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Environmental Disclosure: The Case of Jordanian Chemical Industry

Basman Jalal Mazahrih[1], Daas Ibrahim Katrib[2] and Tamer Mazyad Rfaah[3]

This paper investigates the quality of environmental reporting information by chemical industry in Jordan. The focus is on prescribed accounting principles and reporting practices. Content analysis is utilized to examine and critique evidence. The study demonstrates the extent of environmental reporting in two companies' annual reports at both national and international levels. The environmental reporting performance is measured against the literature and international initiatives. Results show differences between the two levels with regard to the quality, content and profile disclosure. The main reason for such variation in reporting could be attributed to the voluntary nature of environmental disclosure. In the absence of legislation regarding environmental disclosure, doubts remain about the likelihood of better quality reporting.

1. Introduction

The environmental reporting practices of industrial entities have increasingly attracted researchers' attention. Corporation reports to external stakeholders are a principal mechanism by which entities position themselves as engaging in dialogue about their environmental impacts (Tregidga and Milne, 2006; Ghanbari et al, 2013). As such, the reports, and the process of producing them, enable and define the ways management deals with increasing demands for environmental reporting (Ehsan, 2012). As long as such reporting remains predominantly voluntary, then academics will continue efforts to understand the motivations for disclosure. There can be many motivations driving entities' management to externally report information about an organization's environmental performance. Such motivations might be: the desire to legitimize certain aspects of an organization's operations which are in accord with community expectations or to comply with borrowing and industry requirements; a response to negative media attention and to particular environmental incidents or, perhaps, to a poor rating being given by particular ratings organizations; or to manage particular stakeholder groups; and/or to attract investment (ethical) funds (Deegan, 2002; Patten, 2002). In addition, and according to Friedman (1962), at least there is an economic rationality; that is, there might be advantages in appearing to do "the right thing". Others acknowledge that environmental reporting has the potential to enable and encourage change in corporate behavior (Bebbington and Gray, 2000).

1.Basman J. Mazahrih, Accounting Department, Faculty of Administrative & Financial Sciences University of Philadelphia, Amman, Jordan. E-mail: bmazahrih@philadelphia.edu.jo

2. Daas I. Katrib, Accounting Department, Faculty of Administrative & Financial Sciences University of Philadelphia, Amman, Jordan. E-mail: dkatrib@philadelphia.edu.jo

3.Tamer M. Rfaah, Accounting Department, Faculty of Administrative & Financial Sciences University of Philadelphia, Amman, Jordan. E-mail: trfaah@philadelphia.edu.jo

However, in understanding the reasons for environmental reporting, it is most pertinent to determine the materiality of the reporting to certain groups in society who use annual reports to gain information. Therefore, the quality of such reporting is important for several reasons. First, reporting assists groups who consider environmental information is material in making their decisions (Deegan and Rankin, 1999). Second, reporting forms a major source of evidence and provides a valuable insight into a company's present and past strategies (Hussey and Hussey, 1997, Thomas, 2008). Third, as Kassinis and Panayiotou (2006) acknowledge, data on the environmental perceptions of top executives is sometimes hard to find, and reports provide this. Finally, reports bring certain advantages, namely: quick and easy accessibility; they are produced without having been requested; they are often the only source of information; and they provide for the possibility of re-testing (Unerman, 2000; Staden and Villiers, 2006).

Despite significant research interest in the field of sustainability and specifically in the environmental arena, an extensive review of the literature revealed no substantive evidence of attention being paid to the quality of environmental reporting issues in the Jordanian context and there has been little work done by previous studies to satisfy stakeholders' needs for environmental information. In this regard, two companies from the chemical industry are widely seen to be leaders in the field of manufacturing chemicals.

This paper is structured as follows: first, an introductory overview of the concept of environmental reporting in corporations and, in particular, its emergence in chemical industry; second, a brief overview of previous work in the field of environmental reporting, with particular focus on those studies that deal with environmental reporting in the chemical sector; third, an account of the method used; and, fourth, a presentation of the findings and discussion on their impact. Concluding remarks complete the paper.

2. Literature Review

Over the last three decades there has been a growing global concern over the adverse environmental effects of economic development. Resource depletion, damage to the ozone layer, climate change, waste, pollution and contamination are issues which have become the focus of increasing attention (Hackston and Milne, 1996; Stanko et al, 2006). Governmental and non-governmental organizations and businesses have noted environmental issues that may be addressed by identifying, measuring and evaluating the interactions between business and the environment (Mathews, 1997). Reporting is one of the mechanisms used as an important means of communication between corporations and their stakeholders to provide disclosure on environmental performance (Deegan and Rankin, 1997, 2008; Gholami et al, 2012).

