



**WEB SITE CONTENT MANAGEMENT AND ANALYSIS: A STAKEHOLDER AND  
CONTINGENCY PERSPECTIVE**

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## WEB SITE CONTENT MANAGEMENT AND ANALYSIS: A STAKEHOLDER AND CONTINGENCY PERSPECTIVE

**Abstract:** The Internet contributes to financial market transparency by allowing a vast group of stakeholders to be reached quickly. Organizations can use the Internet as a strategic tool to set themselves apart from their competitors. They can use it as a way to maintain relations with their stakeholders. Prior accounting research had mainly focused on web site content analysis, on the content determinants, and, to a lesser extent, on certain aspects of the Internet communication process. Based on the stakeholder and contingency perspectives, this study examines how different stakeholders and contextual factors influence structures related to web site content management. It also analyses the relationship between this and the web site content. A mail survey sent to the web site managers of 551 Canadian organizations resulted in a 32.7% response rate. The web sites of the 180 companies taking part in the study were analysed based on a list of 161 items. Results suggest that stakeholder orientation, structures related to web site management, the size of the organization and business sector influence the web site content. Top management support, the resources allocated to web sites and the size of the organization determine to what extent structures are developed. There are gaps between stakeholder orientation, site objectives and site content. Boards of directors and auditors are not very involved in the Internet communication process. Overall, research avenues are evolving in the area of corporate governance, auditing and strategy.

**Keywords:** content management; web site analysis; Internet reporting; stakeholders; contingency.

### 1 Introduction

Technological changes and globalization put pressure on organizations and stress the importance of relationships between an organization and the stakeholders (Sillanpaa, 1998). The growing social expectations with respect to the reporting of organizational activities with important social impacts motivate accountability (Logsdon and Lewellyn, 2000) and corporate governance where stakeholder interests are considered (Waterhouse and Svendsen, 1998). "Every business is an information business" (Evans and Wurster, 1997). The organization that discloses "good information" over the Internet by taking the "right technological, technical and human means" could be very successful with stakeholders. Moreover, maintaining good relations with them can create value (Svendsen et al., 2003). Information transforms the nature and the structure of the competitive environment (Porter, 2001). The Internet has the potential to reach more stakeholders, to increase the amount of information exchanged with them and to enhance information by increasing the amount in circulation between them, by personalizing it and offering an interactive framework (Evans and Wurster, 2000; Brown and Duguid, 2000). To be more competitive, firms should facilitate stakeholders' access to information (Trites, 2004).

In this context, accounting standard-setters are concerned about Internet reporting (AICPA, 1993; CICA / Trites, 1999; IASC, 1999; FASB, 2000;

IFAC, 2002)<sup>1</sup>. Given that the Internet can improve the organization's transparency and reduce information asymmetry, it is of interest to regulators (TSX, 1999, 2003; CSA, 2001; SEC, 1999; DTI, 2001)<sup>2</sup>. Managers are concerned about costs and benefits; web sites that consider stakeholders' information needs could provide organizations with economic advantages (Ashbaugh et al., 1999; Beattie and Pratt, 2001, 2003).

Accounting standard-setters and regulators encourage the adoption of an Internet disclosure policy (IFAC, 2002; TSX, 2003). After the enforcement of the FD ("fair disclosure") SEC rule in 1999 favouring communication to all stakeholders, firms had used the web to open previously private conference call minutes to the public (Trites, 2004). The Sarbanes-Oxley Act (2002) requires that companies disclose their annual 10-K Form<sup>3</sup> "as soon as reasonably practicable" on their web site. The Company Law Review Steering Committee (DTI,

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<sup>1</sup> AICPA: American Institute of Chartered Public Accountants; CICA: Canadian Institute of Chartered Accountants; IASC: International Accounting Standards Committee; FASB: Financial Accounting Standards Board; IFAC: International Federation of Accountants.

<sup>2</sup> TSX: Toronto Stock Exchange; CSA: Canadian Securities Administrator; SEC: Securities and Exchange Commission; DTI: Department of Trade and Industry, London.

<sup>3</sup> 10-K Form: annual report to be completed according to articles 13 or 15d) of the "Securities Act of 1934" and submitted to the SEC.

2001) recommends that they disclose the preliminary results on their site, immediately after the official announcement. To meet these requirements, accountants should know how electronic reporting systems work (Trites, 2004).

Prior research in accounting had mainly focused on web site content analysis, on the content determinants (based on signalling theory, agency theory, cost / benefit approach) and, to a lesser extent, on a description of certain aspects of the Internet communication process. However, there is a limited number of studies that describe the influence of certain parties, their actions and the means they use to manage the web site content.

Internet reporting choices seem to depend upon stakeholder orientation (Flynn and Gowthorpe, 1997). Stakeholders' information needs are intuitively identified, focusing on shareholders / investors (Gowthorpe and Flynn, 2002; Gowthorpe, 2005). Financial information disclosed over the Internet is a reproduction of PDF documents filed with regulators (Ettredge et al., 2002a; Smith and Pierce, 2005). The time to put 10-K Form information on-line differs from one firm to another (Ettredge et al., 2002b). Firms do not purge their web site content and they do not make sure that hyperlinks are functional when they add new content (Ettredge and Gerdes, 2005). The incorporation of the Internet communication strategy of listed firms into their overall communication strategy has some weaknesses (Lybaert, 2002). It is difficult to know if financial information disclosed on web sites is audited or not (Fisher et al., 2004). Managers are concerned about the security, integrity and credibility of information (Ashbaugh et al., 1999). Paradoxically, there is no indication of their pro-active attitude to ensure integrity; they have little knowledge of the work performed by external auditors to add credibility to information disclosed on web sites; they do not have the same opinion about auditors' responsibilities (Smith and Pierce, 2005). The lack of consensus between information preparers, users and auditors suggests that conflicts exist, based on their evaluation of costs and benefits (Beattie and Pratt, 2001, 2003).

Overall, the previous studies contribute to developing some knowledge of items surrounding web site content management. To further this knowledge, this paper examines: i) How organizations manage their web site content, in particular, how different stakeholders and contextual factors influence the web site's content management ? ii) The relationship that exists between the content management and the web site content. In other words, to what extent the combination of contextual factors

and structural factors (including those related to stakeholders) influence web site content.

In a more qualitative way, the aim of this study is describe content management profiles and the corresponding web site content. In order to generalize the results, its purpose is to examine the influence of contextual factors (both directly and indirectly due to structural factors) on web site content.

The theoretical discussion is based on stakeholder and contingency perspectives. Under the Configuration contingency approach, results are analysed with a cluster analysis. Under the Cartesian contingency approach, path analyses are used to discuss the results.

A mail survey sent to web site managers of 551 Canadian organizations with annual revenues greater than \$50 million resulted in a 32.7% response rate. The web sites of the 180 organizations taking part in the study were analysed based on a list of 161 items.

Results indicate that stakeholder orientation, structures related to web site content, the size of the organization and the business sector influence the web site content. Top management support, the resources allocated to web sites and the size of the organization determine to what extent structures related to web site content are developed. There are gaps between stakeholder orientation, site objectives and site content. Boards of directors and auditors are not very involved in the process under study.

The remainder of this paper is organized as follows. The theoretical framework (Section 2) and the methodology (Section 3) are presented. Descriptive statistics (Section 4) precede the results analyses under the Configuration and Cartesian approaches (Sections 5 and 6). The conclusion of the study is then presented.

## 2 Theoretical Framework

### 2.1 Stakeholder and Contingency Perspectives

The contingency perspective assumes that "there is no best way" to organize and that all depends upon the organization and its "fit" with the environment (Galbraith, 1973). Managers adapt the organization to environmental changes to improve performance (Chenhall, 2003). Success (a good performance) results from a proper fit between the firm and its environment, between its structures and the context.

**Table 1**

List of variables

<i>Contextual factors:</i>	<i>Structural factors related to content management:</i>	<i>Web sites content:</i>
Stakeholder orientation <sup>(a)</sup>	Decentralization	Total content index (split in sub-indexes according to the type of content)
Top management support	Formalization / standardization	
Resources allocated to web site	Strategic planning <sup>(a)</sup>	
Web site development stage	Control system <sup>(a)</sup>	
Environmental uncertainty		
Other contextual factors :		
Size of organization, financial results, indebtedness, foreign revenues, age of organization and business sector		

<sup>(a)</sup> The variables "stakeholder orientation" and "strategic planning" could be pooled under a "strategic factors" block (in a manner similar to Miller and Friesen, 1977) and the variable "control system" could be distinguished from structural factors (in a way similar to Smith and Langfield-Smith, 2004). To simplify the model, the first variable was included as a contextual factor and the two others as structural factors.

In this study, the concept of "performance" is strictly defined. Under the stakeholder perspective, it is exclusively associated to the quantity of information disclosed on web sites. From a transparency point of view, the information targets *multiple* stakeholders; in that sense, a "well-performing" web site is based on the assumption that more information is disclosed. From a general point of view, by combining stakeholder and contingency perspectives, there could be more than one "best way" to align context and structures with a multiple stakeholder orientation. In particular, there could be more than one type of multiple stakeholder orientation (Greenley and Foxall, 1997). When properly aligned with particular factors, multiple stakeholder orientations could lead to higher content sub-indexes.

Table 1 presents the list of variables selected in this study, according to Internet reporting studies, consulting interviews<sup>4</sup>, stakeholder literature and accounting studies based on contingency literature<sup>5</sup>.

## 2.2 Configuration and Cartesian Contingency Approaches

<sup>4</sup> In order to provide support to the development of the theoretical framework and guide the data collection, four web site managers in large organizations, one consultant in numerical relations whose major clients are large private firms and one top manager of a fund management company were met. Six consulting interviews were conducted in five organizations (two public; four of large size; representing three business sectors), for a duration of 90 to 120 minutes each, totalling almost 11 hours of recording.

<sup>5</sup> See Thomas (1986); Mak (1989); Xiao et al. (1996); Greenley and Foxall (1997); Husted (2000); Chenhall (2003).

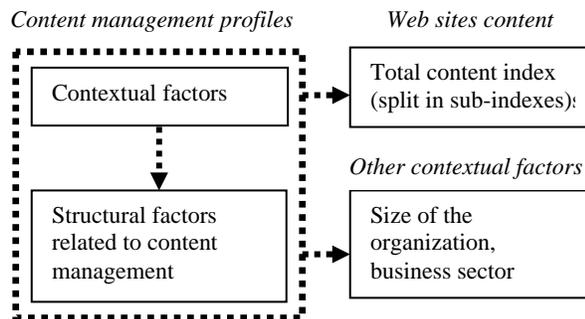
The following discussion (Subsections 2.2.1 and 2.2.2) is mainly based on Gerdin and Greve (2004)<sup>6</sup>. Web site content management is included in a comprehensive set of management systems. Its structures can be affected by particular contextual factors (web site development stage, top management support, resources allocated to web site). Given that there is no literature specific to the topic, it is difficult to predict the direction of the relationships under study. Propositions are thus made.

