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ENVIRONMENTAL SCANNING: PRELIMINARY FINDINGS OF INTERVIEWS WITH CEOs IN TWO CANADIAN INDUSTRIES

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ABSTRACT

Today's business organizations operate in turbulent environments marked by rapid changes in the competition, technology, and economic and social conditions. *Environmental scanning* is the activity of gaining information about events and relationships in the organization's environment, the knowledge of which would assist management in planning future courses of action. This paper is the third and final part of a study of the environmental scanning behavior of Chief Executive Officers (CEOs) in two Canadian industries – publishing and telecommunications. It reports the preliminary results of personal interviews with 13 selected CEOs in the two industries.

The main objective of the personal interviews was to obtain first-hand accounts from the respondents of actual instances of acquiring and using environmental information. During the focused interviews, each respondent was asked to relate two critical incidents of information use. For each incident, the respondent describes the substance of the information received, the sources for the information, and how the information was made use of. The interview data suggest that CEOs acquire environmental information from multiple, complementary sources; they rely to a great extent on personal sources; and that they use impersonal sources, especially printed sources, to keep them informed about trends in the environment.

INTRODUCTION

Today's business organizations face the challenge of succeeding in an increasingly dynamic environment that is characterised by rapid change in competitor and customer behaviour, technological development, government regulations, as well as economic and social conditions. Learning about events, trends, and relationships in the external business environment thus becomes a primary activity of the chief executive officer (CEO) who is charting the course of the firm. The objective of this research is to increase our understanding of how CEOs of business organizations acquire information about the external business environment. Aguilar in his 1967 landmark study defines this process of scanning the business environment as "... scanning for information about events and relationships in a company's outside environment, the knowledge of which would assist top management in its task of charting the company's future course of action." [1]

In this paper, we discuss the environmental scanning behaviors of 13 CEOs who were interviewed, their main sources of environmental information, and how they made use of the information in decision making.

CONCEPTUAL FRAMEWORK

(This study's conceptual framework is based on the scheme that the authors presented at the 1991 54th ASIS Annual Meeting [2], which contains a fuller discussion.)

The **environment** is defined as "the totality of physical and social factors that are taken directly into consideration in the decision-making behavior of individuals in the organization" [3], and the external environment may be viewed as a source of information, continually creating signals and messages that organizations should attend to [4, 5]. In the present study, the chief executives are asked to consider the external business environment as consisting of six sectors: customer, competition, technological, regulatory, economic, and sociocultural sectors [6].

Past research has examined the executive's scanning behavior in terms of the relative **use of information sources** that are available to the executive. Aguilar [7] found that personal sources of information were far more important than impersonal sources. Keegan [8] observed that for multinational companies, sources outside the organization were more important than inside sources. Daft et al [9] found that chief executives responded to perceived uncertainty with greater scanning using multiple, complementary sources to interpret an uncertain environment. Hambrick [10] surveyed executives in three industries and observed that they consistently ranked publications as the dominant information source, and follow-up interviews found that they tend to equate scanning with publication reading. In the present study, we therefore address the following research question:

Question 1: Which information sources do CEOs use to scan the external business environment?

Mintzberg [11] proposes a model of the managerial **use of information** that includes information acquired from the external environment. In his conceptualization of top managers as information processing systems, the manager's interpersonal roles provide access and exposure to information from a large number of external and internal information sources. The manager in the informational role of *monitor* "continually seeks and receives information from a variety of sources in order to develop a thorough understanding of the organization and its environment" [12]. Access to information combines with positional authority to empower the manager to perform four decisional roles. As *Entrepreneur*, the manager initiates "improvement projects" such as new lines of business or joint ventures that exploit an opportunity or solve a problem. As *Resource Allocator*, the manager controls the distribution of all forms of organizational resources through for example budget

allocations and setting of targets. As *Disturbance Handler*, the manager deals with unexpected but important events. Finally, as *Negotiator*, the manager engages in major negotiations with other organizations or individuals. In the present study, we investigate the use of environmental information within Mintzberg's decisional roles framework:

Question 2: How do CEOs use environmental information in their decisional roles?

