



A Model for Environmental Management Information Disclosure Requirement in Financial Reporting

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ABSTRACT

This study aimed to propose a prescriptive model of environmental reporting in Iran. The model was developed through exploratory research and a qualitative approach using the grounded theory method. The research population included experts in the fields of accounting, environment, natural resources, and law. The snowball sampling method was used to select the respondents for the interviews. After analyzing the data, a model for environmental management information disclosure requirements in financial reporting was developed. The results indicated that environmental laws (measurement and reporting requirement) were classified as causal conditions, international financial reporting standards (IFRS) as underlying conditions, and sustainability reporting standards and acquisition of competitive advantages (adhering to accountability and gaining legitimacy) as intervening conditions. Model strategies include reporting quantitative and qualitative environmental information in the value chain in the form of a board report to the assembly, explanatory notes, and defining a new financial statement. Furthermore, acquiring the component of national power (preserving scarce and non-renewable resources, preventing destructive and polluting activities, maintaining public health, establishing environmental justice among different generations and communities, preventing corruption and rentier capitalism, and achieving sustainable development) and facilitating international political and economic relations, assessing the continuity of corporate activity and public supervision, and reducing information asymmetry were identified as the implications of the developed model.

Keywords:

rules and regulations, international financial reporting standards (IFRS), sustainable reporting standards, environmental reporting, grounded theory.



1. Introduction

The management of a business requires the use of three factors: human resources, financial resources, and natural resources (Hejazi & Ghanbari, 2011). Businesses have non-financial responsibilities and their environmental performance is not limited to political and geographical boundaries. The environment in Iran due to industrial production regulations and short-term political goals is being destructed or undergoing a critical situation (Dehdar & Ahmadian, 2017). Besides, there are no suitable and defined indicators to assess environmental performance in developing countries, or they (if any) have low reliance and accuracy (Banimahd et al., 2009). With such a situation, achieving sustainable development, i.e., progress and development that meets the needs of the current generation without compromising the right and ability of the next generation to meet their needs from the environment and natural resources (Janani & Heydari, 2011), is not possible. On the other hand, to evaluate the sustainability and development of companies, the incorporation of data related to natural resources and losses in the production process in financial accounting is necessary to meet the information needs of internal stakeholders (operating in a polluted environment and exposing to risks of irreparable damage to employee health) and external stakeholders (shareholders, customers, suppliers, environmental groups, government legislators and the general public) (Hejazi & Ghanbari, 2011) and to manage or reduce political and social pressures (Talebnia et al., 2012).

These issues indicate the need for environmental reporting to meet accountability requirements. However, such reporting faces major challenges such as voluntary disclosure (non-disclosure of undesirable information and the absence of a consistent procedure), measurement basis, reporting method (disclosure items and place), the inadequacy of current accounting, etc. Accordingly, a conceptual model is developed using all available capacities to minimize the mentioned challenges.

2. The theoretical framework and literature review

The concept of a "global environment" was established in the 1980s and 1990s worldwide. With the emergence of environmental issues such as the

extinction of animals and plants, global warming, and the depletion of the ozone layer, which are global issues (although not necessarily global in origin), the global environment was developed as a new concept and the central theme of social theorizing about globalization, accompanied by the concepts of "global economy", "global communications", and "global village". Just as the global environment creates a global network of socio-economic relations between distant places and people, the global village environment represents another level of interaction between people and distant places. Some environmental issues such as the free market and the global economy are not limited to national borders (Barry, 2001).

At the country level, the concept of national security was developed. It refers to the conditions in which a country is safe from potential or actual foreign threats and foreign political and economic influence, and can take steps in promoting economic, social, and human development and ensuring the unity and existence of the country and public welfare free from foreign interventions (Roshandel, 1997).

At the corporate level, the environmental performance of a company's operations, which are in sync and consistent with the environment, is an important issue that is mainly measured through criteria and scales set by relevant national and international institutions and agencies (Sarumpaet, 2005). Accordingly, various theories such as political economy theory, legitimacy theory, and stakeholder theory try to explain the motivation of the company to disclose environmental and social responsibility information (Jenkins & Yakovleva, 2008). According to the political economy theory, accounting can play a vital role in the quality of organizational structures and the environment from economic, political, and social perspectives (Guthrie & Parker, 1990). Following the theory of political economy, society, politics, and economics are not separate and economic issues cannot be studied without considering social and political issues. In fact, financial reporting is used as a tool to convey political, social, and economic goals to a wide range of users (Maran Jori & Alikhani, 2011). Furthermore, the legitimacy theory was derived from the paradigm of the political economy and assumes that an organization must maintain its social role by responding to the needs of society and giving what society demands (Azizul Islam, 2009). The concept of

legitimacy enables the researcher to explain the social relations of an organization. The legitimacy theory emerges from this definition of the organization's interaction with society. Therefore, the level of homogeneity between the company's activities and the expectations of society arising from these activities is a direct reflection of its legitimacy (O'Donovan, 2002). Furthermore, according to the stakeholder theory, normative branches of ethics and management are two main variables. Ethically, environmental and social reporting is an accountability mechanism that reflects the extent to which an organization is committed to its activities, and from a managerial point of view, it pays attention to the environmental and social reporting literature and focuses on the need to control stakeholders (persons with a direct and significant impact on the company) (Jamil et al., 2003).