### 2.2.1 Configuration Model

The Configuration approach relies on a systemic view of the relationships between contextual and structural factors. The structures are relatively stable over time but are not static. Changes made to them are major, radical (quantum jumps), done on more than one component at a time, when the organization estimates that the costs of misfit between context and structures are greater than the costs of changes. According to the "congruence" view of the Configuration approach, most of the organizations can be classified in a limited number of groups characterized by similar structures and environment (Miller and Friesen, 1984). In this study, the relationship between contextual factors and structural factors is explored, in order to describe content management profiles; web site content and some other contextual factors corresponding to the profiles are examined (Figure 1).

<sup>6</sup> Gerdin and Greve (2004) review the forms of contingency fit in management accounting literature, notably considering the work done by Miller and Friesen (1984), Drazin and Van de Ven (1985), Venkatraman (1989), Meyer et al. (1993) and Donaldson (1996).

**Figure 1**  
Configuration model



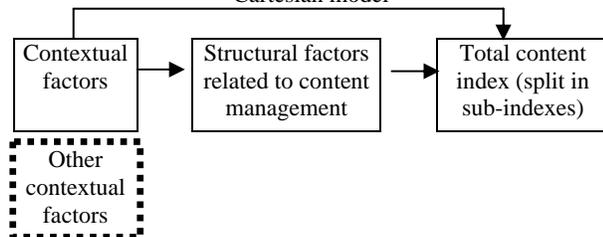
**General proposition:**

*A higher content index results from a proper fit between contextual and structural factors and from a multiple stakeholder orientation. There are a few "well-performing" (proper) fits.*

2.2.2 Cartesian Model

The Cartesian approach relies on a reductionist view of the relationships between contextual and structural factors. Changes on structures are made gradually (incremental changes) on a few components at a time. In the spirit of the "contingency" view of the Cartesian approach, variations in web site content (in the "performance") are explained in terms of the relationship between contextual and structural factors. Multiple fits for "context-structures" could give rise to a variation in "performance". Contextual factors (including stakeholder orientation) could influence web site content both directly and indirectly due to structural factors (Figure 2).

**Figure 2**  
Cartesian model



*Stakeholder Orientation*

The principal groups of stakeholders are represented by shareholders / investors, employees, suppliers, governments / political groups, and the public at large (Clarkson, 1995; Donaldson and Preston, 1995). The management of stakeholder relations (Husted, 1998) requires paying simultaneous

attention to their interests in establishing organizational structures as well as in the general policies (Donaldson and Preston, 1995). Scarcity of resources can prevent an organization from paying the same attention to multiple stakeholder interests (Greenley and Foxall, 1997). Corporate governance from a stakeholder point of view (Freeman and Reed, 1983; Charreaux and Desbrières, 1998; Waterhouse and Svendsen, 1998) implies the establishment of an order of priority that considers potentially conflicting interests; those interests can be considered by the board of directors and in the management structures (Preston, 1998). The perception of stakeholders' attributes (legitimacy, urgency, power) by top managers can influence the order of priority (Agle et al., 1999). Internet reporting choices seem to depend upon stakeholder orientation (Flynn et Gowthorpe, 1997).

**Proposition #1:**

*It can be expected that stakeholder orientation:*  
a) influences web site content; b) influences structures related to content management, and, consequently, web site content.

*Decentralization of Activities Related to Content Management*

Members of the board of directors can be involved in the approval of web site content (Gowthorpe and Flynn, 2002; Gowthorpe, 2005).

According to consulting interviews (Section 2.1), organizations benefit from interactivity (email comments) or ask for information users' participation (focus group discussions, tests using the company's web site) to involve clients and community representants in improving their site. Different groups of employees (notably in communications, marketing, IT departments) are involved in content management; given that their concerns are often diverging, it is not easy to develop a consistent and global vision for the web site. This can influence content.

Under a value-added perspective, by creating stakeholder networks, by calling them out to get an idea of their expectations, an organization develops good relationships with stakeholders (Svendsen et al., 2003). In that sense, the involvement of external groups (distributors, clients, community members, regulating agencies) in a process to obtain ISO 14001 certification (Environmental Management Standard) generates a competitive advantage (Delmas, 2001).

External consultants can be perceived as change agents ("technological innovators") in a highly uncertain environment, where organizations try to imitate their practices (Crucini and Kipping, 2001).

**Proposition #2:**

*It can be expected that decentralization of activities related to content management influences web site content.*

**Top Management Support**

Top management support influences the activity-based costing systems implementation process (Anderson and Young, 1999). It is plausible to expect that this support could influence the structures related to content management.

According to consulting interviews (Section 2.1), top management provides support by appointing a top manager in charge of the site, by developing an overall vision for the site and by formulating the site's mission. This can affect how parties involved face up to their responsibilities (formalization / standardization of mechanisms) and, consequently, can affect web site content.

**Proposition #3:**

*It can be expected that top management support influences structures related to content management and, consequently, web site content.*

**Resources Allocated to Web Site**

According to consulting interviews (Section 2.1), structures related to content management can help to maintain and improve web site content; the availability of human, financial and material resources can influence these structures and the web sites content.

**Proposition #4:**

*It can be expected that resources allocated to web sites: a) influence web site content; b) influence structures related to content management and, consequently, web site content.*

**Web Site Development Stage**

Under stakeholder perspectives, "at any organizational life cycle stage, certain stakeholders, because of their potential to satisfy critical organizational needs, will be more important than others." (Jawahar and McLaughlin, 2001, p. 405). In that sense, web site development stages (characterized by different objectives and strategies) could influence their content as well as the structures put in place to manage it.

The maturity of information systems can influence the degree of user participation (Sabherwal and King, 1992). The web site development stage could thus affect the degree of involvement of stakeholders. According to consulting interviews (Section 2.1), content management could be

centralized at first while it could be decentralized after a period of four to five years.

**Proposition #5:**

*It can be expected that web site development stage: a) influences web site content; b) influences structures related to content management and, consequently, web site content.*

**Environmental Uncertainty**

According to Lawrence and Lorsch (1967), the degree of environmental uncertainty affects organizational structures (Chapman, 1997). Organizations adapt their structures and processes to the environment (Miles and Snow, 1978). Firms confronted with greater environmental uncertainty use more sophisticated operational controls (Mak, 1989). The relationship between a multiple stakeholder orientation and organizational performance is moderated by competitive hostility (Greenley and Foxall, 1997). Small business unit strategy and environmental uncertainty influence the design of management accounting systems; the fit between systems and strategy - environment is a significant determinant of the business unit's performance (Chong and Chong, 1997).

In this study, a firm confronted with a heterogeneous environment could be accountable to a greater diversity of stakeholders, influencing the quantity (and the type) of information disclosed on web sites. A dynamic / stable environment could affect structures related to content management.

**Proposition #6:**

*It can be expected that environmental uncertainty: a) influences web site content; b) influences structures related to content management and, consequently, web site content.*

**Other Contextual Factors**

The *size of the organization* can influence how it is managed (Chenhall and Langfield-Smith, 1998); it can influence its structures (Miles and Snow, 1978; Miller and Friesen, 1984). In the context of this study, small listed companies intuitively identify stakeholders' needs concerning Internet reporting; their board of directors is involved in approving web site content (Gowthorpe and Flynn, 2002; Gowthorpe, 2005).

The *age of the organization* influences its structures (Miller and Friesen, 1984). Experience acquired over the course of time could be materialized in the form of more sophisticated structures related to content management, and,

consequently, could influence web site content. Some studies suggest that *business sector* differences influence organizational structures more than the direct influence of technology (Miles and Snow, 1978). According to consulting interviews (Section 2.1), organizations with good *financial results* benefit from consultants' expertise by involving them in content management; web site content seems to depend upon the *size of the organization* and the *financial results*. According to Internet reporting literature, *size of organization*, *business sector*, *international dimension / foreign revenues*, *financial results* and *indebtedness* could influence web site content (in some studies they do; in others, they do not).

**Proposition #7:**

*It can be expected a) that the size and age of the organization, financial results and business sector influence structures related to content management; and b) that the size and age of the organization, financial results and business sector, foreign revenues and indebtedness influence web site content.*

### 3 Research Methodology

#### 3.1 Data Collection and Sample

Data was collected in three steps: a mail survey<sup>7</sup> (summary, Section 3.2) was sent to the web site managers of 551 organizations<sup>8</sup>; the web sites of 180 firms were analysed based on a list of 161 items (appendix); data related to other contextual factors was mainly collected in the Financial Post database.

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<sup>7</sup> The English and French versions of the questionnaire were developed and tested. Six research colleagues and two external experts (proof reader and translator) revised it and 12 web site managers (who were not taking part in the study) tested it. The questionnaire takes approximately 25 minutes to complete.

<sup>8</sup> The Financial Post electronic database is updated daily and contains information about over 5,600 Canadian organizations. On June 17, 2004, all the organizations having annual revenues greater than \$50 million were selected from this database. The organizations that did not have a web site, whose web site is not distinct from that of their foreign parent company or is not managed in Canada; that were engaged in a dissolution process; that have a web site incorporated in a parent company already included in the target population; or that are not incorporated in Canada, were removed. The target population is represented by 551 organizations.

#### 3.1.1 Survey Implementation

Considering the size of the target population, the need to maintain the cost of this study at a reasonable level and the fact that the questionnaire should ideally be completed by the web site manager or by a person who has an overview or a sufficient knowledge of the management of information content from all points of view, *one respondent per organization* is identified.

The identification of web site managers is crucial because the survey is organized around specific themes. This step is spread out over a period of four weeks before mailing the survey. For each of the 551 organizations in the target population, i) attempt is made to find the name, address and telephone number of "potential" web site managers by scrutinizing information about directors in the Financial Post database or on an organization's web site; ii) as a pre-notice procedure, this information is validated by email or by telephone<sup>9</sup>, once, and twice if necessary. The survey is mailed on September 30, 2004, including a cover letter and a postage-paid envelope. The follow-up procedures are done in four steps: 1) mailing of a thank you / reminder post card about three weeks after the questionnaire mailing; 2) a few days before mailing a replacement questionnaire, emailing respondents who had previously agreed to participate but did not return the survey yet; 3) mailing of a replacement questionnaire to all the non-respondents about five weeks after the first questionnaire mailing; 4) making a final contact with organizations that had positively answered any of our previous contacts, spread out between the second and the third month after the first questionnaire mailing.

#### 3.1.2 Sample Description

A total of 180 managers had completed the survey (response rate 32.7%)<sup>10</sup>. This manager rate of

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<sup>9</sup> Email is more effective and efficient. It makes it possible to indicate in writing the aim of this study, the main themes of the questionnaire and the time required to complete it. In spite of the risk of being deleted without being read by the recipient, it is fast and makes it possible to create a list of contacts facilitating the optimization of the follow-up procedures.