METHOD

Study Population and Data Collection

The study population consists of CEOs in the Canadian publishing and telecommunications industries. Both industries are vital to the Canadian economy and thrive in volatile business environments characterised by technological advances, intense competition, new business structures, population growth, and changing social preferences. The industry sectors were defined with 4-digit US Standard Industrial Classification Codes. Using these codes, an online search was done in the Canadian Dun's Market Identifiers database and the Cancorp Canadian Corporations database. Companies with annual revenues equal to or greater than C\$5 million were selected. This procedure identified 207 CEOs – 94 in publishing, and 113 in telecommunications. Of the 207 executives, 115 (59%) responded to our mail questionnaire. Among these respondents, 40 indicated that they were willing to be interviewed. Interviews were then requested with each of the 22 respondents in the province of Ontario who agreed to be interviewed. The decision to interview in Ontario is based on geographical proximity and on the fact that a large fraction of firms in both industries is located in the province. Eventually, 13 respondents were interviewed – most of the others were out of town during the interviewing period.

Interview Methodology

The interview format is based on the *focused interview* as described by Merton and Kendall [13], and Judd, Smith and Kidder [14]. Originally, Merton and Kendall described two requirements for this type of interview: the persons interviewed have to be involved in a particular situation, and the interviewer has to theoretically analyze the situation beforehand. Judd, Smith and Kidder broaden the definition of a focused interview to include any interview in which interviewers know in advance what specific aspects of an experience they wish to have the respondent cover in their discussion, whether or not the investigator has observed and analyzed the specific situation. For this study, interview respondents are asked to recall and relate their experiences and behaviours in specific incidents (situations) of receiving and using environmental information. The interviewer on the other hand knows what aspects of the incident he or she wishes to pursue in their discussion, as well as what topics or what aspects of a question he or she wishes to be addressed.

The interview design is also based on the principles of *Critical Incident Technique*. The Critical Incident Technique (CIT) was developed by Flanagan at the American Institute for Research in 1947 where it was used in studies to determine critical requirements for the work of pilots, air force officers, scientists, air traffic controllers, and hourly wage employees [15]. Essentially, CIT is "a procedure for gathering certain important facts concerning behavior in defined situations" [16]. The 'incident' to be studied should be a complete, recent incident that had clear consequences. The CIT seems well suited to studies of the information seeking behaviour of a community, and has been applied in a large number of information needs and uses studies [17]. Two classic scanning studies also employed this method. Aguilar [18] asked his interview respondents to recall a number of specific recent instances of gaining external information, to specify information sources, and to say how they came to receive the information. Keegan [19] likewise requested respondents to recall recent specific instances, within the past six months, where the executive personally obtained or received external information.

In summary, the personal interviews are designed to *focus* discussion on *critical incidents* of acquiring and using environmental information. The interview schedule is therefore semi-structured, in that it contains a set of predefined but open-ended questions, all of which are asked in a given sequence. Specifically, each respondent related two 'critical incidents' of receiving information about the external environment in reply to the following question:

Please try to recall a recent instance in which you received important information about a specific event or trend in the external environment — information that led you or your firm to a new initiative, a change of direction, or some significant action.

Would you please describe that incident for me in enough detail so that I can visualize the situation?

Probes were used, where necessary, to prompt respondents to describe the substance of the information received, the issue or problem that it addressed, the sources for the information, how the information was made use of, and what the end results were of acquiring and using the information.

RESULTS

Profile of Respondent CEOs and Firms

Most of the 13 respondents are in the age group 35-44, and have been CEO of the firm for a few years. Nine of them came from previous positions in the marketing or sales areas, while the great majority have a bachelor's or master's degree. Seven of the firms employed over 100 persons, with the largest hiring 1500 persons. The remaining firms employed 40 to 100 staff, except for one company with only 10 employees. Table 1 profiles seven of the interviewed CEOs and their firms (names are fictitious).