In their study, Lio et al. (2021) concluded that based on 34 selected samples in China the disclosure level of the whole sample is low, which indicates that the information disclosed by each enterprise is not substantial.

Casazza et al. (2020) compared Europe and China in terms of urban sustainability (environment, economy, and community) and concluded that the urban structure, the urban-rural gradient, food production and the management of water resources were carefully planned to guarantee the survival of the cities inhabitants, evidencing the importance of integrating the historical environmental and socio-economic dynamics to improve sustainable urban planning.

Kalikov et al. (2020) analyzed the green economy as a model of sustainable development in Kazakhstan and found that the use of alternative energy is an integral part of the development of the green economy and the essential elements of the transition to the green economy are the development of new financial instruments, namely the use of ecosystem services, green banking, stocks and bonds, and markets for the sale of intellectual property of environmental technologies.

Gallego-Álvarez et al. (2018) examined the environmental information of international companies and the extent of its disclosure according to the new standards of the World Reporting Organization. They conducted an intergroup analysis to examine the relationship between geographical areas and industrial sectors with sustainability reporting standards. The

results showed that some sectors of oil, chemicals, and mining industries pay more attention to environmental indicators.

In another study, Latridis (2013) concluded that disclosing corporate social responsibility in annual reports will allow investors and other stakeholders to judge the effectiveness and impact of decisions and social responsibility activities of managers. Sikka (2011) studied the application of Sustainable Accounting Guidelines on the continuity of activities of companies listed on the Thai Stock Exchange and concluded that there is a direct and positive relationship between the continuity of activity and the life of companies that are committed to disclosing reports consistent with accounting standards. Ebimobowei (2011) examined social accounting disclosures in the annual reports in Nigerian companies and found that companies prefer to disclose social accounting information in the Directors' Report, Chairman's Statement, and Notes to the Accounts in the form of short qualitative information. Mahadeo et al. (2011) examined the application of the environmental and social reporting of companies listed on the Icelandic Stock Exchange. The results showed a significant but selective increase in the level and quality of disclosure of environmental and social responsibility information during the period under review. Jones (2011) concluded that companies in industries with a greater impact on the environment tend to release good news more frequently than bad news in charts. In a study conducted in Vietnam, Nakagami (2010) emphasized that attention to environmental issues is necessary to achieve sustainable development. The results of a study by Edu et al. (2009) indicated that as long as disclosure of environmental performance information is non-mandatory and voluntary, companies tend to employ different reporting procedures, and thus, the level of disclosure of environmental performance varies among them. Banerjee (2006) concluded that accounting practices are limited to measuring and reporting economic activities and are not able to capture and report the environmental crisis in the form of accounting figures. Also, companies are reluctant to disclose detailed information on the environmental costs of their operations in their annual reports due to social consequences.

Gao et al. (2005) explored the patterns and determinants of corporate social and environmental

disclosure (CSED) in Hong Kong. The results showed that industry differences have an impact on the amount, content theme, and location of CSED. Besides, most disclosures in annual reports were found in the notes to financial statements. Jamil et al. (2003) concluded that the corporate social responsibility disclosure in the annual reports of Malaysia companies was low, and environmental and social responsibility information in the CEO's report, financial statements, and directors' report was disclosed in the form of news information.

Healy and Palepu (2001) explored the impact of corporate social responsibility (CSR) on corporate financial performance and concluded that CSR reduces information asymmetry and increases investor confidence in fair trading prices, consequently enhancing the liquidity of the company's stock. It was also shown that when information disclosure is incomplete investors will be exposed to more risks. For this reason, their expected return on investment increases. Accordingly, with the increase of information disclosure including voluntary disclosure, investment risk, and hence the cost of capital will decrease. Finally, if the private information of managers is not disclosed through mandatory disclosure, voluntary disclosure will reduce the cost of acquiring information for analysts. The results of a study by Frankle and Anderson (1980) showed that rising stock market prices on US stock exchanges are influenced by the disclosure of social activities in financial statements. Furthermore, the clear disclosure of social performance has a positive effect on the stock market price.

Baharloo et al. (2016) identified environmental issues at the corporate level from 2017 to 2018. They first identified 20 criteria and classified them into four general categories including criteria for recognizing and preventing environmental pollution, compensation for environmental damage, motivating and developing environmental activities, providing education, and building environmental culture. The authors stated that the research findings are effective in a better understanding of environmental issues and their compliance at the corporate level, the development of environmental accounting standards by industry, and encouraging organizations to implement Green Accounting with desirable outcomes.

Jami and Hosseini (2019) examined the educational barriers to environmental accounting in

Iran. The results indicated the inadequacy of the relevant courses, the lack of appropriate and up-to-date educational resources, and the inadequacy of education in universities. Soleimani and Majbourni Yazdi (2019) examined the impact of the corporate environmental strategy, senior management commitment, and environmental uncertainty by emphasizing the role of environmental management accounting on corporate environmental performance. The results suggested that environmental strategies have a significant positive effect on the environmental performance of companies. Environmental strategies have an indirect positive impact on the company's environmental performance through environmental management accounting. Senior management commitment has a significant positive effect on organizational environmental performance. It also has a significant positive indirect effect on the company's environmental performance through environmental management accounting. Finally, it was shown that perceived environmental uncertainty has a significant positive effect on the use of environmental management accounting.