<sup>10</sup> It should be noted that 72 firms (including 47 at the pre-notice stage) indicated that the organizational policies do not allow for participation in any study (17) or that they cannot participate because of an important event such as a reorganization (12), because of their lack of interest in the topic (3), of time or resources (20), for confidentiality reasons (1), or without providing any reason (19).

participation is greater than or similar to studies on their perception of Internet reporting practices (27% to 33%)<sup>11</sup> or research based on contingency perspectives (11% to 25%)<sup>12</sup>. According to studies based on a theoretical framework comparable to our own, the Configuration approach seems to be applied on a sample (16 to 110)<sup>13</sup> smaller than the Cartesian approach (34 to 265)<sup>14</sup>. The sample size (n=180) is therefore acceptable for the analyses based on both approaches.

The average revenues, assets and employees of the sample are not significantly different from the target population (according to one sample T-tests), nor are they from those of the 371 non-respondent firms (according to independent sample T-tests); this suggests that the sample is representative of the target population. It is made up of 165 firms listed on the Toronto Stock Exchange, three companies listed on TSX Venture Exchange, seven crown corporations and five major subsidiaries of large parent companies. These organizations are split into seven business sectors.

### 3.1.3 Web Site Analysis

Web site content was analysed over a period of three months coinciding with the beginning and the end of receipt of the questionnaires (October 2004 to January 2005). The list of 161 items (Appendix A) had initially been tested with the web sites of the 12 first respondent organizations. To get a reliable interpretation of these items, a research assistant and I analysed 16 web sites (one to two sites per business sector). I completed the analysis of the content of the 164 other web sites.

## 3.2 Definition and Measurement of Constructs

To measure contextual and structural factors, a questionnaire was developed based on Dillman

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<sup>11</sup> Respectively 27%, 33%, 31%, 22%, for Ashbaugh et al. (1999), Beattie and Pratt (2001; 2003), Joshi and Modhahki (2003), Smith and Pierce (2005).

<sup>12</sup> Respectively 18%, 23%, 25% and 11% for Sabherwal and King (1992), Greenley and Foxall (1997), Chong and Chong (1997), Bergeron et al. (2001).

<sup>13</sup> See Miller and Friesen (1977), Miles and Snow (1978), Bergeron et al. (2001).

<sup>14</sup> See Gordon and Narayanan (1984), Mak (1989), Sabherwal and King (1992), Greenley and Foxall (1997), Chong and Chong (1997), Chenhall and Langfield-Smith (1998), Anderson and Young (1999).

(2000), consulting interviews (Section 2.1) and questions adapted from previous studies (Appendix B). Seven-point Likert scales were mostly used, complemented by a few questions with response categories.

### *Questionnaire Summary – Contextual factors*

Stakeholder orientation is reflected in the corporate mission (Greenley and Foxall, 1997; Waterhouse and Svendsen, 1998), in the degree of time and attention given by the management team to each group of stakeholders as well as in the importance acknowledged to satisfy their needs (Agle et al., 1999).

Top management support to maintain and improve a web site is provided by appointing a top manager in charge of the site, formulating the site's mission, supporting the allocation of resources, encouraging all the spheres of the organization to help maintain and improve the site (adapted from Anderson and Young, 1999; inspired by Miller and Friesen, 1984; Clarkson, 1995; and Agle et al., 1999).

Financial, human and material resources allocated to web sites can be perceived to be sufficient (adapted from Anderson and Young, 1999). The number of employees involved and the annual amount of the budget allocated to web sites can also be used as measures for the resources allocated to web sites (inspired by consulting interviews).

Web site development stages are inspired by Jawahar and McLaughlin (2001). Web site is at the initial stage. It is continually being adjusted or currently undergoing improvements. It represents a model for competitors and companies in general. It is stagnating (activities to maintain and improve the site are suspended).

Environmental uncertainty has three dimensions. Environmental dynamism refers to the unpredictability of competitors' actions, client demand and regulation (Miles and Snow, 1978). Environment hostility is characterized by competition for prices for products / services and by regulation intensity (Gordon and Narayanan, 1984; Miller and Friesen, 1984). Environmental heterogeneity is measured by the diversity of competitive tactics and client tastes (Miller and Friesen, 1984).

### *Questionnaire Summary – Structural factors*

Decentralization is made up four parts: A) the degree of parties' involvement in writing the information content, delivering it on-line and improving the web sites (inspired by Delmas, 2001); B) the degree of consultation (in respect of the writing and the on-line delivery of information) of the

decision process (inspired by Sabherwal and King, 1992); C) the sharing of web site and content responsibilities between the parties and D) the utilization of content management software (C and D are inspired by consulting interviews).

Consulting interviews (Section 2.1) suggest that the definition of internal parties' roles and responsibilities, a shared common vision of how information content is managed and the existence of procedures to facilitate the settlement of conflicts between groups involved in the process contribute to the formalization / standardization of mechanisms put in place. Written procedures, informal agreements reached to handle situations, informal steps (ad hoc committee seminars, etc.) and the existence of procedures for all situations dealing with management also contribute to it (adapted from Sabherwal and King, 1992).

Strategic planning related to content management refers to the identification of risks inherent to Internet reporting, anticipation of actions to manage those risks, anticipation on a long-term basis of the information needs of Internet users and of the resources requested to do so (adapted from Mak, 1989). It also refers to the incorporation of strategic decisions about Internet reporting into the company's overall communication strategy and the coordination of strategic actions (adapted from Miller and Friesen, 1984).

Based on Miller and Friesen (1984), Mak (1989), Chenhall and Langfield-Smith (1998) and on consulting interviews (Section 2.1), items that can be representative of the system put in place to follow up on web site content are identified (comparison with other web sites, surveys on user satisfaction, focus group discussions, etc.). Web site managers' perceptions of the quality of different types of content compared to the competitors could give rise to changes in content; they are thus also a part of the control system related to content management.

#### *Other Contextual Factors*

The size of the organization is measured by the log of total assets, total revenues, number of employees or, if applicable, market capitalization. The age of the organization corresponds to the number of years since the incorporation date. Financial results are taken into consideration by the return on (average) equity ratio. Indebtedness is measured by the long term debt to equity ratio. The proportion of foreign revenues is equal to foreign revenues divided by total revenues.

Data are collected from different financial data bases (mainly the Financial Post). Business sectors

are defined by the "Global Industry Classification Standard".

#### *Content Index*

The total content index is defined by the quantity of information disclosed on a web site. It is split into sub-indexes according to the type of content. Financial content can refer to accounting information (ex.: results disclosed in the annual report) or not (ex.: quoted market price). Non-financial content is split into six parts: general information (ex.: mission, profile, history, contact, updating date, legal notice), corporate governance, operations / development, human capital, social responsibility and products / services / clients. Promotional information includes details on products / services, pre- and after-sales services. Transactional information principally refers to Internet sales conditions. The content that facilitates accessibility includes hyperlinks with other web sites and navigation aids. The content index measurement is based on a list of 28 financial, 97 non-financial, 5 promotional, 8 transactional, and 23 accessibility items (Appendix A).

This list had been developed by crosschecking indexes from previous studies<sup>15</sup> and judging criteria used for the CICA (2003 / 2004) "Corporate Reporting Awards", "Excellence in Electronic Disclosure" category<sup>16</sup>.

The objective of this study is generally close to Xiao et al. (2004), Marston and Polei (2004) and Héroux and Cormier (2002): is an item disclosed or not on the web site? (yes = 1; no = 0). It does not say if information disclosed on web sites corresponds more to stakeholder needs than the information disclosed in a more traditional way, as there is no comparison between the two communication strategies. The web site content analysis is concentrated on "web pages" only, excluding the PDF document content.

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<sup>15</sup> Xiao et al. (2004), Marston and Polei (2004), Héroux and Cormier (2002), Debreceeny et al. (2001, 2002); Ettredge et al., 2002a), Deller et al. (1999), Pirchegger and Wagenhofer (1999), Williams and Ho Wern Pei (1999), Cormier and Magnan (1999, 2003) and Flynn and Gowthorpe (1997).

<sup>16</sup> Judges are volunteers from the CICA, from the "Canadian Investor Relations Institute" and from the "Toronto Society of Financial Analysts".

**Table 2**

Descriptive statistics – contextual and structural factors (n=180)

Variables <sup>(a)</sup>	# of items	Cronbach Alpha	Mean	S.D.	Min.	Max.
<i>Contextual factors:</i>						
Stakeholder orientation						
- <i>shareholders / investors</i>	3	0.80	5.87	1.56	0	7
- <i>clients</i>	3	0.90	5.41	2.07	0	7
- <i>employees</i>	3	0.79	5.11	1.62	0	7
- <i>suppliers</i>	3	0.79	3.59	1.60	0	7
- <i>governments / political groups</i>	3	0.83	3.16	1.75	0	7
- <i>public at large</i>	3	0.87	3.83	1.95	0	7
Top management support	3	0.77	4.45	1.52	1	7
Resources allocated to web site	3	0.85	4.59	1.55	1	7
Web site development stage						
- <i>initial stage</i>	1	n.a.	2.08	1.89	0	7
- <i>continual adjustments</i>	1		5.34	1.85	0	7
- <i>current major changes</i>	1		4.26	2.25	0	7
- <i>model for other firms</i>	1		4.01	1.76	0	7
- <i>period of stagnation</i>	1		1.87	1.36	0	7
Environmental uncertainty	8	0.80	4.05	1.16	0	6.75
<i>Structural factors related to content management:</i>						
Decentralization	37	0.80	3.09	0.80	1.43	5.24
Formalization / standardization	7	0.81	3.95	1.38	0	7
Strategic planning	6	0.89	4.71	1.58	0.67	7
Control system	18	0.82	3.89	0.90	1.94	6.61

<sup>(a)</sup> Variables measured on a seven-point Likert scale (0 if not applicable).

#### 4 Descriptive Statistics

Table 2 presents sample descriptive statistics for *contextual and structural factors*<sup>17</sup>. The more the means tend to 7, the more the firms tend to have a stakeholder orientation; the more the top management supports web site management; the more the resources allocated to the web site are perceived to be sufficient; the more the environment is uncertain, the more the activities and mechanisms surrounding web site management are respectively decentralized and formalized, and the more the strategic planning and the system control have a place in content management.

It should be noted that 70% of the organizations have had a web site for more than five years and that resources allocated to web sites are limited for 70% to 80% of organizations (less than five employees; annual budget less than \$300,000).

Concerning the *other contextual factors* (descriptive statistics not tabulated), on average, large

organizations<sup>18</sup>, incorporated 30 years ago, had in general made profits during their most recent year-end; 51% of the respondents perceived that the financial results correspond to top management expectations; 22% and 27% think they are respectively below and over these expectations. On average, organizations earn 28% of their total income abroad. Their respective indebtedness is very disparate. A correlation analysis (not tabulated) indicates that the size of the organization seems to have an effect on contextual and structural factors and on web site content. Comparisons between the mean of each variable for every business sector suggest that business sector also seems to have an effect in this area.

