Title
Corporate Environmental Reporting Media: A Case for the World Wide Web

Permalink
https://escholarship.org/uc/item/20d3x61r

Journal
Electronic Green Journal, 1(20)

ISSN
1076-7975

Author
Lodhia, Sumit K.

Publication Date
2004-04-01

Peer reviewed

Corporate Environmental Reporting Media: A Case for the World Wide Web

Sumit K. Lodhia
Australian National University, Australia.

....

This paper focuses on a particular form of environmental communication, commonly referred to as corporate environmental reporting, and highlights the vital role the World Wide Web (WWW) can play in facilitating such a process. The existing limitations of contemporary corporate environmental reporting practices, predominantly through conventional print media, are acknowledged and an attempt is made to establish whether a change in communication media for reporting environmental information could enhance the present practice. Accordingly, the various media for environmental reporting are investigated and a case is made for use of WWW technology. Media richness theory is used as a theoretical basis to conceptualize the potential the WWW has over conventional print media for corporate environmental reporting. However, caution is also thrown for the use of the WWW for environmental communication.

Introduction

Environmental issues have risen to prominence in the last decade and the importance of environmental protection is now globally accepted. This is evident from the numerous World Earth Summits that have been held in this time. Corporations have also begun to realize the importance of environmental issues and this is indicated by the increase in their communication of social and environmental issues in addition to the customary financial disclosure (Gray & Bebbington, 2001). Many organizations have embraced environmental management tools in order to reduce their environmental impacts (Schaltegger, Burritt & Petersen, 2003). While environmental management processes undertaken by organizations are necessary, and probably the most important step towards environmental consciousness, a need arises for communication of these to stakeholders. This process is referred to as corporate environmental reporting (CER), a mechanism whereby companies communicate the environmental aspects of their corporate activity to their numerous stakeholders. Corporate environmental reporting is a very important component of triple bottom line reporting that also includes the communication of social and economical issues (Elkington, 1997). The emphasis in this paper is merely on environmental issues, and hence, CER is the central concern.

The annual report, in the past, has been used as a communication tool for disseminating information to stakeholders in relation to a company's financial position. It has also been regarded as a medium of communication for portraying environmental information (Bebbington & Gray, 2000; Tilt, 2001; Gray & Bebbington, 2001). However, other communication media such as stand-alone environmental reports are available (Bebbington & Gray, 2000; Association of Chartered Certified Accountants, 2001a; Gray & Bebbington, 2001; Tilt, 2001). Advertisements and brochures may also be useful in communicating environmental information (Zeghal & Ahmed, 1990; Bebbington & Gray, 2000; Tilt, 2001), while news media could be used by parties in addition to the organization to disseminate information on a company's environmental performance or to report on major environmental incidents (Brown & Deegan, 1998; Deegan, Rankin & Tobin, 2002). Recent developments have seen an emergence of environmental reporting through the World Wide Web (WWW) (Jones, Alabaster & Hetherington, 1998, 1999; Jones & Walton, 1999; United Nations Environment Programme, 1999, 2001; Isenmann & Lenz, 2001; Shepherd, Abkowitz & Cohen, 2001; Wheeler & Elkington, 2001).

The bulk of CER research to date has primarily focused on conventional print media, especially annual reports, as a communication medium. There is an apparent lack of literature on the use of the WWW for communicating environmental information. Even though conventional print mechanisms such as annual reports or environmental reports are widely accepted as common media for environmental communication, these may also be criticized in relation to time lags for information dissemination, and a lack of accessibility and interaction with stakeholders, coupled with limited means of presenting and organizing information.

Information technology, especially the phenomenal growth of the Internet, has transformed business activity and the society at large (Thornburg, 1995; De Maeyer, 1997; Doost, 1999). It has converted our planet into a global village and allows numerous benefits such as ease of use, better visual presentations, faster communication and interaction. This paper attempts to ascertain whether use of information technology in the form of the WWW could improve communication of environmental information when compared to conventional print media. Specific research issues to be investigated include:

- What are some of the critical limitations of conventional print media for communicating environmental information?
- What are the benefits and limitations of using the WWW for corporate reporting purposes?

- In light of the above, what potential does the WWW offer for CER over conventional print media?