Malekian et al. (2017) concluded that among the eight board variables of the board, non-executive board ratio, board ownership ratio, the ratio of female members of the board, and the board members' stability ratio have a positive and significant effect on environmental, social, and corporate governance reporting. Besides, the duality of the CEO's role and the education level of the board of directors have a negative and significant effect on the level of environmental, social, and corporate governance reporting. However, board size and the number of board meetings have no significant relationship with the amount of environmental, social, and corporate governance reporting.

Fakhari and Mehrabi (2015) found that indicators related to raw materials and energy are more important for analysts and the main reason for paying attention to them is their relevance to shareholders' interests. Besides, environmental indicators were ranked into energy, raw materials, and compliance with environmental and water regulations, respectively.

Fakhari et al. (2017) developed a model for disclosure of environmental, social, and corporate governance information for companies listed on the Securities and Exchange Organization of Iran. The results of the study showed that the highest and lowest

disclosure rates were related to leadership and social responsibility, respectively. Besides, the rate of environmental and social disclosures does not follow a specific trend, which is because these disclosures are voluntary.

Dehdar et al. (2017) concluded that environmental accounting creates competitive advantages and future business opportunities, manages environmental costs, justifies green processes and products, tackles environmental pollution, and prosecutes and punishes perpetrators of crimes against the environment. Accordingly, some regulations related to polluting industries need to be amended and revised.

Taghizadeh Khaneghah and Zeinali (2016) examined the effect of corporate social responsibility on investment efficiency and innovation of companies listed on the Tehran Stock Exchange. Their findings suggested that the disclosure of social responsibility is associated with the production of new products and proper use of the results of investment in research and development, and managers must be committed to their social responsibility duties to make an optimal investment, generate quality and high-tech products, protect the interests of stakeholders, and reduce agency costs.

Khazin et al. (2016) explored the level of environmental financial reporting for companies listed on the Tehran Stock Exchange and found that in the period under review, the level of environmental reporting has slightly improved but is still far from the desired level. Furthermore, companies do not currently pay enough attention to disclosing information about the environment and taking into account the interests of various stakeholders at the operational level. Herati et al. (2016) stated that economic and political inequality has had a negative impact on the environmental quality of the studied countries so that the improvement of income distribution and the democracy index enhances the quality of the environment. The results also highlighted the importance of the increase in literacy rates, the gradual increase in political freedoms, the improvement of civil rights, the strengthening of social capital, and the support for the formation of environmental NGOs. In the international and regional arenas, solving environmental problems requires cooperation between different countries.

Sepasi and Ismaili-Kajani (2015) proposed a model for environmental disclosure in the country

based on the opinions of environmental and financial experts. The purpose of their study was to determine the importance of environmental disclosure and to identify what should be disclosed to the audience. The results indicated that the main factors affecting environmental disclosure are preventive, compensatory, and management measures. It was also shown that the disclosures can be presented in the form of financial statements or explanatory notes.

Bozorg Asl and Ahmadi (2013) examined the relationship between the disclosure of corporate social responsibility information and decision-making of various Iranian investors by surveying a group of capital market analysts and a group of financial management students. Their results showed that investors react to a variety of social behaviors. Nevertheless, there was no significant difference between the reactions of the two groups.

Talibnia et al. (2012) stated that the highest level of disclosure of environmental and social responsibility information in Iran can be found in the report of the Board of Directors to the Assembly in the form of news and financial statements, and this news is impartial and reliable and presents a favorable image of the company.

Abbasi and Mohammadi (2012) stated that the polluting companies listed on the Tehran Stock Exchange disclose their environmental financial performance in the notes to the financial statements and the report of the Board of Directors to the General Meeting of Shareholders. Furthermore, as long as the disclosure of environmental performance information is non-mandatory and voluntary, companies use different procedures for reporting, and the rate of disclosure of corporate environmental performance fluctuates. Janani and Heydari (2011) stated that binding rules and regulations, financial managers' knowledge, financial managers' belief in the benefits of environmental reporting are effective factors in environmental reporting.

Jalali (2008) stated that environmental disclosure and reporting has not yet become a widely accepted concept in the market. There are also no local or international requirements for such disclosure, and only some companies voluntarily disclose their environmental information. There is also insufficient research, training, and guidance on environmental information disclosure and reporting.

Allameh (2004) concluded that the disclosure of environmental accounting information increases the information content and is an incentive for for-profit businesses to protect the environment.

Mirsamei and Khoshtinat (2002) suggested that the factors hindering the development of environmental accounting in Iran are the existence of shortcomings in environmental laws and regulations and such regulations do not have sufficient executive guarantees.

Mirsamei (2001) concluded that to create and develop environmental accounting in the country and its proper implementation, first appropriate and relevant laws and regulations should be laid in this field and then appropriate guidance must be drafted and implemented by professional associations and groups including the Accounting Standards Board so that companies can follow sound procedure.