Table 3 shows that, on average, firms disclose relatively little information versus the maximum number of items. Contextual factors could prevent them from doing so (ex.: limited resources, poor financial results) or they can motivate this practice (ex.: strategic orientation benefits a particular group of stakeholders). The "products / services / clients"

<sup>17</sup> There is no multicollinearity problem between contextual and structural factors related to content management.

<sup>18</sup> On average, total assets, revenues and market capitalization are respectively about \$7.5; \$2 and \$3.3 billion while the average number of employees is about 6,000.

and promotional and transactional contents are brought together under what is referred to as the "marketing content" (\*19 items,  $\alpha=0.84$ ).

The relevance of this grouping had been confirmed by a factor analysis done with the 10 content sub-indexes (not tabulated).

**Table 3**

Descriptive statistics – web sites content indexes (n=180)

Indexes	# of items	Cronbach Alpha	Mean	S.D.	Min.	Max.
Total content	161	0.93	58.01	19.66	17	111
Financial content	28	0.84	9.12	4.69	0	22
Non-financial content	97	0.91	33.63	13.00	10	72
- <i>general</i> <sup>(a)</sup>	17	0.54	9.58	2.55	3	17
- <i>governance</i>	27	0.87	7.10	4.95	1	22
- <i>operations/development</i> <sup>(a)</sup>	23	0.70	6.46	3.51	0	16
- <i>human capital</i>	13	0.84	4.23	3.28	0	12
- <i>social responsibility</i>	11	0.86	3.16	3.17	0	11
- <i>products/services/clients*</i>	6	0.65	3.11	1.49	0	6
Promotional content*	5	0.61	2.54	1.35	0	5
Transactional content*	8	0.87	1.20	2.04	0	7
Accessibility <sup>(a)</sup>	23	0.69	11.53	3.74	2	22
*Marketing content	19	0.84	6.84	3.77	0	16

<sup>(a)</sup> The *general content*'s Cronbach Alpha coefficient is below the acceptable lower limit ( $\alpha=0.54$ ; Table 3). According to correlation analyses (not tabulated), there is no structural factor correlated with *operations / development* content ( $\alpha=0.70$ , Table 3). Correlations between contextual / structural factors and *accessibility content* ( $\alpha=0.69$ ; Table 3) are similar to those observed for the total content. It is then less relevant to deepening the analysis of the relation between those three sub-indexes and these factors.

Cronbach's Alpha reliability coefficient " [...] is a measure of internal consistency that uses repeated measurements [...] to assess the degree to which correlation among the measurements is attenuated due to random error. " (Botosan, 1997, p. 335). It measures the internal consistency of a multi-item scale. A coefficient  $\alpha$  of 0.70 deems to be the lower acceptability limit (0.60 in an exploratory study) (Hair et al., 1998). According to coefficients  $\alpha$ , all exceeding 0.70 (Table 2), the responses collected by questionnaire are consistent. According to the coefficient  $\alpha=0.93$  (Table 3), the correlation between the 161 items is not much attenuated due to random error; overall, the total content index seems to be valid.

## 5 Results – Configuration Approach

In order to describe content management profiles, the cluster analysis technique is used. Homogeneous groups were formed using contextual and structural factors as clustering variables<sup>19</sup>. The corresponding

size of organizations, business sectors and web site content is examined. The k-means clustering method is relevant because the amount of available data is large (n=180) (close to the 200 limit given in SPSS Application Guide).

### 5.1 Determination of the Number of Clusters

The determination of the optimal number of clusters is a crucial step in a cluster analysis; there is no formal method to do so; a heuristic approach progressively guides the researcher (Chenhall and Langfield-Smith, 1998).

According to a visual examination of the dendrograms resulting from a Ward's hierarchical procedure, four or ten clusters could be appropriate while four- or seven-cluster solutions could be relevant according to the average linkage method. Common to the two methods, the four-cluster solution keeps our attention a priori.

An analysis of agglomeration schedules supports this observation. According to Ward's method, two-, three- or four-cluster solutions lead to a large percentage change in agglomeration coefficients

<sup>19</sup> A factor analysis on contextual and structural factors (not tabulated) indicates that two principal components are crosschecking as for a variable. In addition, " [...] there is a debate over the use of factor scores in cluster analysis, as some research has shown that the variables that truly

discriminate among the underlying groups are not well represented in most factor solutions. " (Hair et al., 1998, p. 491). In this study, *every measure* of the contextual and structural factors (of the questionnaire's statements) are used as clustering variables.

compared to four or five clusters, according to the average linkage method. Again, common to the two methods, the four-cluster solution seems to be appropriate.

A four-cluster solution should give rise to a sufficient number of details to distinguish content management profiles. A cluster analysis using more than four groups can make the descriptive process cumbersome and can lead to the formation of clusters with a few observations (which is the case with the five-cluster solution: one cluster has only 15 observations). Thus, the correspondence between the observations of the four- and the three-cluster solutions is finally examined.

Overall, the formation of a fourth cluster makes it possible to isolate 24 observations (of which 21 come from one group for the three-cluster solution). The attribute analysis of this fourth group could enhance the results of this study.

## 5.2 Differences in Content Management Profiles

The analysis of variance (one-way ANOVA) technique was used to indicate if there are significant differences between the means of the variables for each cluster. Table 4 illustrates the results of ANOVAs on the contextual and structural factors. The results from ANOVAs (not tabulated) on each measure of these variables (on each questionnaire's statements) are added *in italics* in Section 5.2.

**Table 4**  
Tests on mean differences between clusters – contextual and structural factors

Variables <sup>(a)</sup> (# of questionnaire's statements; see Table 2)	Means				Statistics		Pairs of means that are significantly different <sup>(c)</sup>
	cl1 n=44	cl2 n=24	cl3 n=53	cl4 n=59	F	or Welch <sup>(b)</sup> ***	
<i>Contextual factors:</i>							
<i>Stakeholder orientation</i>							
- shareholders / investors (3)	6.48	4.42	6.18	5.72		7.743	gr1-2; gr1-4; gr2-3
- clients (3)	4.33	3.18	6.55	6.09		23.306	gr1-3; gr1-4; gr2-3; gr2-4; gr3-4
- employees (3)	5.61	2.93	5.92	4.90		20.439	gr1-2; gr1-4; gr2-3; gr2-4; gr3-4
- suppliers (3)	3.56	2.32	4.32	3.46	10.234		gr1-2; gr2-3; gr2-4; gr3-4
- governments / political groups (3)	3.86	1.42	3.84	2.75		28.096	gr1-2; gr1-4; gr2-3; gr2-4; gr3-4
- public at large (3)	4.14	2.19	5.09	3.14	21.394		gr1-2; gr1-3; gr1-4; gr2-3; gr3-4
Top management support (3)	4.80	2.79	5.58	3.85	37.384		gr1-2; gr1-3; gr1-4; gr2-3; gr2-4; gr3-4
Resources allocated to web site (3)	5.21	3.63	5.28	3.90	16.141		gr1-2; gr1-4; gr2-3; gr3-4
<i>Web site development stage<sup>(d)</sup></i>							
- continual adjustments (1)	5.25	3.71	6.38	5.14		16.932	gr1-2; gr1-3; gr2-3; gr2-4; gr3-4
- undergoing major changes (1)	3.27	3.50	4.96	4.66	6.642		gr1-3; gr1-4; gr2-3
- model for other firms (1)	3.73	2.21	5.19	3.90	22.838		gr1-2; gr1-3; gr2-3; gr2-4; gr3-4
- period of stagnation (1)	1.45	2.17	1.64	2.27		4.111	gr1-4
Environmental uncertainty (8)	3.56	3.27	4.75	4.12		14.988	gr1-3; gr2-3; gr2-4; gr3-4
<i>Structural factors related to content management:</i>							
Decentralization (37)	2.88	2.28	3.97	2.80	71.056		gr1-2; gr1-3; gr2-3; gr2-4; gr3-4
Formalization / standardization (7)	3.96	2.73	4.91	3.57	22.018		gr1-2; gr1-3; gr2-3; gr2-4; gr3-4
Strategic planning (6)	5.60	2.62	5.51	4.18		35.636	gr1-2; gr1-4; gr2-3; gr2-4; gr3-4
Control system (18)	3.97	2.92	4.69	3.50	49.982		gr1-2; gr1-3; gr1-4; gr2-3; gr2-4; gr3-4

<sup>(a)</sup> Variables measured on a 7-point Likert scale. <sup>(b)</sup> According to Levene test, if homogeneity of variances between clusters is assumed, F statistic is examined; otherwise, Welch statistic (\*\*\*) p value p=0,00 for all F or Welch statistics). <sup>(c)</sup> If homogeneity of variances between clusters is assumed, multiple comparisons between clusters are done according to Tuckey HSD ("honestly significant difference"); otherwise, according to Dunnett C test. <sup>(d)</sup> Variable "initial stage of development" not tabulated: means < 3/7; Welch statistic = 2,494, not significant.

In general, according to the weak F / Welch statistics (respectively 7.743; 10.234; 6.642; 4.111; 2.494; Table 4), shareholder / investor or supplier orientations, the fact that a web site is undergoing major changes, is stagnating or is at the initial stage do not contribute to make a clear distinction between clusters.

Overall, organizations comprising cluster 3 are significantly different from other clusters with respect to many variables. They have a greater multiple stakeholder orientation (mean greater than 5/7 for 4 out of 6 orientations, Table 4). They have a greater top management support. Their web sites are continually adjusted and seem to be perceived as a model for other firms. They are facing a more uncertain environment. The unpredictability and intensity of regulations are, however, comparable to clusters 1 and 4 while the intensity of competition is similar to cluster 4's intensity. Structures related to content management are in general more developed than those of other clusters.