This paper begins with a discussion of the theoretical framework for this research (media richness theory), followed by a brief overview of conventional environmental reporting media and discussion of their limitations. The benefits and limitations of WWW environmental reporting are subsequently highlighted and explained in detail. In the penultimate section, the potential of the WWW for environmental reporting is postulated while certain limitations associated with the use of this technology are also outlined. Lastly, a summary of the entire paper is provided and appropriate conclusions are formulated.

Media Richness Theory

Daft and Lengel (1984, 1986) propose the concept of media richness whereby richness refers to the ability of media to improve human understanding by reducing uncertainty and ambiguity-a concept referred to as equivocality. Accordingly, *richer* media would be used for tasks with high equivocality and *leaner* media for tasks with lower equivocality. The authors identify four key factors associated with media richness:

- Immediacy (feedback)
- Multiple cues
- Language variety
- Personal source

Immediacy refers to the ability of media to provide timely feedback. On the other hand, multiple cues refer to the ability to convey messages through differing cues such as body, language, voice, and tones. Language variety refers to the use of different words to increase understanding while personal source refers to the ability to convey feelings and emotions.

According to media richness theory, face-to-face communication would be characterised as rich media while modern information technology such as email or facsimile could be classified as lean media. Studies on media richness have produced conflicting results. For instance, while studies such as Daft, Lengel and Trevino (1987) and Trevino, Lengel and Daft (1987) support the concept of media richness; other studies (Markus, 1994; Dennis & Kinney, 1998) do not provide support for this theory.

Other authors recognize that the concept of media richness was developed at a stage when modern communication technologies, such as the email, were not such popular means of communication. Sproull (1991) and

Valacich, Paranka and Nunamaker (1993) have identified additional criteria for media richness that would take into account the potential of modern communication technologies. These include:

- Multiple addressability
- Externally recordable
- Computer processable memory
- Concurrency

Multiple addressability refers to the ability to communicate information simultaneously to multiple users. The criterion of externally recordable relates to the ability of media to provide a record of the communication. This involves being able to document as well as modify the process of communication. Computer process able memory on the other hand refers to the organization and manageability of communication electronically such that searches can be undertaken on them. The final criterion, concurrency relates to the concept of multiple addressability but is broader in that it allows interactivity to more than one user at once, rather than just addressing multiple persons simultaneously.

It is clear that the original conceptions of media richness theory need to be expanded to take into account the changing forms of organizational activity and the use of modern information technology, rather than merely restricting them to handling ambiguous tasks. Consequently, there is a need to incorporate the additional criteria suggested by Sproull (1991) and Valacich et al. (1993) into the characteristics of media richness. This will provide a broader and comprehensive framework for assessing the potential of electronic media for communication purposes, enabling rich insights to be gained into the functioning of an alternative to print based media.

Thus, according to the *extended* version of media richness theory, a medium that has the features identified earlier will be given a higher priority for selection by individuals. In regard to corporate communications, it will be of interest to explore whether the WWW is a rich medium for communicating environmental information. Such an activity is a highly equivocal task related to the external environment rather than internal organizational processes and preference will be given to a medium that is rich. Any reference to media richness theory from this point onwards is related to the extended version of media richness.

Most media richness theory studies have focused on internal communication whereby emphasis is on communication within an organizational context. Prior studies have also not incorporated the additional criteria for media richness suggested by Sproull (1991) and Valacich et al. (1993) when

testing media richness (Markus, 1994; Dennis & Kinney, 1998). Moreover, studies have not related the WWW to the concept of media richness. This study fills this research gap by focusing on the richness of the WWW for communication purposes and comparing this with conventional print media. The overall emphasis is on the communication of environmental information to stakeholders, thus enabling organizations to be accountable for their activities.

Conventional Environmental Reporting Media

Corporate Annual Report

An annual report is the primary corporate communication tool that seeks to provide information for decision-making purposes coupled with the need to extend accountability to users of accounting information. The Australian Accounting Research Foundation's (1990) *Statement of Accounting Concepts 2* posits that resource providers, recipients of goods and services, parties performing a review or oversight function, and management and governing bodies are the users of accounting information. This indicates that financial reporting is based on the needs of only the relevant and more "powerful" constituents (Parker, 1982).

The corporate annual report (CAR) is referred to as a general purpose financial report because it provides information in a generalized format. It often consists of chairman's (or director's) statement, profit and loss statement, balance sheet, statement of cash flows, notes to accounts and narratives. The quality of information in CARs is enhanced by their audit that provides an independent attestation of financial performance.

