.213	0.043	-0.019	1	
TI	0.574	0.103	0.096	-0.194	0.178	0.048	-0.096	-0.171	1

10.3 Regression analysis

Table(4):Regression analysis- Panel least squares

Symbol	Definition	Coef.	t-statistic	P>t
Cons.	Model Constant	β_0 -0.642927	-6.582966	0.0000
BS	Board Size	β_1 -0.000826	-0.725247	0.4688
BI	Board Independence	β_2 0.034600	2.906017	0.0039
BM	Board Meeting	β_3 0.000522	0.279590	0.7800
CS	Company Size	β_4 0.031004	6.982408	0.0000
CP	Company Profitability	β_5 -0.026229	-7.712063	0.0000
CL	Company Leverage	β_6 -0.027801	-3.359266	0.0009
CA	Company Age	β_7 0.000556	5.641047	0.0000
TI	Type of Industry	β_8 0.134236	14.54604	0.0000
Additional Statistics				
N = 357	F-value = 27.85874	Prob F = 0.0000	Overall R ² = 0.4460	Adjusted R-squared = 0.430024

The first hypothesis aims to test the relationship between the size of the board of directors and the extent of environmental sustainability disclosure. The results of the multiple regression show a non-significant negative association ($\beta_1=-0.000826$, t-statistic=-0.725247), suggesting that the board size has no effect on the extent of environmental disclosure of Saudi listed companies, whereas the p-value is greater than 5% ($0.4688 > 0.05$). Therefore, the first hypothesis of the study is rejected. This result supports the results reported by Setyawan and Kamilla (2015) and Primary and Rahardja (2013), arguing that the board size does not affect the environmental disclosure. On the other hand, this result is inconsistent with the results reported by Sahin et al. (2011), Rafique et al. (2017), Wang (2017), Albassam and Ntim (2017), Hu and Loh (2018), Aman and Bakar (2018), who reported a significant relationship between the board size and the extent of environmental disclosure.

The second hypothesis attempted to test the relationship between the independence of the board of directors and the extent of environmental sustainability disclosure. The results of the multiple regression show positive associations ($\beta_2=0.034600$, t-statistic=2.906017) and are statistically significant at the .05 threshold. Accordingly, it can be concluded that boards with more independent directors will reveal more ED information. Therefore, the second hypothesis is accepted. This result is consistent with the results reported by a number of studies (e.g., Rafique et al., 2017; Ortas et al., 2017; Hu & Loh, 2018; Garas & ElMassah, 2018). However, this result does not support the result reported by Primary and Rahardja (2013), Setyawan and Kamilla (2015) and Habbash (2015).

The third hypothesis was proposed to examine the association between the number of board meetings and the extent of environmental sustainability disclosure. The results of the multiple regression showed a positive but statistically insignificant relationship between the two variables ($\beta_3= 0.000522$, t-statistic= 0.279590, the p-value was greater than 5% ($0.7800 > 0.05$). This indicates that the number of board meetings is not a determinant of the environmental disclosure made by Saudi listed non-financial companies. Therefore, the third hypothesis is rejected. This finding is in alignment with the results reported in a number of studies that have been carried out in Saudi Arabia such as Issa (2017), Alhazaimah et al. (2014). It, however, does not support the findings of Naseem et al. (2017), who reported a significant association between the two variables and argued that the probability of CSR disclosure increased by 3.274 times as the number of board meetings increases by one point. Also, this result does not support the findings of Hu and Loh (2018) and Mahmood et al.(2018).

H4 investigated the relationship between the company size and the extent of environmental disclosure. Regression analysis showed that the company size has a positive and significant impact on the extent of the environmental disclosure. The beta value shows that the coefficient is 0.031004 with p-value of 0.000, which is less than 0.01, suggesting that the relationship is significant at 1% level. Hence it can be concluded that the company size positively impacts the extent of environmental sustainability disclosure. This result leads us to accept the fourth hypothesis. This finding is consistent with the findings reported by numerous studies (e.g. Andrikopoulos & Krikilani, 2013; Juhmani, 2014; Akbas, 2014; Hussainey et al, 2016; Nguyen et al., 2017; Khalid et al., 2017; Garg& Kumar, 2018). On the other hand, this does not support the findings reported by Elshabasy (2018) and Garas and ElMassah (2018).

The fifth hypothesis examined the relationship between the company profitability and the extent of environmental disclosure. Table (6.5) shows that the company profitability has negative and significant impact on the extent of environmental disclosure. The beta value shows a coefficient of -0.026229 with p-value of 0.000, which means that the relationship is significant at 1% level. Hence it can be concluded that company profitability negatively impacts the extent of environmental disclosure, and the study fifth hypothesis is accepted. Previous research has shown mixed results regarding the relationship between company profitability and voluntary environmental disclosures. For example, the study by Tagesson et al. (2009) pointed out that there is a positive relationship between company profitability and various sustainability disclosures. Also, the study by Habbash (2015) that was applied to Saudi companies for the period 2007–2011, which shows a positive and significant

impact of the Company's profitability on environmental disclosure. While not consistent with the study by Grecco et al. (2013).

The sixth hypothesis investigated the relationship between the company leverage and the extent of ED. The result of the regression showed that the company leverage has a significant negative impact on the extent of environmental sustainability disclosure. The beta value showed that the coefficient was -0.027801 with p-value of 0.000, which is less than 0.01, suggesting that the relationship is significant at a 5% level. Accordingly, the sixth hypothesis is accepted. This result supports the results reported by Habbash (2015), Garas and ElMassah (2018). On the other hand, this result did not support the results reported by Garg and Kumar (2018) and Elshabasy (2018).