A review of the theoretical issues and previous studies in the literature suggested that previous studies have been conducted mostly on single cases and provided descriptions of the current situation. However, using grounded theory and taking into account theoretical issues and empirical studies in the literature and surveying subject-matter experts, the present study aims to develop a model for disclosing environmental management information in financial reporting.

3. Research questions

Given the research objectives, the following questions are addressed in this study:

- 1) What is an appropriate model to explain the environmental management information disclosure pattern in financial reporting?
- 2) What are the factors affecting the disclosure of environmental management information in financial reporting?

Based on theories of political economy, legitimacy, and stakeholders, environmental reporting reflects the social role of an organization in responding to the needs of society and accounting for its activities. However, according to the literature, environmental information is not adequately disclosed in financial reporting. Accordingly, building upon the principles of grounded theory, the present study explores the factors affecting the disclosure of environmental information and develops a model for use in Iran.

4. Methodology

The present research employs a qualitative research design using the grounded theory method. Qualitative research is a complex process that requires a relatively long time to be completed and data is analyzed using inductive reasoning (Danaeifar et al., 2004). The grounded theory method is based on the discovery or development of a theory or model using existing facts and facts and through the systematic collection of data and taking into account all aspects related to the phenomenon under study (Mehrabani et al., 2011).

Given the objectives of the study, a snowball or chain sampling technique was used. In this sampling technique, the participants are somehow related to each other and guide the researcher to select other participants from the same population (Mashayekhi et al., 2013). In other words, first, several experts with sufficient education and experience related to the subject matter under study are selected and interviewed, and after the interview, they are asked to introduce other experts in a specific field and with relevant experience. To enrich the data, subject-matter experts and highly experienced people were interviewed. To this end, the research population included experts (university professors, managers, and senior staff of related organizations) in the fields of accounting, environment, natural resources, Islamic jurisprudence, and law. The data were collected through open-ended interviews with the participants. The data were saturated after 20 interviews and using conference and TV interview audio files, 4 newspaper articles, related legal texts, and a review of the literature. The participants were surveyed via unstructured, open-ended, and semi-structured interviews. Given that this study sought to identify factors affecting the disclosure of environmental information in financial reporting, the initial codes were identified via unstructured interviews with the participants. Afterward, the data collection process continued with semi-structured interviews. Since the grounded theory is used to develop hypotheses, open and flexible questions were used to capture the phenomenon under study. Thus, the questions were moderately open-ended and flexible to enable the researcher to explore the problem at hand while not restricting the possibility of coming up with discoveries. Examples of the questions used in the interviews are as follows:

- How do you assess the current status of disclosure of environmental information in financial reporting?
- What are the reasons for the current state of environmental information disclosure in financial reporting?
- What solutions do you offer for disclosing environmental information?
- Do you think if it is possible to have environmental reporting in the financial statements or not, and how?
- Are there any protective laws and standards in environmental protection and environmental reporting?

The mentioned questions were asked based on the expertise and experience of the respondents. Besides, other questions were developed and asked based on the interviewees' responses and the literature review. The participants' demographic data are shown in Tables 1 and 2:

Table 1: The participants' education and field of study

Field of study	Education	
	Ph.D.	Master
Accounting	11	3
Environmental law	1	
Financial management	1	
Geography	1	1
Law	1	1
Total	15	5

Table 2: The department, position, and education

Department	Position	Number	Education	
			Ph.D.	Master
Faculty member	State and Azad universities	10	10	
Department of Environment	Directors general and provincial deputies	2	2	1
Natural Resources Organization	Provincial deputies	1		1
Islamic Consultative Assembly	Auditor at Supreme Audit Court of Iran	1	1	
Tehran Stock Exchange	Department of Financial Auditing and Reporting	2		2
University lecturer	Instructor	1	1	
Banks	Employee	1	1	
Private sector	Financial Assistant	1		1
Total		20	15	5

The collected data were analyzed using the systematic method (Strauss & Corbin, 1990) through open, axial coding, and selective coding.

4.1. Open coding

Open coding is part of the data analysis process which segment, compare, label, conceptualize, and categorize the data. In this process, the data are broken down into separate segments and are categorized to find out similarities and differences. A "category" is a theme that is more abstract than other themes. In short, a set of conceptual categories are created from data via

open coding (Mashayekhi et al., 2013). To this end, the data from each interview were analyzed to extract related themes and label them.

An example of open coding done in the present study is as follows:

"If the companies themselves should disclose this information (voluntary disclosure), they may refuse to disclose it because of the competitive conditions (refusing to disclose unfavorable information due to competitive conditions). Officials from the Department of Environment do not assess products and raw materials. They just protest why the company's

wastewater is running into the street, the forest, etc. (non-reporting of the value chain and the weakness of the regulations). Then, they issue a fine ticket (measurement, pollution duties subject to Article 38 of the VAT law) and the fine is not paid by follow-up measures taken by the company's officials (corruption and the influence of people)".