The CAR has been widely used to communicate social and environmental information. As Macintosh (1990) puts it, an annual report is "a permanent expression of those social issues which top management regard as important and wish to communicate to shareholders and the public, and so are a record of the entity's historical social consciousness" (p. 168). Environmental information is often provided as narrative disclosure, either in the director's statement or in notes to accounts. It is rare for financial statements to reflect environmental information (Gray et al., 1998).

Despite its prominence as the prime media for communication of social and environmental information, the annual report has been subject to a number of criticisms. The information provided in CARs is too general (Parker, 1982; Department for Environment, Food and Rural Affairs, 2001). Shareholder needs usually predominate in terms of reporting requirements (Cooper &

Sherer, 1984). Other stakeholders' needs are usually not taken into account because they do not possess the "power" to alter reporting trends (Neu, Pedley & Warsame, 1998), largely due to their distance from the geographical reach of the company. It is also believed that CARs do not provide information on an ongoing basis and are restricted to past data (Chambers, 1966).

Stanton and Stanton (2002) suggest that annual reports are dictated by financial information in their first half and by voluntary information in the other half. Financial information has guidelines and is governed by Generally Accepted Accounting Principles (GAAP), accounting standards, and corporate law, while narratives and other information appearing in the second half of the annual report are not audited and could end up as a proactive approach towards creating corporate legitimacy. This places doubts on the credence of voluntary environmental information disclosed in CARs and could lead to diminution of the accountability function of the reporting process.

O'Donovan (1999), in a study involving interviews with personnel charged with the responsibility of environmental disclosure in annual reports of three major Australian corporations, found that interviewees did not perceive the annual report as the most useful medium for environmental disclosure. This was largely due to time and space constraints involved in producing an annual report. There seemed a need to disclose information based on only the organization's needs rather than the users' needs.

Stand Alone Environmental Reports

Environmental reports have emerged recently in conjunction with the global recognition of the importance of environmental issues. The Association of Chartered Certified Accountants (ACCA) and the Canadian Institute of Chartered Accountants (CICA) have played a fundamental role in the establishment of environmental report awards, and this has prompted other institutions and organizations to initiate similar awards in their respective nations.

An environmental report (ER) is a document outlining a corporation's environmental agenda. The ideal ER should contain information on an organization's profile, environmental policy statement, target and achievements, performance and compliance, management systems and procedures, and independent verification statement (Association of Chartered Certified Accountants, 2001a, p. 10-11; Department for Environment, Food and Rural Affairs, 2001). Tilt (2001) indicates a rise in the use of ERs by Australian corporations and suggests that the common

medium used for researching environmental reporting trends (the CAR) may be inappropriate.

Research into reporting through stand alone ERs is limited and caution needs to be exercised with the use of this medium. While the annual report has been criticized for not being reflective of social and environmental issues, it does have acceptance as the key corporate communication tool. ERs suffer from a lack of credibility and legal standing. Information in corporate annual reports is audited and is within the bounds of the corporate law-as opposed to information in environmental reports, which have limited and ad-hoc attestation (Ball, Owen & Gray, 2000) and do not have specific requirements for disclosure. For instance, Neu et al. (1998, p. 269) point out that, "while narrative material in the annual report is unaudited, its proximity to the audited financial statements and the fact that auditors are required to read this information lends it a degree of credibility."

Hence, the credence of information in ERs is questionable and it may also serve as a public relations exercise (Bebbington & Gray, 2000). As Gray (2001) posits, "Consequently, one is frequently left with the fear that environmental reports are guilty of cherry-picking and concentrate on the less important or better news of environmental activity" (p. 4).

Accessibility of ERs to relevant stakeholders could be a problem. However, recent developments in the use of the WWW to display environmental reports have somewhat eased this limitation. ERs could also be heavily focused on environmental information which ordinary users may find difficult to interpret. They may not always integrate financial information into the documentation.

CARs are criticized for being financially oriented while ERs are environmentally focused. A need arises to integrate these two vital aspects. Thus, other possible media for corporate environmental reporting need to be investigated.

Advertisements and Brochures

Advertisements and brochures may be used to communicate environmental information. However, they are not as frequently available as CARs or ERs. Zehgal and Ahmed (1990), based on their empirical findings, state that advertisements "are not a major means of disclosing social information" (p. 46) while brochures "appear to be a widely used means of disclosing [social information]" (p. 47). Tilt (2001) states that advertisements and brochures are limited media for communication and lack performance reporting.