The seventh hypothesis investigated the relationship between the company age and the extent of environmental disclosure. Regression analysis showed that the company age had a positive and significant impact on the extent of environmental disclosure. The beta value showed a coefficient of 0.00055, with the p-value of 0.000, which means that the relationship is significant at a 5% level. Therefore, it can be argued that the company age positively impacts the extent of environmental disclosure. This suggests an acceptance of the seventh hypothesis. This result is consistent with a number of studies (e.g., Elshabasy, 2018; Nguyen et al., 2017; Hussainey et al., 2016). From another point of view, this result of the study is not consistent with the results reported by a number of studies (e.g., Akbas, 2014; Khalid et al., 2017; Garas & ElMassah, 2018).

The eighth hypothesis examines the relationship between the type of industry and the extent of environmental disclosure. As is shown in Table (6.5), as per the regression analysis, the type of industry has a positive and significant impact on the extent of environmental disclosure. The beta value shows a coefficient of 0.13423 with p-value of 0.000, which means that the relationship is significant at 1% level. Hence, it can be concluded that the type of industry positively impacts the extent of environmental disclosure. Hence, the eighth hypothesis of the study is accepted. This result is consistent with the results reported by Alsaeed (2006), Kansal et al. (2014), Ahmed (2013), Hussainey et al (2016), which found a positive and statistically significant association between the type of industry and the environmental sustainability disclosure.

11. CONCLUSION

The research interest of this study was to examine the impact of eight factors on the extent of disclosure of environmental sustainability by Saudi non-financial companies. First, the study found that the average disclosure of environmental sustainability is 10%, which is low in comparison with the results reported by other studies. Further, the descriptive analysis showed a great variation in the extent of disclosure provided by companies. It showed that some companies disclose about 88% at the maximum, while other companies do not disclose any information pertaining to environmental sustainability and the percentage is 0%. Then, a correlation analysis test was performed to determine the level of correlation between the dependent variable and independent variables on the one hand and independent variables with each other on the other hand. In the analysis, if the level of correlation between the variables arrives at 70% or more, it suggests that multicollinearity exists or there is a correlation risk. In this study, all independent variables had correlation coefficients below the specified value of 0.7, and the highest correlation coefficient was 0.57, between environmental disclosure and industry type, which emerged as the most important and influential factor in detecting environmental sustainability disclosure. For the relationship between the independent variables of each other, the highest ratio was 46.9%, between firm size and board size.

Last, the regression analysis of the association between the disclosure of the environmental sustainability and factors reflecting companies governance structure and companies attributes suggests that one attribute of company governance structure and most characteristics of the company factors determine the extent of disclosure of environmental sustainability practices in Saudi Arabia for the period 2015–2017. In detail, the results revealed that the independence of the board of directors has a positive association and is statistically significant with the extent of disclosure of ED, while the number of board meetings and board size has no significant association with ED. On the other hand, the results also revealed that the size of the company, the age of the company and the type of the company industry have a positive and significant impact on the practices of environmental sustainability disclosure in Saudi Arabia. In addition, the results revealed that the company's profitability and leverage have a negative and significant impact on disclosure practices. This is due to some reasons that have been discussed in the previous chapter.

Overall, it can be stated that the main factors that affect the extent of disclosure of environmental sustainability relate to the characteristics of the company, especially the type of industry, company profitability and company size. On the other hand, the results show that there is no significant impact of corporate governance structure on the disclosure of environmental sustainability except for board independence. This is due to many reasons, the most important of which is the voluntary nature of the environmental sustainability disclosure system.

To conclude, these results suggest that companies' attributes and characteristics play an important role in companies' affairs in Saudi Arabia, especially in terms of information reporting. This suggest peers could have an influence on how and to what extent companies report information. Accordingly, it can be argued that the premises of the theory of legitimacy in Saudi Arabia are influenced by the type of industry and peer competition. In other

words, companies in the same sector are competitively seeking to provide everything that can enhance their continuity and acceptance in the community with reference to their competitors. Companies that meet the community's expectations regarding environmental sustainability reporting can gain a competitive advantage among their peers. Thus, the practices of competitors in the same industry are used as a benchmark for most voluntary reporting decisions. This might be due to the voluntary nature of the Saudi business as a developing country.

12. LIMITATIONS AND RECOMMENDATIONS

This study is subject to some limitations that should be taken into consideration and may open up new opportunities for further research which are:

1. The research focuses on non-financial companies listed in Saudi Arabia, as financial companies are subject to special regulations and laws.
2. This study concentrates on annual reports in collecting required data without taking into account the likelihood that the company may publish information pertaining to environmental sustainability in different social media platforms or websites.
3. The research in evaluating annual reports relied on the content analysis approach which has some limitations as it requires considerable effort and a long time to analyze the annual reports of companies.

The findings of this study present some recommendations that are:

1. Regulators should rethink the way to enhance the board of directors' awareness of social issues by modifying corporate governance regulations.
2. Related parties should work to spread the culture of the importance of disclosing sustainability information among non-industrial companies.
3. Issuing regulations, recommendations or guidelines to companies in all sectors in order to encourage the disclosure of sustainability information in line with Saudi Vision 2030.
4. Use other methods of data collection such as questionnaires or interviews.
5. Extend the data source to other social media platforms.

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