There have been a number of studies that have reviewed the environmental reporting of corporations, some constructively critical of the policies and practices adopted by corporations regarding such reporting (Deegan and Rankin, 1997, 1999; Hackston and Milne, 1996; Gray and Milne, 2002; Cowton and Thompson, 2000; Milne and Gray, 2008; Ahmed, 2012; Ghanbari, 2013). These studies revealed that annual report disclosures relating to environmental performance tend to be declarative and "good news" biased, give minimal disclosure of negative environmental information, and are not to the standard that satisfies the needs of report readers. Most prior studies on environmental disclosure have been conducted in other countries including the United Kingdom (Thompson, 1998), Australia (Deegan, 2002; Deegan and Rankin, 1999) and

Europe (Lundgren and Catasus, 2000; Weber, 2005), and there has been scant research undertaken in the Jordanian context.

However, several studies do provide insights into business' conceptions of reporting on environmental issues (Thompson, 1998; Coulson and Monks, 1999; Lundgren and Catasus, 2000; Thompson and Cowton, 2004, Fenchel et al, 2003, 2005; Weber et al, 2008), but most have not examined closely the manner in which chemical industries portray their own reporting on environmental performance. Whether and how environmental reporting in the chemical sector enables management change and potentially affects their performance and behaviour is not something to which the environmental reporting literature has paid sufficient detail. There are only a few reports where international agencies have undertaken voluntary initiatives to develop environmental reporting within chemical industry managerially and operationally. These are the GRI, the GRI – Financial Services Sector Supplement: Environmental Performance 2005 and EPI-Finance 2000. However, the implications of these initiatives seem to be that disclosure is selective and incomplete (Missbach, 2004; Milne and Gray, 2008; Mitchell and Hill, 2009; Hassan et al, 2013).

To date, in fact, an extensive literature review identified that few studies have been undertaken regarding environmental reporting in chemical entities outside of Europe, consequently, the research question was not answered, therefore, this paper is important then for two reasons. First, it aims to cover the gap in the global literature by providing a comparability study into the extent of the disclosure of environmental performance in the financial/stakeholder reports of two chemical companies and, second, it adds insights into the chemical industrial reporting literature on environmental issues by critically and historically analysing financial/sustainability reports from, arguably, its leading exponents.

The source of environmental information is limited to industrial companies as these have significant effect on natural environment. Detailed information about environmental policies, procedures, practices and regulations is considered commercially confidential, and in fact, difficult to obtain. Therefore, it was not possible to obtain enough information by interviewing or asking executives and other managerial staff. Accordingly, most material about company's environmental performance had to be obtained from annual reports.

Consequently, this study offers a deeper understanding of the role of reporting as a tool for identifying the managerial and operational environmental performance, and the motivational drivers for two companies in this regard.

3. Method and Data

Annual reports from two companies were selected for this study: the Dow Chemical Company and Jordan Phosphate Mines Company (JPMC). The selection is based on their interaction with environmental issues. This provides valuable data for national and international comparison. An extensive research has been conducted to explore the application of environmental disclosure for many chemical companies within the Jordanian context. The research results indicated no applications are available in their annual reports. This is the reason why this research limited the number of companies to one of the most highly respected companies: the Jordan Phosphate Mines Company.

In this paper, content analysis is utilised to measure environmental disclosures. It is a method of codifying the text or content of a piece of written script into various categories (Weber, 1990; Sarantakos, 1993). According to Linsley and Shrives (2006), it is a means of categorising the information of annual reports and can be used where a large amount of qualitative and quantitative data needs analysing. Content analysis of annual reports has been widely used and is held to be empirically valid in the social, ethical and environmental reporting research fields, where such disclosures are usually of a voluntary nature and it can be used to test whether the environmental information needed by interested stakeholders is being effectively communicated via the annual reports (Gray et al., 1995; Weber et al, 2008).

Furthermore, content analysis is a research technique that makes “replicable and valid inferences from data according to their context” (Krippendorff, 1980, p.21). In one way or another, this method has been widely adopted in sustainability disclosures research (e.g., Krippendorff, 1980; Linsley and Shrives, 2006; Gray et al., 1995; Hackston and Milne, 1996; Deegan and Rankin, 1997; Guthrie and Parker, 1990).