*Organizations comprising cluster 3 involve more groups of stakeholders (decentralization); they have the greatest tendency to involve clients and community representants to improve the web site; this can explain the involvement of a multidisciplinary Internet team to coordinate the activities. They define the roles and responsibilities of the internal parties involved and procedures to settle conflicts exist (formalization / standardization). Surveys on web site satisfaction, tests using web site, focus group discussion results, the number of visitors per web site section, fall out reports (specifying where on a web page the Internet user has given up visiting the site or completing an application on line), reflect a certain level of sophistication of the control system.*

The contextual and structural factors characterizing cluster 2 differ in many respects from the three other clusters. Firms tend to adopt a shareholder / investor orientation (the only orientation with a mean greater than 4/7, Table 4). Top management does not seem to provide support to maintain and improve the web site, which is not continually adjusted. Structures related to content management are less developed. *Comparison with the web sites' competitors or leaders in Internet reporting are examples of basic tools used to follow up on web site content. Overall, cluster 2 uses control mechanisms to a lesser extent than clusters 1, 3 and 4.*

Cluster 1 is distinguishable from others by a multiple stakeholder orientation (mean greater than 4/7 for 4 out of 6 orientations, Table 4) marked by a

"financial and political dimension". *On average, the finance / administration department, top management and the board of directors are involved in content management to a greater extent than in the other clusters (decentralization). It should be noted that the unpredictability and intensity of regulation are comparable to those of cluster 3 (environmental uncertainty). Resources allocated to web sites are perceived to be sufficient by cluster 1 and 3 representants (respective means of 5.21 and 5.28/7; Table 4). The strategic planning measures for clusters 1 and 3 related to content management are comparable.*

Cluster 4 is also characterized by a multiple stakeholder orientation (mean greater than 4/7 for 3 out of 6 orientations, Table 4). It is marked by a "promotional" dimension from a client orientation (comparable to cluster 3), by *competition intensity (similar to cluster 3) and by a web site that aims at promoting products / services.*

*The four clusters lean towards decentralization as managers' decisions concerning the writing of the content and its delivery on-line are made with a maximum of consultation (differences generally not significant between clusters) and towards centralization of responsibilities for the web site and for the information content around a few parties involved. Their different levels of use of content management software suggest that firms are not all at the same stage of decentralization of activities related to writing and delivering the content on-line. Clusters 1 and 3 tend to use content management software while clusters 2 and 4 do not do so very much. The degree of parties' involvement differs from one cluster to another. The four clusters do not tend to involve community representants, auditors, or members of the board of directors (means lesser than 3/7).*

On the whole, one content management profile with a multiple stakeholder orientation at large (cluster 3), two profiles with a selective multiple stakeholder orientation ("financial / political" – cluster 1 and "promotional" – cluster 4) and one profile without a multiple stakeholder orientation ("shareholders / investors") (cluster 2) are distinguished.

### 5.3 Content Management Profiles and Web Sites Content

Table 5 presents the results of ANOVAs on the content indexes and on the size of organizations. The size of organizations of clusters 1, 2 and 4 are

comparable (differences not significant) and smaller than cluster 3 firms.

It should be noted that there is a certain concentration of business sectors in each cluster (frequencies not tabulated). Cluster 1 is mainly composed of enterprises from the Energy (34.1%) and Materials (29.5%) sectors. A third of the organizations in cluster 2 operate in the Consumer sector (33.4%). Cluster 3 has half of the Technology and telecommunications firms (11/22) and more than one third of the ones in the Consumer sector (13/36). Cluster 4 is more concentrated in the Industrials, Consumer and Financial services sectors.

### 5.3.1 Higher Content Indexes

#### Total Content

Organizations with a multiple stakeholder orientation at large (cluster 3) are significantly larger than others (Table 5). The total content index associated with this content management profile is significantly higher than those of the three other profiles (Table 5), suggesting a proper fit of structures to a multiple stakeholder orientation and to contextual factors.

**Table 5**

Tests on mean differences between clusters – content indexes and size of organization

Variables	Means				Statistics F or Welch ( <sup>a</sup> )***	Pairs of means that are significantly different ( <sup>b</sup> )
	c1 n=44	c2 n=24	c3 n=53	c4 n=59		
<i>Content indexes (# of items, see Table 3):</i>						
Total content (161)	57.84	48.54	68.50	52.56	76.134	gr1-3; gr2-3; gr3-4
Financial content (28)	11.59	8.21	9.60	7.20	8.886	gr1-2; gr1-4; gr3-4
Non-financial content						
- governance (27)	9.40	5.96	8.04	5.00	75.110	gr1-4; gr3-4
- human capital (13)	2.41	3.50	6.34	4.00	15.237	gr1-3; gr1-4; gr2-3; gr3-4
- social responsibility (11)	2.72	2.42	4.55	2.54	5.201	gr1-3; gr2-3; gr3-4
Marketing content (19)	3.46	4.79	9.38	7.92	79.634	gr1-3; gr1-4; gr2-3; gr2-4
<i>Other contextual factor:</i>						
<i>Size of organization<sup>(c)</sup></i>						
- ln total assets	13.38	12.99	14.55	13.27	6.215	gr1-3; gr2-3; gr3-4
- ln revenues	12.62	12.76	13.94	12.89	6.294	gr1-3; gr2-3; gr3-4
- ln number of employees	5.96	6.62	8.12	7.15	9.954	gr1-3; gr1-4; gr3-4
- ln market capitalization <sup>(d)</sup>	13.58	12.62	14.35	12.79	7.656	gr2-3; gr3-4
<i>Note :</i>						
- total assets (millions \$)	2.649	4.845	17.765	2.699		
- revenues (millions \$)	1.330	1.588	3.883	928		
- number of employees	3.075	4.544	11.769	3.171		
- market capitalization (millions \$)	2.661	3.259	6.141	1.331		

<sup>(a)</sup> According to Levene test, if homogeneity of variances between clusters is assumed, F statistic is examined; otherwise, Welch statistic (\*\*\* p value  $p < 0,01$  for all F or Welch statistics). <sup>(b)</sup> If homogeneity of variances between clusters is assumed, multiple comparisons between clusters are done according to Tuckey HSD ("honestly significant difference"); otherwise, according to Dunnett C test. <sup>(c)</sup> ANOVA is affected by variances differences and by the difference between the size of the clusters. Even if the Welch test permits a correction, when the variances are too different (it could be the case for the "size of organization" variable), means difference cannot be statistically underlined. Therefore, tests on mean differences for log of assets, revenues, number of employees and market capitalization are presented. <sup>(d)</sup> n=165 firms listed on Toronto Stock Exchange (c11=43; c12=23; c13=48; c14=51).

Overall, the description of this profile is in accordance with the general proposition (Subsection 2.2.1).

#### Financial and Governance Content

Financial and governance content indexes of the multiple stakeholder orientation at large (cluster 3) and of the financial / political multiple stakeholder orientation (cluster 1) are generally higher than those associated with the two other profiles but they are not significantly different from each other (Table 5). Overall, clusters 1 and 3 content management profiles are different, but factors common to both influence those types of content in particular.

Shareholder / investor orientation, intensive regulation (environmental uncertainty) and resources perceived as being sufficient by web site managers are contextual factors that, combined with well-developed strategic planning, influence financial and governance content. By incorporating Internet reporting policies to overall existing communication policies (strategic planning), organizations from clusters 1 and 3 take into consideration those of the Toronto Stock Exchange (2003).

### *Marketing Content*

In spite of resources perceived as being insufficient, less top management support and fewer developed structures (than cluster 3), the marketing content of the organizations having the promotional multitude stakeholder orientation (cluster 4) is comparable to the one having the multiple stakeholder orientation at large (cluster 3); it is higher than the shareholder / investor profile (cluster 2) and the financial / political multitude stakeholder orientation (cluster 1) (Table 5). The strong strategic client orientation, which is clearly apparent in the web site aims, seems to particularly influence marketing content in an environment where the site is continually being adjusted. Two different content management profiles (including a comparable stakeholder orientation) can therefore lead to a similar and higher marketing content index.

Overall, in the spirit of the general proposition (Subsection 2.2.1), the results indicate that a few content management profiles give rise to higher particular content indexes, suggesting that there is no best structure and no best way to manage the different types of web site content.

#### 5.3.2 Lower Content Indexes

Some content management profiles have components that do not seem consistent with the web site content.

The shareholder / investor profile (cluster 2) is associated with total and corporate responsibility content indexes lower than those of the "well-performing" profile (cluster 3). In spite of an orientation which is *not directed toward multiple stakeholders* and with generally more limited means (top management support, structures, etc.), these indexes are, however, similar to those of the financial / political (cluster 1) or promotional (cluster 4) *multiple stakeholder* profiles, whose size of organizations is comparable (Table 5). The shareholders / investors profile seems to be as effective as others but it looks more efficient. Other factors not considered in the model could influence the web site content.

As an example, a firm could be more efficient and can successfully "raise" its web site content by imitating its competitors' Internet reporting practices. Therefore, the content is not the incarnation of the fit between the contextual and the structural factors of the firm but it could reflect what the web site manager (or team) retains from its comparison with the site of organizations' leaders in Internet reporting.

In accordance with the Configuration approach (Subsection 2.2.1), the organizations to which the firm having a shareholders / investors profile is compared could temporarily align the structures to the context in an inappropriate manner, resulting in a certain inconsistency (a temporary imbalance) between contextual and structural factors and web site content. They could also perceive the Internet as *a mean among others* to communicate with stakeholders (*as opposed to an end*, a strategic tool to set themselves apart from their competitors), and therefore presenting less information on their web site. In that sense, the results indicate for the financial / political profile (cluster 1) a social responsibility content which is *comparable* to shareholders / investors (cluster 2) and promotional (cluster 4) profiles (Table 5) even if it has greater government / political group or public at large orientations. Pushing up the incorporation of the strategic dimension into the Configuration model could be an interesting research avenue.

## 6 Results – Cartesian Approach

### 6.1 Evaluation of the Cartesian Model

The comprehensive model comprises 25 variables including six dichotomous variables representing seven business sectors. Some rules of thumb propose a minimal number of 10 to 15 observations per independent variable; others suggest a range of 4 to 5 (Hair et al., 1998). In order to make the model more robust, six influential observations and one outlier<sup>20</sup> were eliminated (n=173). The ratio is then seven observations per variable (nine if the "business sectors" variables are excluded) (Table 6).

The explanatory power of the model tends to be high (adjusted R<sup>2</sup> going as far 67.5% for total content). Overall, a larger organization gives less attention to suppliers' interests, continually adjusts its web site, has more formalized / standardized

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<sup>20</sup> Six observations whose standardized measure of the DFFIT statistic (SDFFIT) exceeds the limit +/- 0,8218\* for at least two out of six contents were withdrawn. The outlier (by more than three standard deviations) results from a multiple regression on total content (with n=180, not tabulated).

\*0,8218 = 2 x square root of [(25 independent variable + 1) / (n=180-25 independent variable-1)] (according to Hair et al., 1998).

mechanisms put in place to manage the web site content, and discloses more information on its site.