Table 1. Profile of a Sample of Respondents and Firms

<i>CEO Name</i>	<i>Business</i>	<i>Sales/ Employees</i>	<i>CEO Age</i>	<i>Years as CEO</i>	<i>Previous Function</i>
Ben	One of Canada's largest cable television operators and the largest private paging company.	\$64M/ 450 emp.	35-44	5 years as CEO, 15 years in firm.	Finance
Chris	Supplier of data communications equipment and services for LAN, WAN interconnection.	\$15M/ 65 emp.	35-44	1 year as CEO, 1 year in firm.	Marketing & Sales
Frank	Second largest reseller of long distance telecommunications services in Canada.	\$40M/ 47 emp.	35-44	1 year as CEO, 1 year in firm.	Sales
George	Manufacturer of multiplexing and switching equipment for common carriers, interexchange carriers.	\$29M/ 60 emp.	39	3 years as CEO, 4 years in firm.	Marketing
Peter	Developer and provider of online databases, document management services, and reference tools.	\$12M/ 120 emp.	45-54	Founded firm 20 years ago.	-
Rob	Publishing firm involved with printing, publication, and wholesale of books.	\$45M/ 100 emp.	35-44	1 year as CEO, 1 year in firm.	Marketing
Steve	Publisher and printer of a wide range of magazines and periodicals.	\$115M/ 1500 emp.	45-54	2 years as CEO, 2 years in firm.	Marketing

Summary of Critical Incidents

The 13 respondents related a total of 25 critical incidents of using environmental information to make significant decisions for the firm. Thirteen of these incidents are summarized in Table 2, which shows the substance of the information acquired, the environmental sector it concerned, the decisional role the respondent was acting in, and the sources of the information.

Table 2. Summary of a Selection of Critical Incidents

<i>Incident</i>	<i>Information</i>	<i>Environmental Sector</i>	<i>Decisional Role</i>	<i>Customers</i>	<i>Busi./Prof. Associates</i>	<i>Government Sources</i>	<i>Newspapers, Journals</i>	<i>Trade Associations</i>	<i>Internal Staff</i>
B1	Use of digital video compression to provide greater program flexibility.	Technology	Entrepreneur	▲	▲	▲	▲	▲	▲
B2	Assessment of competitors' strengths in the Canadian paging market.	Competition	Entrepreneur		▲	▲		▲	▲
C1	Identification of a market for smaller network routing systems.	Customer	Entrepreneur	▲					
C2	Firm's competitive position after entry to generic markets.	Competition	Entrepreneur	▲					
F1	Bell Canada's filing with CRTC to lower long distance WATS rates.	Regulatory	Disturbance Handler		▲	▲			
F2	New parliamentary bill on national telecommunications policy.	Regulatory	Negotiator		▲	▲		▲	
G1	Information on Process Management for organizational improvement.	Technology	Entrepreneur				▲		▲
G2	News about imminent economic downturn.	Economic	Resource Allocator	▲			▲	▲	
P1	News that a legal information service firm was selling its indexing service.	Competitor	Entrepreneur		▲				▲
P2	Joint venture offer by competitor to merge two databases.	Competitor	Entrepreneur		▲				
R1	Changes in consumer buying trend – consumers concerned with price.	Customer	Resource Allocator	▲	▲		▲	▲	
S1	Re-acquiring printing business from publishing conglomerate.	Competition	Negotiator		▲		▲		
S2	Assessing the sale of one of the firm's assets to a major customer.	Competition	Negotiator		▲				

(Incidents are numbered according to CEOs' names in Table 1. Thus B1 is the first incident related by Ben.)

Table 3. Most Important Sources Identified by Some Respondents

<i>CEO</i>	<i>Most Important Sources for Environmental Scanning</i>
Ben	Journals, publications
Chris	Distributors
Frank	Past colleagues in former firm
George	Account managers
Peter	Newsletters, trade journals
Rob	Newspapers, shortwave radio
Steve	Newspapers, periodicals, business acquaintances

Most Important Sources

During the interviews, we asked the thirteen respondents to identify the information sources which are most important to them when scanning the external environment. The responses of seven CEOs who answered the question are presented in Table 3.