As these mechanisms are ad-hoc, their use in environmental reporting may be restricted to informing stakeholders of possible developments and referring them to other media, such as the company website on the WWW, for detailed information. They suffer from most of the limitations already discussed for CARs and ERs.

News Media

The media is a powerful medium for environmental communication. However, the control of what is disclosed is often independent of the organization. Companies may use media releases to report on specific environmental developments such as, for instance, investments in environmental technology. Conversely, the news media may report on the environmental activities of a company independently, especially during an environmental crisis. Companies can respond to media reports through their media releases or paid advertisements.

Brown and Deegan (1998) initially developed media agenda setting theory to describe the impact media has on companies' environmental reporting practice (Deegan et al., 2002). The authors maintain that media is quite effective in driving community perception of a particular organization. They concur that the response by organizations would be to increase communication of environmental information in corporate annual reports. O'Donovan (1999) supports this by indicating that corporate managers consider newspaper coverage in prior periods when deciding upon environmental disclosure in subsequent annual reports. In essence, media has a role beyond mirroring public priorities relating to the environment-they are seen as shaping these and, in turn, shaping the public agenda (Deegan et al., 2002).

Thus, news media serves a dual role for corporate environmental communication. It could be used to inform stakeholders of a company's environmental developments (either by a company or through independent reports) coupled with being used as a medium to respond to concerns raised in media in relation to the company's environmental activities. Even though news media provides a continuous process of corporate environmental reporting when compared to periodic reporting under CARs and stand alone environmental reports, it is limited in scope in regard to how much can be reported and the level of control that the organization can exert over the media.

Summary of Conventional Environmental Reporting Media

This section has identified the factors that restrict the usefulness of conventional print media for disseminating environmental information. These include issues such as periodic generalized historical information, lack of accessibility and provision of information to "less powerful stakeholders," limited control over what is disclosed (in regard to news media), limited credibility and legal standing of reports largely due to a lack of guidelines and attestation, a lack of integrated information on economic, social and environmental performance (triple bottom line information), and limited means of presenting and organizing information. Communication through conventional print media is also unidirectional, leading to limited interaction with stakeholders. While issues such as the authenticity and credibility of environmental information are also associated with the WWW, it is claimed in the next section that the WWW has certain features that could assist in providing more useful information to external stakeholders in regard to a company's interaction with its physical environment. Moreover, it should also be considered that the use of the WWW for environmental communication brings about certain new limitations.

Corporate Reporting via the WWW

The WWW has numerous benefits for environmental reporting over conventional print media (Table 1). Its mass communication (Lymer, 1997; 1999; Lymer, Debreceny, Gray & Rahman, 1999; Ashbaugh, Johnstone, Warfield, 1999; Ettredge, Richardson & Scholz, 2001) and global reach abilities (Trites, 1998; Lymer, 1999; Lymer et al., 1999; United Nations Environment Programme, 1999) allow information to be disseminated to a wide range of stakeholders. The WWW facilitates two-way interaction and feedback through discussion forums, bulletin boards, and email lists (Gowthorpe & Amat, 1999; Jones & Walton, 1999; Lymer et al., 1999; Trites, 1998; United Nations Environment Programme, 1999; Financial Accounting Standards Board, 2000; Williams & Pei, 2000; Association of Chartered Certified Accountants, 2001b; Isenmann & Lenz, 2001; Shepherd et al., 2001; Wheeler & Elkington, 2001).

Table 1. *Benefits and Limitations of Corporate Reporting via the WWW*

Benefits	Limitations
- Global reach and mass communication - Timelines and updateability - Interaction and feedback - Presentation flexibility and	- Developed/Developing country digital divide - Costs and expertise - Information overload - Security problems

visibility • Navigational ease • Increased information (downloadable) and analysis • Cost beneficial • Archived information can be kept and users of websites can be tracked • Integration • Push information	• Authentication, attestation and legal impediments • Poor website design and advertising • User preference and competence

Another important benefit offered by the WWW is its timely dimension (Lymer, 1997; 1999; Ashbaugh et al., 1999; Lymer et al., 1999; Trites, 1998; United Nations Environment Programme, 1999; Financial Accounting Standards Board, 2000; Williams & Pei, 2000; Association of Chartered Certified Accountants, 2001b; Ettredge et al., 2001; Isenmann & Lenz, 2001; Shepherd et al., 2001; Wheeler & Elkington, 2001). Webcasting is a possible tool that could be utilized to disseminate information conveniently and on a timely basis to multiple stakeholders (Parker & Adler, 2001). This involves a live broadcast of an event through the WWW. A common example is a webcast of an annual general meeting.