By reviewing the above quotation and by constantly comparing the differences and similarities in other themes extracted from the data, the following categories are extracted: *The use of legal instruments for measuring and requiring environmental reporting, gaining competitive advantages, environmental management information reporting, and corruption.*

4.2. Axial coding

In axial coding, the researcher selects one of the categories as the core category and other categories are explored and selected based on it. In this coding, the main categories extracted from open coding are related to each other and the links between the categories are explained in terms causal conditions (those events that affect the phenomenon), contextual conditions (why a phenomenon is restricted in some cases and unrestricted in other cases), intervening conditions (leading to ease or limitation of strategies), the core category (the main phenomenon under study), strategies (based on actions and reactions to control, manage and deal with the phenomenon in question), and outcomes (output from strategies) (Rezaei, 2017; Sajjadi & Kazemi, 2016; Mashayekhi et al., 2013).

4.3. Selective coding

In this coding, the goal is to integrate and put together the resulting hypotheses, propositions, and the growing analysis. In general, the purpose of different types of coding is to develop an abstract theory about data, that is, a theory that is rooted in the data and has become a grounded theory (Mashayekhi et al., 2013).

4.4. The model assessment and validation

Using a grounded theory approach, the research model and findings were assessed and validated using the triangulation of the data and member control based on the acceptance criteria (Mashayekhi et al., 2013). Data triangulation means using multiple sources of data collected from different groups, different environments, or at different times. In the present

study, data were collected from multiple sources based on different views and opinions, from faculty members, persons working in the Department of Environment, Natural Resources Organization, Watershed Management Organization, investment companies, Securities and Exchange Organization of Iran, members of parliament, auditors at Supreme Audit Court of Iran, banks, TV interviews, newspaper articles, legal texts, etc. Member control is a technique by which a researcher controls his or her assumptions with one or more knowledgeable individuals, and this technique is used to validate the researcher's interpretations from the perspective of participants and knowledgeable individuals to establish the reliability of findings and interpretations (Mashayekhi et al., 2013). To validate the research model, the variables extracted from the interviews and the literature and the results were sent to 6 experts and revised.

5. Results

The data were collected in this study through interviews and a review of upstream documents and rules and regulations. To this end, the initial interviews were exploratory and descriptive. The relevant codes emerged gradually by comparing the data and using open coding. Following the grounded theory, a theorist can narrate his/her theory in three ways: graphic, description, or a story or a mixture of them (Danaeifar & Kazemi, 2012). Fig. (1) shows the environmental management information disclosure requirement model in financial reporting:

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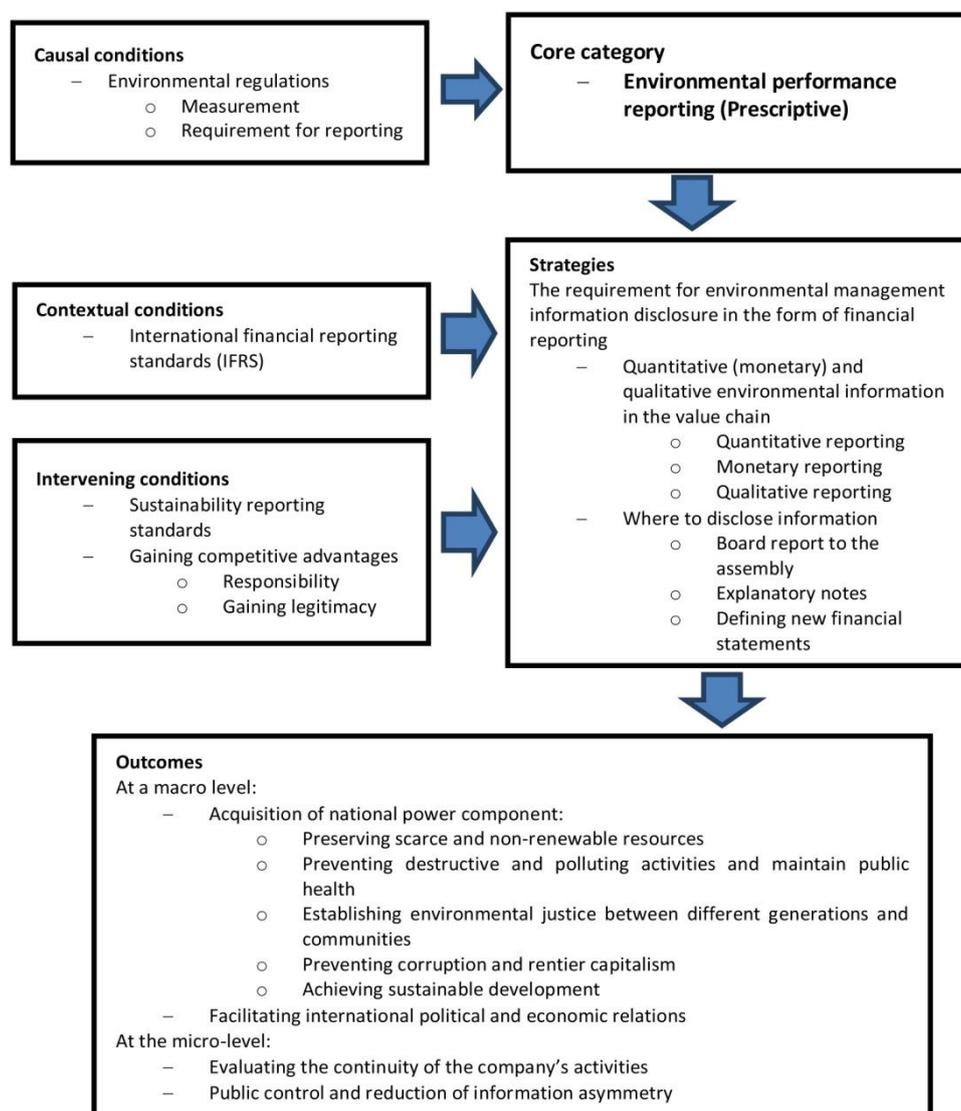