The literature generally follows certain paths when using content analysis as a method of codifying the text or content of a piece of writing into categories. Gray et al. (1995) point to the number of disclosures or amount of disclosures. Vuontisjarvi (2006) indicates that several authors have focused on determining the volume of disclosure with regard to determined categories, using words, sentences or proportion of pages as a unit of analysis. Sarantakos (1993) and Unerman (2000) suggested the following guidelines to determine the importance of an indicator:

- The evidence in the annual reports is linked to a specific indicator and appears in the annual report. This paper suggest utilizing environmental performance indicators suggested by GRI – Supplement Report 2005 and Epi-Finance 2000.
- The frequency of the evidences appearance: in the form of the number of sentences, the number of words, the number of annual reports.
- The significance or prominence of the indicator in the document.
- The evaluation of the evidence: whether it is a positive, negative or neutral factor.
- The evidence of the indicator may be found within different areas among the annual reports.
- The volume of disclosure for that evidence may signify the relative importance of that indicator.

Accordingly, this paper suggests to use the research model which utilizes the performance indicators proposed by GRI – supplement Report 2005 and EPI – Finance 2000. This research has improved the previous studies by categorizing the indicators into three distinguishable groups: managerial, operational and environmental aspects. Consequently, this research has suggested this model to facilitate advancement of current literature with specific attention to the environmental indicators.

However, by utilising these perspectives this research aims at establishing the presence or absence of certain themes in the reports, followed by categorising the themes under certain categories to facilitate the analysis process.

The initial stages of this research involved careful reading of annual reports for 2012. Initial notes on the significant features of the texts and differences between them were taken. Once the initial reading was complete, a closer reading of the texts was made and a large number of extracts were drawn from each company's two reports which illustrated how the two companies attempted to present environmental issues and the relationship between companies and the environment, with emphasis on accounting practices. From these readings it was possible to classify the evidence found in the reports under several categories and indicators. These categories and indicators were then analysed in greater depth. Through a process of careful attention to the literature and the extracts from the reports along with their classification under categories and indicators, the strengths and weaknesses of the content and the quality of environmental reporting for both companies were able to be identified.

The version of software, SPSS, was used to conduct all data analysis and facilitate testing. Various statistical tests were performed on the data. Statistical techniques involved in this study were: data descriptive - mean, median, variance and standard deviation; a one-sample t test is used to determine whether the two companies apply the disclosure indicators.

3.1 Descriptive Statistics

Once a data set was entered into the SPSS software, exploratory data analysis was conducted. Simple data-descriptive analysis, such as, means, median and standard deviation provided general information to the interested people about the nature of the data. The t test is statistically reliable, as the research results indicated that the significance is less than 5%, therefore it is used to explain the results.

The standard measurement for meeting the requirements is the test value of 2. This value is obtained by adding the sum of minimum test value which is 1 and the maximum test value which is 3, divided by 2. As indicated in Table 1, 1 tick means that a company does not provide information, 2 ticks means a company provides partial information and 3 ticks mean that a company provides sufficient information.

4. Research Hypotheses

H0: Local companies do not meet the requirements of environmental disclosure depicted in international guidelines, frameworks and initiatives, in comparison to foreign companies.

H1: local companies meet the requirements of environmental disclosure depicted in international guidelines, frameworks and initiatives in comparison to foreign companies.

5. Results

The analysis of the evidence of environmental performance found in the two companies' annual reports for 2012 addresses three major categories: management performance, operational performance and motivational drivers, which are key concepts identified in previous research (Thompson and Cowton, 2004; EPI Finance, 2000; the Supplement 2005). Under these categories the comparison of analysis is executed under sub-categories. Then, under each sub-category specific indicators are analysed qualitatively and quantitatively.

Table 1 presents qualitatively a summary of themes and their relationship to the availability of environmental information in JPMC and Dow annual reports.