Similarly, improved presentation and navigation through graphics, hyperlinks, and search facilities is possible through the WWW (Ashbaugh et al., 1999; Lymer et al., 1999; United Nations Environment Programme, 1999; Jones & Walton, 1999; Financial Accounting Standards Board, 2000; Association of Chartered Certified Accountants, 2001b). The WWW also allows an increased information flow (Lymer, 1997, 1999; Ashbaugh et al., 1999; Financial Accounting Standards Board, 2000; Association of Chartered Certified Accountants, 2001b; Williams & Pei, 2000; Ettredge et al., 2001) and has a low cost of information dissemination (Lymer, 1997, 1999; Ashbaugh et al., 1999; Lymer et al., 1999; Trites, 1998; Williams & Pei, 2000; Financial Accounting Standards Board, 2000; Ettredge et al., 2001).

Archived information such as environmental reports for multiple years can be displayed on corporate websites. WWW tools can also be used to record and track users of websites. This is possible through the hit counter facility (Financial Accounted Standards Board, 2000) as well as log analysis software (Jones et al., 1999). Thus, organizations are not only aware of how many users have accessed their website but also when they had used the website and what type of information was accessed.

The WWW could allow a company to integrate all aspects of corporate communication (United Nations Environment Programme, 2001). For instance, triple bottom line (financial, social, and environmental) information could be provided on a website and linked together by utilization of hyperlinks. On the other hand, Isenmann and Lenz (2001) indicate that even though the WWW allows users to pull information (pull-based technology), push-based technology could also be used to disseminate information. This could be feasible through utilization of email lists and alerts (Financial Accounting and Standards Board, 2000), which would provide timely information to stakeholders.

While the downside of such reporting may lead to disparities between large and small size companies or developed and developing countries (United Nations Environment Programme, 1999), increased costs for website expertise and maintenance (Jones & Walton, 1999; United Nations Environment Programme, 2001), cause information overload (Lymer et al., 1999; Trites, 1998) and lead to security risks (Ashbaugh et al., 1999; Trites, 1998; United Nations Environment Programme, 1999) and authentication problems (Ashbaugh et al., 1999; Gowthrope & Amat, 1999; Trites, 1998; Financial Accounting Standards Board, 2000; Ettredge et al., 2001), its potential development should not be restricted by these. On the contrary, it is hoped that should such a practice become functional, such limitations would be alleviated through improvements in technology (and the associated cost reduction) and improved communication dimensions (concentrating on relevant and reliable information). Furthermore, companies will need to have a responsibility to provide information to external stakeholders on the website through extensive site promotion and also train users in the use of WWW technology (Association of Chartered Certified Accountants, 2001b).

The Potential of the WWW for CER

Media Richness Theory and WWW Environmental Reporting

It is evident from Table 2 that the benefits of environmental reporting on the WWW could be conceptualised through media richness theory This provides support to the notion of the WWW as a rich media for disclosing environmental information. The WWW has an edge over conventional print media in all aspects of the media richness theory. In addition, it has the advantage of being a cost beneficial medium for disseminating information-one that could also reduce the consumption of paper. While the limitations of WWW reporting are acknowledged, it is accepted that its potential for disseminating environmental information should not restrict the use of this phenomenal technology.

The WWW allows companies to disclose environmental information instantly (immediacy) to numerous stakeholders (multiple addressability) and possibly engage and seek the views of their stakeholders (concurrency). Various approaches to presenting the information (multiple cues) based on different formats (language variety) and needs (personal source) can be used. Information can be well organized through hyperlinks and search tools in order to allow ease of navigation for stakeholders (computer processable memory). The extent to which such information has been used by various stakeholders can also be accessed by WWW technology while archived information can also be disclosed (externally recordable).