Fig. (1) The environmental management information disclosure requirement model

Accordingly, causal conditions, underlying conditions, intervening conditions, strategies, and outcomes related to (prescriptive) environmental performance reporting were identified and described:

5.1. Causal conditions

Based on the available data, the causal conditions of environmental reporting following environmental regulations (existing legal capacities and enacting new

regulations) were categorized into measurement issues and reporting requirements as described as follows:

5.1.1. Measurement

To solve the main problem of environmental reporting, i.e. measuring and documenting it, the existing laws and regulations can be used because the law provides a basis for measuring damages, crimes, and pollution effects following a consistent procedure. The applicable laws are related to water (Article 46 of

the Law on Fair Water Distribution approved in 1982 and instructions on how to calculate the volume of unauthorized use, compensation and restoration to the previous status approved by the Ministry of Energy in 2016), air (Articles 12 and 14 of the Clean Air Law approved in 2017 and Resolution No. 84411 / T55181 dated Sep. 18, 2018 by the Council of Ministers), soil (Articles 14, 15, 16, 19, 25, and 26 of the Soil Protection Law approved in 2019) and forests, natural groves, and rangelands (Articles 12 and 13 of the Law on Increasing the Productivity of Agriculture and Natural Resources and Resolution No. 121604/T 43987 dated Sep. 23, 2013 by the Council of Ministers), Noise pollution (Article 29 of the Clean Air Law approved in 2017, Resolution No. 84401 / T 55069 dated Sep. 18, 2018 by the Council of Ministers and Article 19 of the Islamic Penal Code), wetlands (Resolution No. 157408/T55096 dated Feb. 16, 2019 by the Council of Ministers), waste (Articles 16, 18, and 19 of the Law on Waste Management approved in 2004), as well as the application of pollution duties on environmentally polluting production units (Note 1 to Article 38 of the VAT Law) or the enactment of new laws regarding the quantitative (and monetary) and qualitative measurement of environmental destruction.

5.1.2. Reporting requirement

The absence of accounting standards, refusal to provide undesirable information, and lack of a consistent procedure for voluntary disclosure of information in environmental reporting necessitate the use of legal tools to require firms and enterprises to engage in environmental reporting. For example, Article 14 of the Soil Protection Law approved on Jun. 10, 2019, Articles 19 and 20 of Resolution No. 88482/T32561 dated Aug. 1, 2006, and Amendment No. 152732/T41956 dated Oct. 24, 2009, by the Council of Ministers and Paragraph B of Article 192 of the Law on the Fifth Five-Year Development Plan have required destructive and polluting units to report and stop their polluting activities. Therefore, setting such requirements for corporate financial reporting can lead to providing useful information for users of financial statements.

5.2. Contextual conditions

International financial reporting standards have considered concepts such as the possibility of drafting more or different requirements for governments to

achieve their goals (Introduction to Theoretical Foundations of Financial Reporting), incorporating more information (Paragraphs E-8) and including reports on management expectations, strategies used by reporting firms, and other forward-looking information (Paragraph 2), reporting in the form of words and numbers (Paragraph 12), reporting all the information needed by users (paragraph 13) and so on. Using these concepts, environmental reporting can be done in the form of financial statements.

5.3. Intervening conditions

Based on the collected evidence and data, intervening conditions were subcategorized into the following factors:

5.3.1. Sustainability reporting standards

Organizations use Section 300 of the Sustainability (Environmental) Reporting Standards to provide environmental performance reporting. However, the main problem is users' inattention to these reports for reasons such as multiple reports, interpretive nature of these reports, and their focus on financial reporting. Therefore, these standard have been used as a reliable support to explain the important issues of environmental reporting.

5.3.2. Gaining competitive advantages

To protect the rights of citizens and comply with ethical issues, organizations must take their social responsibility, to protect the interests of the general public (current and future generations) and the environment, and to report and be accountable for their performance in this area. Accordingly, while gaining social acceptability and legitimacy, they will also gain a competitive advantage.