Table 1: Adequacy of availability of environmental information in JPMC's and Dow's annual reports for 2012

Description of category, sub-category and indicators	Availability of information in JPMC reports*	Availability of information in Dow reports
Management performance		
1.Top management		
Environmental roles and responsibilities	√	√√√
Recognition of environmental risks and opportunities	√	√√√
Promoting sustainable environmental practices	√	√√√
Environmental policy	√	√√
Communicating with stakeholders	√	√√√
Environmental performance is monitored	√	√√√
Environmental policy is reviewed	√	√√√
Top management includes members who have environmental knowledge and experience, and holds regular meetings where environmental issues are on their agenda	√	√√
2. Training	√	√√
3.Auditing	√	√√√
Operational performance		
1. Integration of environmental issues into company's processes		
Environmental risks are considered	√	√√√
Screening	√	√√√
Evaluation	√	√√√
Controlling the risks	√	√√
Monitoring	√	√√√
Sum and number of environmental transactions	√	√√√
Region and industry	√	√√√
implementation of GRI	√	√√√

principles		
2. Environmental pioneering projects		
Financing and investing projects with high environmental benefits	√	√√√
Sum and number of environmental transactions	√	√
Region and sector	√	√
Designing environmental loans and investments to address an environmental issue	√	√√
Motivational drivers		
1. Managerial drivers		
Environmental regulations	√	√√√
Ethical stance	√	√√√
Stakeholders expectations and pressure	√	√√√
Reputation	√	√√√
2. Financial drivers		
Environmental liabilities	√	√√√
Company liability	√	√√
Profitability	√	√√
3. Environmental drivers		
Environmental protection	√	√√√
Company's activities make impact on the environment	√	√√√

- √ No information √√ Partial information √√√ Adequate information

6. Main Results

6.1 JPMC

The data in JPMC reports showed deficiencies in the communication system between management and the company's stakeholders and within the company’s internal structure. This can be verified by the absence of information regarding both an appropriate governance structure and the management’s environmental roles and responsibilities.

Furthermore, JPMC did not identify environmental risks and opportunities and failed to make an environmental policy details consistently available in the annual reports. Also this limitation does not conform to the completeness and comparability approaches which enable the stakeholders to assess the reporting company’s performance within the reporting periods. Hence, many annual report users such as investors would be wary of the potential risks associated with companies that are unable to reflect environmental responsibility (Deegan and Rankin, 1997). This issue raises concerns about managers’ accountability and their responsibility to disclose information to those who have a right to know (Deegan, 2002). Lundgren and Catasus (2000) identify those parties who provide companies with capital and do not know where their investments are destined. This is also consistent with Mathews (1997, p.26) who states:

A challenge for the company's management is to reconsider the availability of the environmental policy and an appropriate environmental governance structure associated with the relevant responsibilities to the company's stakeholders, and to structure the reporting system to conform to the GRI G3 framework. Such availability also allows the company to consider, at least, environmental performance disclosure.

Weber et al. (2010) consider the training of staff in assessing environmental issues is decisive. They argue that staff who perceive and evaluate company's environmental risks are able to integrate business activities into the company's operations. Thus, the implementation of a rating system should go alongside capacity building in this business field in a company. They added that applying knowledge about the interaction between financial risks and environmental risks could lead to an improvement in the risk rating process, as well as enabling a company to determine the environmental performance. They concluded that some of the environmentally-caused credit defaults could have been prevented if the company had used a rating system that consisted not only of economic and financial indicators, but also of environmental indicators. JPMC reports raise questions about the adequacy of their training programs.

With regard to the auditing performance, there are two major findings. First, JPMC has not yet had an external audit of its environmental performance. Second, regarding the internal audit (the other major form of audit), JPMC unfortunately, information was not available in 2012 reports. Therefore, it can be concluded that the environmental auditing information is inadequate.

With no evidence, the reports showed that on one hand JPMC is not motivated by managerial, financial and environmental reasons to incorporate such environmental aspects into its business activities as environmental regulations, management's ethical stance and stakeholders' expectations, company's liability and profitability, and environmental protection. On the other hand, there was no evidence that other reasons, for example, stakeholder pressure, reputation, and liability, motivated the company to undertake such incorporation.

6.2 Dow

Dow's reports featured active communication systems between all levels of the company and between the company and its stakeholders. The reports indicated management's responsibility to embed a sustainable culture into the organisation by defining environmental responsibilities, and depicting an organisational chart. Moreover, the reports reflected on the awareness of Dow management with regard to environmental risks and opportunities. The reports clearly pointed to the environmental policies that promote sustainable practices and show an emphasis on environmental activities and monitoring the environmental performance.

Furthermore, the reports indicated that Dow has voluntarily agreed to abide with international principles and agreements, such as GRI, the UNEP FI and the UN Global Compact.