**Table 6**  
Multiple regressions: independent variables on content indexes (n=173)

Independent variables	Content indexes					
	total	financial	governance	social resp.	human capital	marketing
<i>Contextual factors:</i>						
Stakeholder orientation						
- shareholders / investors	(a) 0.05	*** <b>0.23</b>	** <b>0.18</b>	*** <b>-0.17</b>	-0.09	-0.06
- clients	-0.01	*** <b>-0.15</b>	-0.14	0.07	<b>*0.17</b>	*** <b>0.27</b>
- employees	-0.05	-0.13	-0.05	0.01	0.11	0.01
- suppliers	<b>*-0.10</b>	-0.02	-0.05	-0.09	-0.13	<b>*-0.13</b>
- gov. / political groups	0.09	0.10	0.11	0.10	-0.03	-0.09
- public at large	-0.04	-0.04	-0.13	0.09	-0.05	-0.04
Top management support	-0.09	<b>*-0.17</b>	-0.06	-0.04	-0.07	0.09
Resources allocated to web site	0.02	** <b>0.22</b>	0.05	0.01	-0.03	*** <b>-0.26</b>
Web site development stage	** <b>0.12</b>	-0.01	0.01	<b>*0.10</b>	0.08	*** <b>0.15</b>
Environmental uncertainty	-0.09	-0.06	-0.07	-0.07	-0.12	-0.04
<i>Other contextual factors<sup>(b)</sup>:</i>						
Size of organization	*** <b>0.70</b>	*** <b>0.60</b>	*** <b>0.45</b>	*** <b>0.60</b>	*** <b>0.46</b>	** <b>0.18</b>
Accounting rate of return	0.01	0.08	-0.01	-0.05	-0.02	-0.08
Long term debt / net assets	0.08	<b>*-0.12</b>	0.02	0.06	<b>*0.13</b>	0.07
Foreign revenues / total revenues	-0.03	0.03	0.09	-0.08	-0.09	** <b>-0.16</b>
Age of organization	0.04	-0.08	0.03	** <b>0.13</b>	0.09	** <b>0.16</b>
<i>Structural factors related to content management:</i>						
Decentralization	0.05	0.06	0.07	0.09	0.05	-0.01
Formalization / standardization	*** <b>0.16</b>	-0.03	0.13	** <b>0.16</b>	*** <b>0.24</b>	<b>*0.14</b>
Strategic planning	0.07	<b>*0.15</b>	<b>*0.16</b>	-0.04	-0.01	-0.12
Control system	0.05	-0.05	-0.01	-0.11	-0.01	*** <b>0.28</b>
Adjusted R <sup>2</sup>	67.5%	43.6%	41.8%	62.8%	37.5%	45.1%
F statistic	*** <b>15.308</b>	*** <b>6.313</b>	*** <b>5.940</b>	*** <b>12.601</b>	*** <b>5.133</b>	*** <b>6.643</b>
F Change						
- other contextual factors						
o size, business sectors	*** <b>42.649</b>	*** <b>13.920</b>	*** <b>14.699</b>	*** <b>32.216</b>	*** <b>13.037</b>	*** <b>11.891</b>
o others	0.866	** <b>2.591</b>	0.952	*** <b>5.032</b>	1.859	1.069
- contextual factors	** <b>1.918</b>	*** <b>2.880</b>	** <b>1.987</b>	1.478	1.072	*** <b>2.637</b>
- structural factors	*** <b>4.195</b>	1.053	** <b>2.532</b>	** <b>2.764</b>	** <b>2.803</b>	*** <b>4.597</b>

(a) Standardized beta coefficient.

(b) Statistics related to business sectors not tabulated.

\*\*\* p value < 0.01; \*\* p value < 0.05; \* p value < 0.10; bilateral test.

Variables:

Stakeholder orientation =  
Top management support =  
Resources allocated to web site =  
Web site development stage =  
Environmental uncertainty =  
Size of organization =  
Financial results / accounting rate of return =  
Indebtedness =  
Foreign revenues =  
Age of organization =  
Decentralization of activities =  
Formalization / standard. of mechanisms =  
Strategic planning =  
Control system =  
Content indexes (total and sub-indexes) =

Measures:

for each group of stakeholders, mean of 3 statements of the questionnaire, scale 0-7  
mean of 3 statements of the questionnaire, scale 0-7  
mean of 3 statements of the questionnaire, scale 0-7  
web site is continually adjusted, 1 statement of the questionnaire, scale 0-7  
mean of 8 statements of the questionnaire, scale 0-7  
natural log of total assets at the end of the last completed fiscal year at the collecting data period  
net results from the last completed fiscal year at the collecting data period / average net assets  
long term debt / net assets of the last completed fiscal year at the collecting data period  
foreign revenues / total revenues from the last completed fiscal year at the collecting data period  
number of years since the date of constitution  
mean of 37 statements of the questionnaire, scale 0-7  
mean of 7 statements of the questionnaire, scale 0-7  
mean of 6 statements of the questionnaire, scale 0-7  
mean of 18 statements of the questionnaire, scale 0-7  
# of items disclosed on web sites

**Table 7**

Other measures of independent variables – multiple regressions (n=173)

Variables:	Other measures:
Stakeholder orientation =	- for each group of stakeholders, mean of statements of the questionnaire related to the web site's aim, scale 0-7
Resources allocated to web site =	- quantity or human (number of employees) and financial (annual budget) resources allocated, two statements of the questionnaire, categories 0-4
Web site development stage =	- is at the initial stage (1 statement of the questionnaire, scale 0-7) - is undergoing major changes (1 statement of the questionnaire, scale 0-7) - is a model for other firms (1 statement of the questionnaire, scale 0-7) - is stagnating (1 statement of the questionnaire, scale 0-7)
Environmental uncertainty =	- beta risk (collected in the Financial Post database) (for 159 listed firms)
Size of organization =	- natural log of revenues - natural log of number of employees - natural log of market capitalization (for 159 listed firms)
Financial results	- return on assets - dividend yield (for 159 out of the 173 firms)
Decentralization of activities =	- involvement of different groups of stakeholders (31 statements of the questionnaire, scale 0-7) - utilization of a content management software (2 statements of the questionnaire, scale 0-7) - responsibility in respect to the content and to the site at large (2 statements of the questionnaire, scale 0-7)
Control system =	- follow-up mechanisms (10 statements of the questionnaire, scale 0-7) - quality of different web site contents as perceived by web site (8 statements of the questionnaire, scale 0-7)

F change is significant ( $p$  values  $< 0.01$ ) for each of the content indexes, confirming the influence of the size of organization and business sector. The other contextual factors (accounting rate of return, indebtedness, etc.) have, for their part, a significant effect only on financial and social responsibility content. The contextual factors (stakeholder orientation, top management support, etc.) and the structural factors improve the Cartesian model in general (F changes respectively significant for four and five out of six indexes).

The orientations toward employees, governments / political groups or the public at large, environmental uncertainty, accounting rate of return and decentralization of activities do not have a significant influence on any content indexes.

The management of a transactional web site requires more human, material and financial resources compared to a web site that is not transactional. Web site managers from organizations that disclose more *marketing* content perceive the resources put in place as being insufficient (significant negative relationship, Table 6), while those from firms that disclose more *financial* content perceive them as being sufficient (significant positive relationship, Table 6). The control system positively and significantly influences the marketing content (Table 6). On the one hand, financial and non-financial information can be a reproduction of PDF documents or documents filed for the securities

administrators, requiring less control before being put on-line on web sites (Ettredge et al., 2002a ; Smith et Pierce, 2005). On the other hand, promotional and transactional content could be more "dynamic", and could require a more sophisticated control system.

## 6.2 Sensitivity Analyses

Other measures of independent variables (Table 7) were used in new regressions on the different content (results not tabulated). The analyses had been done independently for each variable and positioned in relation with the results presented in Table 6. Overall, the Cartesian model is not improved by using these different measures.

To a certain extent, ordinal logistic regression makes it possible to examine the effect of the subjectivity related to the measurement of the content indexes on the results. These indexes are thus recoded as 0, 1 or 2 if they are respectively in the lowest, central or highest third of their distribution. Overall, the results (not tabulated) corroborate those of multiple regressions (Table 6). The Pseudo  $R^2$  are similar to the adjusted  $R^2$ . The size of the organization and business sector influence web site content. Excluding employee orientation, stakeholder orientations have an effect on some content. Three out of four structural factors significantly influence various content.

### 6.3 Path Analyses

The regression analyses (Section 6.1) help to identify the contextual and structural factors whose variations give rise to a significant change in web site content. However, they do not highlight the significant relationships between these factors, nor the effect of the combination of those factors (indirect influence) on the content. In order to examine to what extent the propositions are supported (Subsection 2.2.2), path analyses are done.

Considering that no previous research seems to have been done on the topic under study, hypotheses for each relationship between them were not developed; some propositions were suggested. Using the path analysis technique is therefore more relevant than a structural equation modelling technique:

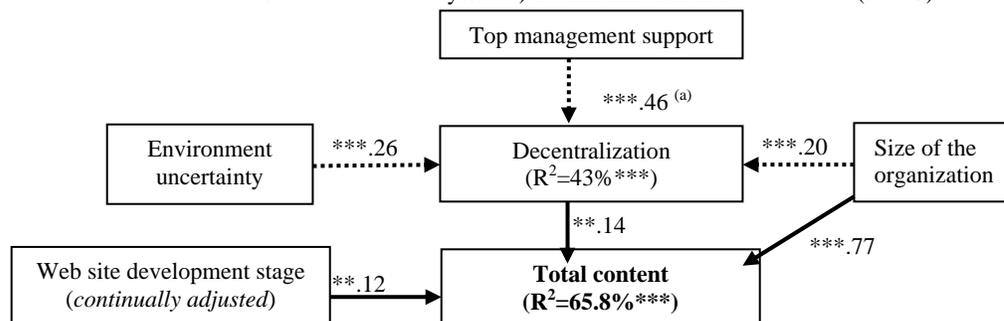
" [...] SEM techniques are perhaps not appropriate in situations where measurement structure underlying a series of items is not well established, and when theory concerning the paths between latent construct is weak. " (Smith and Langfield-Smith, 2004, p. 71-72).

**Table 8**

List of path analyses

a) decentralisation (see Figure 3), b) formalization / standardization, c) strategic planning and d) control system on total content; e) strategic planning on financial content; f) decentralization and g) strategic planning on governance content; h) formalization / standardization on social responsibility content; i) formalization / standardization on human capital content; j) formalization / standardization and k) control system on marketing content.

**Figure 3**  
Illustration – Path analysis – a) decentralization and total content (n=173)



Independent variables <sup>(a)</sup>	Multiple regressions on	
	decentralization of activities related to content management	total content
Stakeholder orientation		
- shareholders / investors	<sup>(b)</sup> -.06	.05
- clients	.02	-.01
- employees	.09	-.02
- suppliers	.02	-.10
- governments / political groups	.10	.08
- public at large	-.07	-.01
Top management support	***.46	-.08
Resources allocated to web site	-.06	.09
Web site dev. stage ( <i>continually adjusted</i> )	.08	** .12
Environmental uncertainty	***.26	-.09
Size of the organization ( <i>ln assets</i> )	***.20	***.77
Business sector	n.t.	n.t.
Decentralization	--	** .14
Adjusted R <sup>2</sup>	43%	65.8%
F Statistic	***	***

<sup>(a)</sup> Excluding the "other contextual factors" not significant according to Table 6 (Section 6.1): accounting rate of return, indebtedness, foreign revenues and age of the organization.

<sup>(b)</sup> Standardized beta coefficient (n.t.: not tabulated).

\*\*\* p value < 0.01; \*\* p value < 0.05; \* p value < 0,10; bilateral test.