5.4 Strategies

Strategies used for environmental reporting represent another important issue that emerged in this study. To this end, we explored the requirement to disclose environmental management information in the form of financial statements. As required by law, managerial information is reported in the form of management accounting and financial reports detailed as follows:

5.4.1. Quantitative (monetary) and qualitative environmental information in the value chain

Any environmental activity from the time of construction of the company, process, and products is

considered and the necessary disclosure must be made by taking into account the following parameters:

- Quantitative reporting
 - Inputs (raw materials, energy, etc.)
 - Outputs (waste, effluents, air pollution, crops, environmental activities, etc.)
- Monetary reporting
 - Inputs (price paid for raw materials, energy, etc.)
 - Outputs
 - Crimes, damages, and pollution charges
 - Money spent on environmental projects
- Qualitative reporting
 - Explaining how inputs and output affect the environment
 - Explaining whether or not inputs and output are renewable and irreparable
 - Explaining legal constraints, alternative methods, and existing strategies
 - Disclosing warnings received and lawsuits filed
 - Disclosing environmental support activities

5.4.2. Where to disclose information

Based on the interviews conducted, the environmental reporting method can be in the form of the board report to the assembly, explanatory notes, and defining new financial statements.

5.5. Outcomes

The results of the present study indicated that disclosing environmental information has favorable outcomes at the macro and micro levels as detailed below:

5.5.1 Outcomes at the macro level

According to our data, informational transparency resulting from environmental reporting, responsibility, and accountability leads to the preservation of scarce and non-renewable resources, prevention of destructive and polluting activities and maintaining the public health, establishing environmental justice between generations and communities, preventing corruption and rentier capitalism, achieving sustainable development in the country, and ultimately the acquisition of national power. Furthermore, these

factors facilitate international political and economic relations.

5.5.2 Outcomes at the micro-level

Assessing the continuity of corporate activity (basic assumption) is important for users of financial statements and facilitates their risk management. Accordingly, various laws such as Article 50 of the Constitution, Articles 11 and 12 of the Law on Environmental Protection and Improvement, Articles 12 and 14 of the Law on Clean Air and Article 4 of the Law on Protection, Restoration, and Management of Wetlands have pointed to the prohibition of environmentally destructive and irreparable activities, the prevention and cessation of destructive activities or the transfer of lines or facilities to other places. Furthermore, these regulations consider environmental protection as a public duty, and considering the importance of non-governmental organizations, the issue of public control becomes more essential. Therefore, the realization of environmental reporting will lead to free access to information and, consequently, accountability to the general public, reduction of information asymmetry, and evaluation of the continuity of companies' activities.

6. Conclusion

According to previous studies in the literature, there is no suitable context for disclosing environmental activities. The present study indicated that legal and regulatory instruments can be used to solve the problems of measurement and reporting requirement issues. Besides, sustainability reporting standards were used to identify relevant factors. As stated earlier, these standards complement accounting standards without contradicting them. Therefore, environmental reporting is possible within a legal and regulatory framework and based on management accounting and financial accounting principles in a prescriptive format by passing new laws and regulations. Moreover, to survive, businesses must be accountable for their environmental activities to gain a competitive advantage and legitimacy. Hence, they will be required to provide quantitative (and financial) and qualitative environmental information resulting from their performance in the production value chain, and this is possible through various reporting methods such as board reporting to the General Assembly, explanatory notes, or defining new financial

statements. These measures at the macro level lead to the acquisition of the component of national power by preserving scarce and non-renewable resources, preventing destructive and polluting activities, maintaining the health of members of the community, establishing justice between different generations and communities, preventing corruption and rentier capitalism, achieving sustainable development, and facilitating international political and economic relations. Besides, environmental information disclosure at the micro-level provides a suitable tool for assessing the continuity of corporate activity,

increasing public control, and reducing information asymmetry.

By comparing the components of the model developed in the present study with the factors highlighted in the literature as shown in Table (3), new components were identified and added to the model. The main difference is that the previous studies in the literature have mainly described the prevailing conditions in the country or selected examples, while the present study proposed a prescriptive model for solving the basic problems, i.e., measurement (environmental accounting) and environmental performance reporting.

Table 3: A comparison of the elements of the research model with the factors identified in the literature