Findings indicate that Dow's reports confirm that the company does not provide sufficient learning training programs at all staffing levels. Such programs include learning and updated training about climate change, environmental risk and the application of Dow sector policies and the GRI. According to these programs, such learning processes improve awareness and understanding about how decisions on sustainability issues impact a variety of stakeholders.

With regard to the auditing process, Dow reports reflected both an internal audit and external assurance. For example, the internal audit ensures that the company has a number of effective environmental policies in place. Also the report indicated the company's engagement in providing external assurance, which includes the accuracy and completeness of environmental performance including the implementation of GRI Principles.

However, Dow reports indicated that the assurance was performed against AA1000 Assurance Standard and against the Assurance Standard ISAE3000 in 2012. In fact, the company consulted the GRI reporting framework and Financial Services Supplement as guidelines for sustainability reporting. No explanation was provided for using different approaches for performing the assurance. Furthermore, the external assurance was conducted according to the AA1000 and ISAE3000 Standards which include only three principles, but in fact, the GRI G3 framework requires complying with ten principles.

At the operational level, the reports assured the consideration of environmental risks alongside other business risks and emphasised the integration of environmental aspects into the risk management decisions and processes.

In trying to understand the managerial motivation drivers for incorporating environmental issues into company's activities, the report indicated that Dow reviews the regulatory changes relevant to sustainability, acknowledges that stakeholders demand more balance on economic, social and environmental issues and recognises that such incorporation enhances the company's ethical stance, reputation and brand.

With regard to financial motives, the report indicated that operating a profitable business is a first priority, but did not deny that the incorporation process presents opportunities and drives the company's growth and competitiveness as well as minimising the environmental risk for both the company and its clients. However, reports did not reflect quantitatively how financial motives contribute to the company's financial performance a similar view to JPMC's.

With regard to environmental drivers, the reports extensively described the company's direct environmental impact and performance with regard to energy, waste, travel and water. With similar emphasis, the reports confirmed that Dow's activities have an impact on natural resources and, therefore, the company employs the GRI and other measures of environmental assessment to reduce the impact of its business on the environment.

A major result of this research points out that the previous studies have not provided clear insights about the managerial, operational and environmental aspects. This research emphasises the importance of displaying the research model as a performance measurement for companies and a footprint for enhancement of environmental literature.

7. Conclusion

Most of the previous studies have not examined closely the manner in which chemical industry portray their own reporting on environmental issues. This paper analysed the environmental disclosure practices of two chemical companies using information obtained from their annual reports 2012. The paper utilises content analysis and provides a comparison of such practices as carried out by JPMC and Dow. In addition, by utilising the academic literature, international environmental agreements, guidelines and reports, the paper provides valuable insights with regard to the environmental reporting practices of the two companies and the literature.

The investigation found that the Dow reports make disclosure on aspects relevant to customers, employees, the environment and the community. The disclosure of the direct environmental impact tends to receive significant attention. In particular, with regard to the GRI, environmental risks and opportunities and environmental assessment, stakeholders' engagement, environmental responsibility and roles, and the processes of environmental training and auditing. In relation to operational performance, the company presented the implementation of environmental policy, managing environmental risks and opportunities, and communication with stakeholders.

Dow's reports attempt to mitigate the effect of their operations and activities on the environment and emphasise the need to meet stakeholders' expectations. Dow's reports extensively reflect on the direct impact of its operations on the environment.

A major conclusion in this regard, JPMC poorly portrayed the disclosure of environmental aspects in its reports. According to results of testing hypotheses posed in this study, the following conclusions can be made:

Regarding the first hypothesis, JPMC does not meet the requirements of environmental disclosure depicted in international guidelines, frameworks and initiatives.

Regarding the first hypothesis, Dow meets the requirements of environmental disclosure depicted in international guidelines, frameworks and initiatives.

Previous studies have shown that annual reports' disclosures relating to a business's environmental performance tend to be unreliable. Stakeholders seek environmental information to make business decisions. This paper indicates that there is a shift in how companies view the consideration of environmental performance as material to report to users. However, due to the voluntary nature of environmental disclosures in annual reports and the focus on business profitability as a priority, there is a gap in the information provided.

This paper emphasises the need for improvement relating to the content and quality of environmental reporting and provides a call to develop robust environmental disclosure standards and legislation for specific environmental reporting in the chemical sector.

After all, this paper moved the body of environmental knowledge to include managerial, operational and environmental indicators in both the contents and the quality of environmental reporting.

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