Table 2. *The Richness of WWW Media for Environmental Reporting*

	Print media	*WWW*
Immediacy	Historical information.	Information can be supplied on a timely basis and updated regularly.
Multiple cues	Limited ways of presenting information in hardcopy form.	Presentation flexibility and visibility can provide multiple cues for disseminating information.
Language variety	Restricted to a general report.	Information can be organized through hyperlinks, increased information can be provided, different file formats can be used for downloadable information.
Personal source	Information is for a general audience.	Hyperlinks can provide information for different stakeholders, information can be pushed to stakeholders through email lists, automatic feedback forms can also be utilized.
Multiple addressability	Accessibility is often limited due to geographic barriers; the addressability of information is often to the more "powerful" stakeholders.	Anyone with WWW access can receive information due to the global reach and mass communication potential of the WWW.
Externally recordable	Manual ways of tracing the users of the disclosed information.	Log analysis software and the hit counter facility can be utilized to keep a record of

		users of the website. Reports for multiple years can be archived on a website.
Computer process able memory	Manual searching.	Navigation and management of information on website is possible through hyperlinks, menus and search engines. Integration of information is also possible through hyperlinks to another section, page, or website.
Concurrency	Simultaneous interaction is not possible.	Allows two way interactions through discussion forums, emails and bulletin boards.

Potential Constraints to Media Richness

A common criticism of media richness theory is that it does not take into account the social and political context in which media choice decisions are made in organizations. The need for a much broader social and political framework to complement media richness theory arises. Webster and Trevino (1995) suggest that rational theories for media choice, such as media richness theory, should be complemented by social theories.

The implications of the above for the current study is that while the benefits of WWW reporting do suggest that it is a rich medium, social and political factors may impede its usage by organizations. Limitations of WWW reporting that were mentioned earlier are common social and political factors that may hinder the process of WWW reporting to stakeholders in relation to environmental issues.

A company may not seek to use the WWW for communicating environmental information as the Internet may not be accessible to its stakeholders (digital divide). Their stakeholders also may not prefer the use of the WWW to gain information on environmental issues (user preference and competence). The costs and technical expertise, poor website design and advertising, security as well as authentication issues may restrict a company from utilizing the WWW for environmental communication. A company may even be reluctant to provide too much information (especially confidential information) to its stakeholders about environmental issues (information overload).

Summary and Conclusions

This paper has discussed the various reporting media for disseminating environmental information. The limitations of conventional print media in reporting environmental information useful to stakeholders have been highlighted. It is proposed that environmental reporting through the WWW could be utilized to enhance the process of communicating environmental information to stakeholders.

This paper has achieved a theoretical contribution by conceptualising the potential of the WWW for environmental communication though the use of media richness theory. As Steinfield and Fulk (1990) point out, the field of communication technology in organizations is data rich but theory poor. Thus, a need arises for theories of communication technology in organizations because "the overall consequences of theory-driven research efforts is a more coherent and defensible set of conclusions on which to base knowledge claims" (pp.13-14).

This paper also provides an impetus for the use of the WWW for environmental communication in actual practice. However, it is elucidated that while the WWW has significant potential for environmental communication, there are certain limitations associated with it that could impede its usefulness and practical usage by organizations. This calls for an urgent need to improve the functionality, accessibility and regulation for the WWW so that the full potential of this phenomenal technology is not impeded by security, cost, information technology literacy, digital divide, and authentication problems. Thus, this paper has policy implications in addition to its theoretical and practical contributions, highlighting that regulatory and operational improvements are needed to bridge the gap between the theoretical potential of the WWW and its practical use.

References

Association of Chartered Certified Accountants. (2001a). A*n introduction to environmental reporting.* London: The Certified Accountants Educational Trust.

Association of Chartered Certified Accountants. (2001b). *Environmental, social and sustainability reporting on the World Wide Web: A guide to best practice.* London: The Certified Accountants Educational Trust.

Ashbaugh, H., Johnstone, K. M., & Warfield, T. D. (1999). Corporate reporting on the Internet. *Accounting Horizons 13*(3), 241-257.

Australian Accounting Research Foundation. (1990). *Statement of Accounting Concepts* (SAC) 2. N.p.: AARF.

Ball, A., Owen, D. L., & Gray, R. H. (2000). External Transparency or Internal Capture? The Role of Third Party Statements in Adding Value to Corporate Environmental Reports. *Business Strategy and the Environment 9*(1),1-23.

Bebbington, J., & Gray, R. H. (2000). Accounts of sustainable development: The construction of meaning within environmental reporting. *Working Paper 00-18 Aberdeen Papers in Accountancy, Finance and Management.*

Brown, N., & Deegan, C. (1998). The public disclosure of environmental performance information: A dual test of media agenda setting theory and legitimacy theory. *Accounting and Business Research 29*(1), 21-41.