The model components	Literature Review
<p>Causal conditions</p> <ul style="list-style-type: none"> • Environmental regulations <ul style="list-style-type: none"> ○ Measurement ○ Requirement for reporting 	<p>Edu et al. (2009) indicated that due to non-mandatory and voluntary disclosure of environmental performance information companies tend to employ different reporting procedures, and thus, the level of disclosure of environmental performance varies among them. Sarumpaet (2005) underlined the consistency of companies' environmental performance with the environment, which is mainly measured through criteria and scales set by relevant national and international institutions and agencies (Sarumpaet, 2005). Fakhari et al. (2017) stated the rate of environmental and social disclosures does not follow a specific trend because these disclosures are voluntary. Dehdar et al. (2017) suggested some regulations related to polluting industries need to be amended and revised. Abbasi and Mohammadi (2012) suggested that the use of different reporting procedures and variations in environmental reporting are due to non-mandatory and voluntary disclosures. Janani and Heydari (2011) stated that binding rules and regulations are effective factors in environmental reporting. Mirsamei and Khoshtinat (2002) suggested that the factors hindering the development of environmental accounting in Iran are inadequacies in environmental laws and regulations. Mirsamei (2001) concluded that to create and develop environmental accounting in Iran, appropriate and relevant laws and regulations should be passed.</p>
<p>Intervening conditions</p> <ul style="list-style-type: none"> • Sustainability reporting standards • Gaining competitive advantages <ul style="list-style-type: none"> ○ Responsibility ○ Gaining legitimacy 	<p>According to the legitimacy theory, an organization must maintain its social role by responding to the needs of society and giving what society demands (Aziz al-Islam, 2009). Various theories such as political economy theory, legitimacy theory, and stakeholder theory explain the motivation of the company to disclose environmental and social responsibility information (Jenkins & Yakovleva, 2008). Following stakeholder theory, Jamil et al. (2003) stated environmental and social reporting is a mechanism for responding to activities and controlling stakeholders. Dehdar et al. (1396) suggested that environmental accounting will create competitive advantages and future business opportunities.</p>
<p>Strategies</p> <p>The requirement for environmental management information disclosure in the form of financial reporting</p> <ul style="list-style-type: none"> • Quantitative (monetary) and qualitative environmental information in the value chain <ul style="list-style-type: none"> ○ Quantitative reporting ○ Monetary reporting ○ Qualitative reporting • Where to disclose information <ul style="list-style-type: none"> ○ Board report to the assembly ○ Explanatory notes ○ Defining new financial statements 	<p>Ebimobowei (2011) found that companies prefer to disclose social accounting information in the Directors' Report, Chairman's Statement, and Notes to the Accounts in the form of short qualitative information. Gao et al. (2005) showed that industry differences have an impact on the amount, content theme, and location of CSED. Besides, most disclosures in annual reports were found in the notes to financial statements. Jamil et al. (2003) stated that environmental and social information is disclosed in the CEO's report, financial statements, and board report. Sepasi and Ismaili Kojani (2015) suggested that environmental information can be disclosed in the form of financial statements or explanatory notes. Talibnia et al. (2012) stated that the highest level of disclosure of environmental and social responsibility information in Iran can be found in the report of the Board of Directors to the Assembly in the form of impartial and reliable news and financial statements. Abbasi and Mohammadi (1391) found that the environmental and financial performance of companies is disclosed in the notes to the financial statements and the report of the board of directors to the general meeting of shareholders.</p>
<p>Outcomes</p>	<p>Latridis (2013) concluded that disclosing corporate social responsibility in annual</p>

The model components	Literature Review
<p>At a macro level:</p> <ul style="list-style-type: none"> • Acquisition of national power component: <ul style="list-style-type: none"> ○ Preserving scarce and non-renewable resources ○ Preventing destructive and polluting activities and maintain public health ○ Establishing environmental justice between different generations and communities ○ Preventing corruption and rentier capitalism ○ Achieving sustainable development • Facilitating international political and economic relations <p>At the micro-level:</p> <ul style="list-style-type: none"> • Evaluating the continuity of the company's activities • Public control and reduction of information asymmetry 	<p>reports will allow investors and other stakeholders to judge the effectiveness and impact of decisions and social responsibility activities of managers. Sikka (2011) found that there is a direct and positive relationship between the continuity of activity and the life of companies that are committed to disclosing reports consistent with sustainability accounting standards. Jones (2011) found that companies tend to releases good news more than bad news on charts. Nakagami (2010) emphasized that attention to environmental issues is necessary to achieve sustainable development. Healy and Palepu (2001) found that corporate social responsibility will reduce information asymmetry, investment risk, and the cost of obtaining information for analysts. Dehdar et al. (2017) concluded that environmental accounting manages environmental costs, justifies processes and products, and tackles environmental pollution. Herati et al. (2016) stated that economic and political inequality has had a negative impact on the environmental quality of the studied countries so that the improvement of income distribution and the democracy index enhances the quality of the environment. The results also highlighted the importance of the increase in literacy rates, the gradual increase in political freedoms, the improvement of civil rights, the strengthening of social capital, and the support for the formation of environmental NGOs. In the international and regional arenas, solving environmental problems requires cooperation between different countries. Following the theory of political economy, society, politics, and economics are not separate and economic issues cannot be studied without considering social and political issues. In fact, financial reporting is used as a tool to convey political, social, and economic goals to a wide range of users (Maran Jori & Alikhani, 2011). The global environment was developed as a new concept and the central theme of social theorizing about globalization, accompanied by the concepts of "global economy", "global communications", and "global village". Some environmental issues such as the free market and the global economy are not limited to national borders (Barry, 2001). Roshandel (1997) addressed the role of the environment in maintaining the national security of countries.</p>

7. Suggestions

Based on the findings of the present study, the following suggestions are offered to improve environmental performance reporting:

- To following a consistent procedure in measurement, requirements related to measuring the extent of damages to the environment must be revised, modified, or redrafted.
- Given the need for the use of a consistent reporting procedure, environmental reporting requirements should be developed within the framework of accounting standards.
- Considering the importance of environmental issues in the country, a set of requirements shall be developed for the independent auditor and statutory auditor to comment on companies' environmental performance (according to existing regulations).
- Given the model developed in this study, the concepts in the model such as measurement, financial reporting method of environmental information, qualitative and quantitative items

that can be reported, etc. should be examined in the form of separate hypotheses in future studies.

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