The table indicates the importance of printed sources in providing environmental information to the chief executives. While the critical incidents recounted by the respondents highlighted the role of personal sources such as business and professional associates in providing environmental information that led to making consequential decisions, the table indicates that when *scanning* the environment (as differentiated from making decisions using environmental information), printed sources such as newspapers, newsletters and trade journals become very important.

DISCUSSION

While each chief executive has a distinctive style of scanning the external environment, an analysis of the 25 critical incidents suggests patterns in the acquisition and use of environmental information by CEOs in the two industries studied.

Respondents acquire or receive environmental information from multiple, complementary sources. For the majority of critical incidents reported, information had been acquired or received from between two and as many as five sources. The sources used include both personal and impersonal sources, which may be internal or external to the firm. Although the importance of personal sources such as Customers, Business and Professional Associates, and Internal Staff is clearly evident in most of the incidents, the contribution of printed sources such as Newspapers, Journals, and External Reports is also manifest. One respondent (Ben), when asked to identify his most critical sources, replied that it was difficult to say which sources are more important. In both incidents that he described, information from various sources, including the R&D staff, suppliers, marketing staff, industry association, and regulators, had to come together for the decisions to be made. In addition, he does a great deal of reading of newspapers and journals, looking for information about innovative applications of paging and broadcasting technology in other countries. Another respondent (George) spoke of blending data from multiple sources, so as "to see or recognize a trend coming," and then solicit more information from additional sources. In both incidents he described, information came initially from impersonal, printed sources (economic reports from banks, and Fortune magazine). The use of multiple, complementary sources by CEOs in scanning has also been found in another recent study. Daft et al [20] surveyed the scanning behaviors of small to medium-sized manufacturing firms in Texas, whose businesses ranged from aerospace to kitchens. They concluded that the chief executives in their sample employed several complementary sources to interpret an uncertain environment, and that the executives responded to greater environmental uncertainty by increasing their scanning using all available sources.

Respondents rely to a great extent on personal sources for environmental information. Of the 25 critical incidents reported, 22 included information from personal sources. In 6 cases among the 22, the personal source was the sole source of the information that led to decision making. The most often cited personal sources are Business and Professional Associates, Customers, and Internal Staff, which includes both subordinate managers and subordinate staff. One respondent (Chris) carries out competitor analysis by delegating staff to talk directly to distributors of competitors' products. When he wanted to determine the competitive position of his firm, he obtained information through "a lot of conversations with customers, both the existing and potential customers . . ." He had recently discontinued subscriptions to online databases and market research reports, partly to save money, but mainly because he now preferred "going right to the horse's mouth for the information we need." Another respondent (George) concentrates on his fifteen major customers, and is "very sensitive to information that they provide about competitive threats, new technology, new services deployment, regulatory environment, and so on." Each of the major customers is assigned to one account manager who has detailed information about his or her customer. At a personal level, the respondent said that "actual contact with a customer is one of the sources with the most impact." A third respondent (Peter) related two incidents in which the critical information came directly from other top executives – the director of a Canadian legal information service firm wishing to sell its indexing service, and the manager of a competitor's database product wishing to merge its database with that produced by Peter's firm.

The reliance on personal sources in scanning and decision making may be interpreted as follows. Information about the external environment is often equivocal. Some of it may concern events or trends that are still evolving, some of it may be based on conjecture or opinion, some of it may be inaccurate or incomplete, and almost all of it may be subject to multiple interpretations. The processing of environmental information must therefore aim at lowering its inherent equivocality [21]. Furthermore, the information task of reducing equivocality may depend on hierarchical level: top managers may need to confront and evaluate ambiguous environmental messages more often than middle-level managers. Equivocality is reduced by using sources of high *information richness* [22]. Personal sources are considered rich because they transmit their information typically through rich media, such as face-to-face meetings and telephone conversations, that allow chief executives to observe additional information cues, seek clarification immediately, probe more deeply, and in general, to make better sense of an unclear situation. It is the richness of information conveyed by personal sources, a richness that is needed to interpret equivocal environmental information, that accounts for the chief executive's reliance on personal sources in scanning and decision making.