Chambers, R. J. (1966). *Accounting, evaluation and economic behaviour.* Englewood Cliffs, NJ: Prentice Hall.

Cooper, D. J., & Sherer, M. J. (1984). The value for corporate accounting reports: Arguments for a political economy of accounting. *Accounting Organizations and Society 9*(3/4), 207-232.

Daft, R., & Lengel, R. (1984) Information richness: A new approach to managerial behaviour and organization design. *Research in Organizational Behaviour 6*, 191- 233.

Daft, R., & Lengel, R. (1986). Organizational information requirements, media richness and structural design. *Management Science 32*(5), 554- 571.

Daft, R., Lengel, R., & Trevino, L. (1987). Message equivocality, media selection, and manager performance: Implications for information systems. *MIS Quarterly 11*(3), 355- 366.

De Maeyer, D. (1997). Internet's information superhighway potential. *Internet Research: Electronic networking applications and policy 7*(4), 287-300.

Deegan, C., Rankin, M., & Tobin, J. (2002). An examination of the corporate social and environmental disclosures of BHP from 1983-1997: A test of legitimacy theory. *Accounting, Auditing, and Accountability Journal 15*(3), 312-343.

Dennis, A. R., & Kinney, S. T. (1998). Testing media richness theory in the new media: The effects of cue, feedback, and task equivocality. *Information Systems Research 9*(3), 256-274.

Department for Environment, Food and Rural Affairs (Great Britain). (2001). *Environmental reporting: General guidelines.* London: Defra.

Doost, R. K. (1999). Advances in accounting and communication: A historical review. *Managerial Auditing Journal 14*(8), 438-441.

Elkington, J. (1997). *Cannibals with forks: The triple bottom line of 21st century business.* Oxford: Capstone.

Ettredge, M., Richardson, V. J., & Scholz, S. (2001). The presentation of financial information at corporate Web sites. *International Journal of Accounting Information Systems 2*, 149-168.

Financial Accounting Standards Board. (2000). *Business reporting research project: Electronic distribution of business reporting information* (Steering Committee report series). Norwalk, CT: FASB.

Gowthorpe, C., & Amat, O. (1999). External reporting of accounting and financial information via the Internet in Spain. *European Accounting Review 8*(2), 365-371.

Gray, R. H. (2001, July 9). *Social and environmental responsibility, sustainability and accountability: Can the corporate sector deliver*. Paper presented at a seminar of the CPA Australia and Accounting and Finance Research Unit of Victoria University, Melbourne, Australia.

Gray, R. H., & Bebbington, K. J. (2001). *Accounting for the environment* (2nd ed.). London: Sage.

Gray, R. H., Bebbington, J., Collison, D., Kouhy, R., Lyon, B., Reid, C., et al. (1998). *The valuation of assets and liabilities: Environmental law and the impact of the environmental agenda for business.* Edinburgh, Scotland: The Institute of Chartered Accountants of Scotland.

Isenmann, R., & Lenz, C. (2001). Customized corporate environmental reporting by Internet-based push and pull technologies. *Eco-Management and Auditing 8,* 100-110.

Jones, K., Alabaster, T. & Hetherington, K. (1998 spring). Virtual environments for environmental reporting. *Greener Management International 21*, 121-137.

Jones, K., Alabaster, T. & Hetherington, K. (1999 summer). Internet-Based Environmental Reporting: Current Trends. *Greener Management International 26*, 69-90.

Jones, K., & Walton, J. (1999). Internet-based environmental reporting: Key components. In M. Bennett, P. James, & L. Klinkers (Eds.), *Sustainable measures: Evaluation and reporting of environmental and social performance* (pp. 412-425). Sheffield, United Kingdom: Greenleaf.

Lymer, A. M. (1997). The use of the Internet for corporate reporting: A discussion of the issues and survey of current usage in the UK. *Journal of Financial Information Systems.* Retreived from http://www.shu.ac.uk/schools/fsl/fisjnl//vol1996/pprs1997/lymer97.htm

Lymer, A. M. (1999). The Internet and the future of corporate reporting in Europe. *The European Accounting Review 8*(2), 289-301.

Lymer, A., Debreceny, R., Gray, G. L., & Rahman, A. (1999). *Business reporting on the Internet.* A report prepared for the International Accounting Standards Committee.