**Table 9**  
Results – path analyses

Propositions	Independent variables		Dependent variables	Ref. to Table 8	Conclusion
	<i>Contextual factors and other factors</i>	→	<i>Content indexes</i>		
1a	Shareholder / inv. orientation	+	financial	e)	<b>supported</b>
		+	governance	f), g)	
		-	social responsibility	h)	
	Client orientation	-	financial	e)	
		+	human capital	i)	
		+	marketing	j), k)	
	Supplier orientation	-	total	b), d)	
		-	marketing	k)	
	Gov. / political gr. orientation	-	total	b)	
	Public at large orientation	-	governance	f), g)	
4a	Resources allocated to web site	+	financial	e)	<b>partly supported</b>
		-	marketing	j), k)	
5a	Web site dev. stage ( <i>cont. adjusted</i> )	+	total	a), b), c), d)	<b>partly supported</b>
		+	marketing	j), k)	
6a	Environmental uncertainty	---	---	a) to k)	not supported
7b	Size of the organization	+	all the indexes	a) to k)	<b>supported</b>
7b	Indebtedness	-	financial	e)	<b>partly supported</b>
		+	human capital	i)	
7b	Age of the organization	+	social responsibility	h)	<b>partly supported</b>
		+	marketing	j), k)	
7b	Foreign revenues	-	marketing	j), k)	<b>partly supported</b>
7b	Financial results ( <i>acc. rate of return</i> )	---	---	---	
7b	Business sectors	+/-	all the indexes	---	<b>supported</b>
	<i>Structural factors related to content management</i>	→	<i>Content indexes</i>		
1b, 2, 3, 4b, 5b, 6b	Decentralization of activities	+	total	a)	<b>partly supported</b>
		+	governance	f)	
1b, 3, 4b, 5b, 6b	Formalization / standardization of mechanisms	+	total	b)	<b>partly supported</b>
		+	social responsibility	h)	
		+	human capital	i)	
		+	marketing	j)	
1b, 3, 4b, 5b, 6b	Strategic planning	+	total	c)	<b>partly supported</b>
		+	financial	e)	
		+	governance	g)	
1b, 3, 4b, 5b, 6b	Control system	+	total	d)	<b>partly supported</b>
		+	marketing	k)	
	<i>Contextual factors and other factors</i>	→	<i>Structural factors related to content management</i>		
1b	Shareholder / inv. orientation	+	strategic planning	c), e), g)	<b>partly supported</b>
	Public at large orientation	+	control system	k)	
3	Top management support	+	decentralization	a), f)	<b>supported</b>
		+	form. / standard.	h)	
		+	strategic planning	b), e), g)	
		+	control system	d), k)	
4b	Resources allocated to web site	+	form. / standard.	b), h), i), j)	<b>supported</b>
		+	strategic planning	c), e), g)	
		+	control system	d), k)	
5b	Web site dev. stage ( <i>cont. adjusted</i> )	+	control system	d), k)	<b>partly supported</b>
6b	Environmental uncertainty	+	decentralization	a), f)	
		+	form. / standard.	b), i), j)	<b>supported</b>
7a	Size of the organization	+	decentralization	a), f)	
		+	form. / standard.	b), h), i), j)	
		+	strategic planning	c), e), g)	
		+	control system	d), k)	
7a	Age of the organization	---	---	h), j), k)	not supported
7a	Financial results ( <i>acc. rate of return</i> )	---	---	---	not supported
7a	Business sectors	+/-	decentralization*	a), f)	not supported (*relationship significant for one or two sectors only)
		-	form. / standard.*	b), i)	
		---	strategic planning	c), e), g)	
		---	control system	d), k)	

All analyses involving a structural factor with a significant influence on one of the content indexes had been examined (Table 8). The "other contextual factors" that are not significant according to Table 6 (Section 6.1) are excluded from regressions.

Figure 3 illustrates the first analysis a). Each analysis comprises a first regression of independent variables on a structural factor and a second one, with the same independent variables and the structural factor, on a content index. Results from path analyses are presented in Table 9.

In general, results indicate that stakeholder orientation, the size of the organization and the business sector have a significant influence on web site content while environmental uncertainty and financial results do not. The resources allocated to the web site and its development stage directly influence some types of content, as do the organization's indebtedness, age and foreign revenues.

Overall, structures related to content management directly influence the web site's total content. Particularly, different structures influence some content. A variation in the formalization / standardization of mechanisms affects the social responsibility, human capital and marketing content while a change in strategic planning influences financial and governance content. A more sophisticated control system contributes to maintaining more marketing content.

These structures are partially affected by stakeholder orientation, by the web site development stage and by environmental uncertainty. They are significantly affected by top management support, the resources allocated to web sites and the size of organization.

In the light of the path analyses, the size of the organization influences the *total content* directly, and indirectly, by the structures under study. It affects *governance content* directly, and indirectly, by the decentralization of activities related to content management; it affects *social responsibility*, *human capital* and *marketing content* directly, and indirectly, by the formalization / standardization of mechanisms; it affects *financial and governance content* directly, and indirectly, by the strategic planning. Resources allocated to web sites have a significant effect on the formalization standardization of mechanisms, the strategic planning and the control system related to content management, which in turn influence some content.

In brief, the Cartesian model is supported. The four structural factors are mediating variables between contextual factors and different content indexes.

## Discussion and Conclusion

The aim of this study was to understand how organizations manage their web site content (who is involved in the process, doing what and how, considering what ...) and to see to what extent this influences content. Results bring new knowledge about this topic by integrating into the analyses organizational and environmental general factors (stakeholder orientation, environmental uncertainty) as well as specific factors related to web site content management (top management support, resources allocated to web sites, web site development stage and structures related to content management).

Given that a cluster analysis has no statistical foundations, results based on the Configuration approach cannot be generalized to the target population. However, this approach offers the opportunity to examine content management as a system of relationships between context and structures. The identification of different content management profiles gives information to parties concerned by the effectiveness and the efficiency of web site content management. Under this systemic point of view, a higher content index results from a proper fit between context and structures and from a multiple stakeholder orientation. There could be gap between stakeholder orientation, site objectives and site content. This could be observed in a transitory period of change. This could suggest that some organizations maintain their web site as a complement to traditional media of communication. This could also suggest a lack of consistency between strategic orientation or site objectives and web site content. Limited means and less developed structures does not necessarily lead to lower content indexes. This suggests that there is not only one way to manage content management system effectively. However, some firms could look more efficient (same results with less resources) than others if they imitate their competitors while, in fact, others could have chosen not to use their web site as a strategic communication or commercial tool. Overall, different ways do not seem all effective to the same extent; all seem to depend upon the context. This implies that if accounting standard-setters and regulators continue to develop Internet reporting process guidelines or intend to impose rules, they should be aware of the reality surrounding organizations (knowing their limits and their resources). Results also indicate that boards of the directors and external auditors are not very involved in the Internet communication process. This could be the outcome of the lack of consensus between the management and the auditors about their

respective responsibilities in respect to information disclosed on web sites. Board of directors, more specifically audit committees, are those with oversight responsibility for the financial reporting process; auditors can enhance the credibility of information disclosed on web sites; recent financial scandals put both of them in the hot seat. In this context, as Internet reporting can contribute to the transparency of an organization, why are they not involved in improving web sites? Should they be? If so, to what extent and at what level? Given that this study does not answer those questions, they could be examined in further research supported by a corporate governance theoretical framework or based on an audit perspective.

Under the Cartesian approach, structural factors intervening between the contextual factors and web site content (mediating variables) were isolated. Results indicate the size of an organization is a significant determinant of web site content and structures used to manage it. Organizations could benefit from the use of particular content management structures to maintain a higher quantity of specific web site content. Top management support and resources allocated to web sites influence these structures while stakeholder orientation, business sector and these structures influence the different content. This suggests that it could be relevant for managers to take into consideration the stakeholder orientation and the site objectives in order to develop in a consistent manner the content management structures that have the potential to lead to higher content indexes. For example, it can be expected that a shareholder / investor orientation that is totally reflected in site objectives should be related to higher financial and governance content; strategic planning could help to enhance this relation. In a similar way, a client orientation totally reflected in site objectives should be related to higher marketing content; control system could help to enhance this relation. It should be noted that, in order to explain the variation in web site content, it could be relevant to refine the content index measurement and introduce the notion of *quality* of information in further research. A theoretical framework based on a strategy point of view could put focus on managers' actions, choices and motivations.

Based on the stakeholder perspective, this study followed a tendency in accounting. By combining it with a contingency perspective, a bridge between accounting and management fields of research was created. By using Configuration and Cartesian approaches, analyses were enriched: in practice, changes made to structures related to content

management can be discontinuous (radical, on more than one factor at a time) (Configuration approach) or continuous (incremental, gradually) (Cartesian approach). Further research could use the empirical results of the study to elaborate hypotheses and to use structural equation modelling (SEM).

This study benefits from the use a mixed methodology (Tashakkori and Teddle, 1998). The initial qualitative steps (consulting interviews, tests on questionnaire) oriented data collection, provided assistance for the development of a theoretical framework and measurement instruments, and gave some evidence that can be compared with the quantitative analyses. To my knowledge, no studies have collected empirical data from web site managers. This one provides valuable information from inside the organizations to describe structures related to content management and contextual factors.

Analyses should be read taking into consideration the limits inherent in stakeholder perspectives (transparency assumes more content), in the two contingency approaches (statistical foundation or not, kind of changes to structures), in the use of a questionnaire (one respondent per organisation) and in the development of an index (items could be missing on the list). As the study is cross-sectional, it does not consider the dynamic inherent in the Internet communication process. The Cartesian approach is limited to a model with mediating variables (structural factors); moderating effects resulting from the interaction between some variables on web site content are not considered.

Overall, notwithstanding the limitations of the study, results contribute to the accounting literature and to the management literature. Research avenues are evolving in the area of corporate governance, auditing and strategy; that could be of interest for regulators, standard-setters and managers.