Impersonal or printed sources play an important part in keeping respondents informed about the environment. Nine of the 13 interview respondents recalled critical incidents in which printed sources were instrumental in their decision making.

One respondent related how information initially obtained from reading a computer trade magazine eventually led to the widespread introduction of in-house desktop publishing in his firm. Another respondent described how he read a newsletter story about a firm with a new technology, and he then started negotiations with the firm about a potential joint venture. Yet another respondent (Frank) described two incidents in which he spent a great deal of time and energy in studying and interpreting regulatory documents and a draft parliamentary bill. Finally, a fourth respondent made clear his use of *The Globe and Mail* (Canada's national newspaper) as a primary source: "In hindsight, most of my information comes from *The Globe and Mail*, it's something I read every morning almost without exception. Generally, I trust the information appearing in *The Globe and Mail*."

Because they have limited time and attention, chief executives appear to use printed sources in order to carry out a general, wide-area viewing of the external environment in an efficient manner. This wide-area viewing may then identify specific issues for closer scanning [23]. Although printed sources lack information richness compared with face-to-face contact, they convey information using media that communicate accurately and efficiently unequivocal messages such as factual information, numerical data, rules and definitions, and so on. Ghoshal and Kim [24] detected a differential use of personal and impersonal sources by their sample of managers in some of the largest firms in South Korea. Impersonal sources such as journals and reports are used more often when executives seek information on the broader environmental sectors for long-term planning, while personal sources like business associates and customers are more important for information about the immediate business environment (competitors, markets, existing technologies). In the present study, the interview data appear to suggest a similar differential usage of personal and impersonal sources.

Respondents use environmental information mainly in the Entrepreneur decisional role. Nine of the 13 interview respondents recalled critical incidents in which they were acting in the Entrepreneur decisional role: 14 of the 25 incidents led to decision making in the Entrepreneur role. Seven respondents indicated environmental information was used in ways that were strategic to the firm. For example, two respondents described how information about a change in the external environment led to fundamental redesigns of the pricing structure of their services that enabled them to defend their market positions. Another respondent (Ben) said that he had formed a strategic planning committee led by a full-time head whose main task is to evaluate environmental information about potential opportunities for the firm. A fourth respondent (Chris) used environmental information to decide to shift the firm from being a niche player to being a supplier of 'generic' products. Finally, one respondent (Rob) responded to environmental information about customer's price sensitivity by closing its Canadian book warehousing and distribution system in order to lower costs.

This apparent connection between scanning activity and the Entrepreneur decisional role is predicted by

Mintzberg [25]. In the Entrepreneur role, the manager initiates improvement projects to exploit opportunities or to solve problems. According to Mintzberg [26], "Entrepreneurial work begins with scanning activity," where the manager uses information from scanning the environment to identify opportunities or problems, and then to design and select improvement projects. The chief executive who scans a greater amount would therefore receive or acquire more information about developments in the external environment, including information about opportunities or problems, as well as possible solutions or alternatives. As a result, the executive who scans more would have more environmental information to call upon when deciding about improvement projects in the Entrepreneur role. Findings from the interview data are consistent with this interpretation.

SUMMARY

The findings of the personal interviews with CEOs are consistent with those of the mail questionnaire survey, which were reported at the 1992 ASIS Annual Meeting [27]. Both the interviews and the questionnaire survey conclude that the CEOs use a complementary mix of information sources to scan the business environment. They frequently use both internal and external sources, as well as personal and printed sources of information to scan the environment – both printed and personal sources are therefore important. In addition, the interview data provide specific examples of the vital part played by personal sources such as business and professional associates in supplying environmental information that lead to decision making. Complementarily, printed sources such as newspapers and periodicals are important as sources which the chief executives use to scan the environment broadly and efficiently, possibly to identify specific issues for closer analysis. Finally, the interviews suggest that environmental information is used most frequently by chief executives in the Entrepreneur decisional role, mainly to initiate new improvement projects.

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NOTES

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