Macintosh, N. (1990). Annual reports in an ideological role: A critical theory analysis. In D. J. Cooper & T. M. Hopper (Eds.), *Critical accounts* (pp. 153-172). London: Macmillan Publishing Ltd.

Markus, L. (1994). Electronic mail as the medium of managerial choice. *Organization Science 5*(4), 502- 527.

Neu, D., Pedley, R. V., & Warsame, H. (1998). Managing public impressions: Environmental disclosures in annual reports. *Accounting Organizations and Society 23*(3), 265- 282.

O'Donovan, G. (1999). Managing legitimacy through increased corporate environmental reporting: An exploratory study. *Interdisciplinary Environmental Review 1* (1), 63-97.

Parker, L. D. (1982 autumn). Corporate annual accounting: A mass communication perspective. *Accounting and Business Research*, 279-286.

Parker, J. P., & Adler, R. I. (2001). *Investor relations in an Internet age : A CCBN perspective.* Naperville, IL: Panacea Press.

Schaltegger, S., Burritt, R., & Petersen, H. (2003). *An introduction to corporate environmental management: Striving for sustainability.* Sheffield, United Kingdom: Greenleaf.

Shepherd, K., Abkowitz, M., & Cohen, M. A. (2001). Online corporate environmental reporting: Improvements and innovation to enhance stakeholder value. *Corporate Environmental Strategy 8*(4), 307-315.

Sproull, R. (1991). A lesson in electronic mail. In L. Sproull & S. Kiesler (Eds.), *Connections: New ways of working in the networked organization* (pp. 177-184). Cambridge, MA: MIT Press.

Stanton, P. A., & Stanton, J. (2002). Corporate annual reports: Research perspectives used. *Accounting, Auditing, and Accountability Journal 15* (4), 478-500.

Steinfield, C. W., & Fulk, J. (1990). The theory imperative. In J. Fulk & C. W. Steinfield (Eds.), *Organizations and communication technology* (pp. 13-25). Newbury Park, CA: Sage Publications.

Thornburg, D. D. (1995). Welcome to the communication age. *Internet Research: Electronic Networking Applications and Policy 5*(1), 64-70.

Tilt, C. A. (2001). *Environmental disclosures by Australian companies: What is happening outside the annual report*. Paper presented at the Third Asia Pacific Interdisciplinary Research in Accounting (APIRA) Conference, Adelaide, July 15th-17th. Retrieved from http://www.commerce.adelaide.edu.au/apira/papers/Tilt40.pdf

Trevino, L. K, Lengel, R., & Daft, R. (1987). Media symbolism, media richness, and media choice in organizations: A symbolic interactionist perspective. *Communication Research 14*(5), 553- 574.

Trites, G. D. (1998, October). *Issues in electronic on-line financial and business reporting*. Paper presented at the 28th Annual Atlantic Schools of Business Conference, Wolfville, Nova Scotia.

United Nations Environment Programme. (1999). *The Internet reporting report* (Engaging stakeholders series). London: SustainAbility Ltd.

United Nations Environment Programme. (2001). *Virtual sustainability: Using the Internet to implement the triple bottom line* (Engaging stakeholders series). London: SustainAbility Ltd.

Valacich, J., Paranka, D., & Nunamaker, J. (1993). Communication concurrency and the new media. *Communication Research 20*(2), 249-276.

Webster, J., & Trevino, L. K. (1995). Rational and social theories as complementary explanations of communication media choices: Two policy capturing studies. *Academy of Management Journal 38*(6), 1544-1572.

Wheeler, D., & Elkington, J. (2001). The end of the corporate environmental report? Or the advent of cybernetic sustainability reporting and communication. *Business Strategy and the Environment 10*, 1-14.

Williams, S. M., & Pei, C. H. W. (2000). Corporate social disclosure by listed companies on their Web sites: An international comparison. *International Journal of Accounting 34*(3), 389-419.

Zeghal, D., & Ahmed, S. A. (1990). Comparison of social responsibility information disclosure media used by Canadian firms. *Accounting, Auditing, and Accountability Journal 3*(1), 38-53.

....

....

Sumit K. Lodhia <Sumit.Lodhia@anu.edu.au> BA, PGDip, MA AFM (USP, Fiji), MACS PCP, MSPCS, Associate Lecturer and Ph.D. Candidate, School of Business and Information Management, Faculty of Economics and Commerce, Australian National University, Canberra, ACT 0200 Australia. TEL: 61 2 61258460, FAX: 61 2 6125 5005