## **Appendix A – Summary list of items comprising the content index**

### **Financial content**

Quarterly and annual reports: current and past year  
 Annual information / proxy circular  
 Stock quote on the web site of the organization: on line, current and past year; compared to financial index  
 Key ratios, financial data summary: current and past year, more than 2 years  
 Credit rating  
 Value creation  
 Management discussion and analysis

Prospective information, warning / limits  
 Conference calls, speeches, shareholders meeting,  
 financial events calendar  
 Dividend reinvestment program  
 Financial analysts: list, recommendations, forecast  
 Periodic data: sales in total, electronic sales

### **Non-financial content**

#### *General*

Periodic general information (html or pdf format)  
 Profile, history, portfolio / affiliated  
 Promotional or social calendar  
 Press releases: current and past year  
 Updating dates, legal considerations, frequently asked  
 questions, glossary  
 Contact: general and specific

#### *Corporate governance*

Mission statement, strategic planning  
 Regulation (SOX, NYSE, TSE, etc.)  
 Risk management  
 Governance: guidelines  
 Globalization / internationalization  
 Managers / members of board of directors list  
 Role and responsibilities president (board of  
 directors, committees, chief executive officer)  
 Competence, compensation management  
 Competence, recruitment / evaluation, compensation,  
 independence, mandate board of directors  
 Board of directors committees: mandate / role and  
 responsibilities  
 Stock option plan  
 Comments to board of directors  
 Whistle-blowing policy, insider trading policy,  
 disclosure policy  
 Important contract, auditors fee  
 Shareholders meeting results  
 Code of ethic / code of conduct  
 Ownership, majority shareholders

#### *Operations / development*

Operation periodic and annual data  
 Productivity: costs, capacity, wasting / recovery,  
 inventory, quality of equipment / raw material /  
 technology, flexibility, description of process,  
 time  
 Certification ISO or other, strategic alliances  
 Distribution: network, strategic alliances  
 Future / growing strategy / innovation, development  
 projects: increase in sales / market, increase in  
 investments, investments (amount - % sales) /  
 importance of R&D, description of products /  
 services in development, tests / feasibility study /  
 exploration, strategic alliances  
 Future / tendencies (industry / market), industry data

#### *Human capital*

Competence: hiring new employees, qualifications,  
 expertise in general, training in general  
 Motivation: participation, creativity, team work,  
 performance evaluation, compensation based on  
 performance, social benefits, development  
 Satisfaction, retention

#### *Social responsibility*

Purchase products / services  
 Program: employment, equity, development of human  
 capital  
 Security at work, security of products  
 Environment taken in consideration in organizational  
 operations  
 Economic / regional development, community,  
 donations, strategic alliances

#### *Products / services / clients \*\**

Number / profile / segment market  
 Pre- and after-sales services  
 Satisfaction, loyalty  
 Summary description products / services

#### **Promotional content \*\***

Detailed description of des products / services  
 Quality finished product / service  
 Conditions: prix, reliability  
 Delivery delay

#### **Transactional content** (electronic commerce) \*\*

Order products / ask for services  
 On line service  
 Quality / distinction on line services  
 Conditions: security, payment, price, delivery delay  
 Number of users or visitors

#### **Accessibility**

Distinct headings: Relations with investors, Corporate  
 governance, Human and intellectual capital or  
 Career, Social responsibility or Community,  
 Environment or Sustainable development  
 External links: SEDAR / EDGAR, stock quotes,  
 associations / governments, affiliated, "newswire"  
 Internal links, one click to access : Investor relations,  
 press releases  
 E-mail list, order financial documents on line  
 Interactive component, download financial  
 documents, send web page, financial information  
 available in html or PDF or by sections  
 Navigation aids / help, search, table of contents / site  
 map, "previous-next" / "top-down"  
 Bilingual web site

\*\* Grouped into "Marketing content"

## Appendix B – Survey questions used in the study

### 1. Stakeholder orientation (not representative = 1, very representative = 7)

Please indicate to what extent the following items are representative of the attention paid to groups interested in the organization's business.

- a) The following groups\* are explicitly referred to in the corporate mission or vision.
- b) The following groups\* receive a high degree of time and attention from the management team.
- c) Satisfying the claims / needs of the following groups\* is important to the management team.

*\*Questions 1a), b) and c) for each of the following groups: shareholders / investors, clients, employees, suppliers, governments / political groups, public at large.*

### 2. Top management support (not representative = 1, very representative = 7)

Please indicate to what extent the following items are representative of the web site.

Top management provides support to maintain and improve the web site by:

- a) appointing a top manager in charge of the site, formulating site mission, etc.
- b) supporting the allocation of resources (financial, human and material).
- c) encouraging all spheres of the organization to help maintain and improve site.

### 3. Resources allocated to web sites (not representative = 1, very representative = 7)

Please indicate to what extent the following items are representative of the resources allocated to the web site.

In order to maintain the web site:

- a) parties involved have a sufficient amount of money.
- b) a sufficient number of people are involved.
- c) there is enough equipment / material to support the completion of the tasks.

### 4. Web site development stage (not representative = 1, very representative = 7)

Please indicate to what extent the following items are representative of the web site.

- a) It is at the initial stage (first version of the site).
- b) It is continually being adjusted (changed daily, weekly, etc.).
- c) It is currently undergoing improvements (major changes or re-design).
- d) It represents a model for competitors and companies in general.
- e) It is stagnating (activities to maintain and improve the site suspended).

### 5. Environmental uncertainty (not representative = 1, very representative = 7)

Please indicate to what extent the following items are representative of the company's main business environment.

- a) Competitors' actions are highly unpredictable.
- b) Client demand for products / services is highly unpredictable.
- c) Regulations are highly unpredictable.
- d) Competition for prices is highly intensive.
- e) Competition for products / services (attributes, design) is highly intensive.
- f) Regulations are highly intensive.
- g) Differences in competitive tactics require original marketing, production (if applicable) and administrative practices.
- h) Differences in client tastes require original marketing, production (if applicable) and administrative practices.

## 6. Decentralization of activities related to web site content management

### Part A – Degree of parties' involvement (not involved = 1, highly involved = 7)

Please indicate to what extent the following groups are involved in writing and delivering the information content as well as in improving the web site.

- a) Involvement of the following groups\* in writing the information content (development, quality control).
- b) Involvement of the following groups\* in delivering the information content on line (display, removal, quality control).
- c) Involvement of the following groups\* in improving the web site (major changes or re-design).

*\*Questions 6a), b) and c) for each of the following groups: marketing, communications, technology / IT, multidisciplinary Internet team, finance / administration, various business units / subsidiaries, top management, clients, external consultants. Groups added for question 6c): community representants, external auditors, internal auditors, members of the board of directors.*

### Part B – Degree of consultation of the decision process (not representative = 1, very representative = 7)

Please indicate to what extent the following items are representative of the mechanisms for managing information content.

- a) Managers make decisions concerning the writing of the content (development, quality control) with maximum consultation.
- b) Managers make decisions concerning the delivering of the content on line (displaying, removal, quality control) with maximum consultation.

### Part C – Sharing of web site and content responsibilities (number of groups involved /of box checked = from 1 to 7)

Please indicate which group(s) is (are) responsible for the following duties.

- a) The following group(s)\* is (are) ultimately responsible (accountable) for the web site.
- b) The following group(s)\* is (are) ultimately responsible (accountable) for the information content.

*\*One box or more checked for each of the following groups: marketing, communications, technology / IT, multidisciplinary Internet team, finance / administration, various business units / subsidiaries, top management.)*

### Part D – Utilization of content management software (not representative = 1, very representative = 7)

Please indicate to what extent the following items are representative the resources allocated to the web site.

- a) The organization is using a content management software / tool developed for the general needs of most companies.
- b) The organization is using a content management software / tool developed for her specific needs.

## 7. Formalization / standardization of mechanisms related to web site content management (not representative = 1, very representative = 7)

Please indicate to what extent the following items are representative of the mechanisms for managing information content.

- a) Internal parties involved' roles and responsibilities are defined.
- b) Groups of internal parties involved share common vision of how information content is managed.
- c) Procedures (formal or informal) exist to facilitate the settlement of conflicts between groups involved in the management of the information content.
- d) Procedures (formal or informal) have been put in place for all situations dealing with the management of the information content.
- e) Existing procedures are usually in writing.
- f) Informal agreements are reached to handle situations.
- g) Informal steps (ad hoc committee, inter-organizational discussions, seminars, etc.) can be at the origin of changes to information.

**8. Strategic planning related to web site content management (not representative = 1, very representative = 7)**

Please indicate to what extent the following items are representative of the mechanisms for managing information content.

- a) Strategic decisions about information reporting on the Internet are incorporated into the company's overall communication strategy.
- b) Strategic actions about information reporting on the Internet are coordinated with the company's overall communication strategy.
- c) Risks inherent in information reporting on the Internet are identified (ex. : lawsuit if information is wrong, providing strategic information to competitors).
- d) Actions are anticipated to manage those risks (ex. : evaluation procedures).
- e) The information needs of Internet users (shareholders, investors, clients, etc.) are anticipated on a long-term basis (over a year).
- f) Financial, human and material resources are anticipated on a long-term basis.

**9. Control system related to web site content management**

**Part A – Web site managers' perception of the quality of content (significantly lower = 1, significantly higher = 7)**

Please position the quality of information content relative to one of the leading competitors for the following items:

- a) Type of information:
  - a. Business information (profile, organizational structure, governance, careers, etc.).
  - b. Financial information (annual, quarterly, quoted market prices, key ratios, etc.).
  - c. Non-financial information (operating data, performance measurements used by top management, industry statistics, company's credit rating, etc.).
  - d. Promotional information (details on products / services, promotions, etc).
  - e. Transactional information (Internet sales conditions).
- b) General form of information (graphics, audio, video, etc.).
- c) User-friendliness to access information (navigation aids, user needs headings, external / internal links, etc.).
- d) Information content taken as a whole.

**Part B – Follow-up of the information content quality (not representative = 1, very representative = 7)**

Please indicate to what extent the following items are representative of the system put in place to follow up on the quality of the web site's information content.

- a) Periodic evaluations are done (weekly, monthly or quarterly).
- b) Quality evaluation is currently based on:
  - a. a comparison with the web sites of competitors.
  - b. a comparison with the web site of leaders in information reporting on the Internet
  - c. surveys on company web site user satisfaction
  - d. tests using the company's web site
  - e. focus group's discussion results.
  - f. feedback obtained via e-mail.
  - g. number of visitors on each web site section.
  - h. external consultants' opinion.
  - i. all out reports (specify where on a web page Internet user has given up visiting the site or completing an application on line).

## 10. Other information

### Web site's aim (not representative = 1, very representative = 7)

Please indicate to what extent the following items are representative of the web site.

- a) It explicitly aims at maintaining relations by satisfying, as a priority, information needs of ...\*
- b) It explicitly aims at promoting products / services.
- c) It explicitly aims at encouraging Internet transactions.

\* Question a) for each of the following groups: shareholders and investors ; clients ; employees ; suppliers ; governments / political groups ; public at large.

### Nature of parties' involvement

Please indicate the type of participation that best describes the overall involvement of the following groups\* in writing and delivering the information content and in improving the web site: not invited to participate; consulted as a web site user; consulted as a specialist; operational participation (development, revision, quality control, approval, etc.); or strategic participation (site's objectives, identification and management of risks, etc.)

\* Only one box checked for each of the following groups: marketing, communications, technology / IT, multidisciplinary Internet team, finance / administration, various business units / subsidiaries, top management, clients, external consultants, community representants, external auditors, internal auditors and members of the board of directors.

### General information

How many years has the company had a web site?

(less than 2 years ; 2 to 3 years ; 4 to 5 years ; more than 5 years)

How many employees have a major role in maintaining or improving the web site?

(less than 5 ; 5 to 10 ; 11 to 20 ; more than 20)

For the current fiscal year, what is the amount of the budget allocated to the web site?

(less than \$300,000 ; \$300,000 to \$500,000 ; \$500,001 to \$1,000,000 ; more than \$1,000,000)

How would you describe the fiscal results of the most recent year-end?

(below, meet or exceed top management's predictions / expectations)

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