Strategic Management Journal, Vol. 7, 69–89 (1986)

Environmental Analysis Units and Strategic Decision-making: a Field Study of Selected 'Leading-edge' Corporations

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Summary
In response to increasing environmental change many corporations have developed specialized environmental scanning units. Previous research reveals conflicting findings regarding the viability of these units for introducing environmentally relevant information into strategic decision processes. A field study was conducted on 10 'leading-edge' corporations. The results show continuing experimentation with alternative administrative structures and the vulnerability of units that are not tightly linked with strategic planning processes.

A growing concern for executives, academicians and consultants is what appears to be the increasing volatility of organizational environments. Chronicles of business corporations are replete with instances of executives whose organizations were caught off guard by large-scale environmental shifts. In the United States the automobile industry is a prime example. Automakers experienced huge losses as a consequence of regulatory changes, the shift from national to global markets, actions by the OPEC cartel, and new lifestyles and preferences of consumers. Other industries, such as commercial banking and insurance, have also been radically transformed. New laws and technology have reduced entry barriers in primary markets and, thereby, broadened the number of competitors and the form of inter-firm rivalries.

Under such conditions of change there is a growing sense of urgency to develop more effective ways to provide environmental intelligence to strategic decision-makers (Lenz and Engledow, 1984; Klein, 1979; Miller and Friesen, 1983). If extant research on organizations is correct, firms that can successfully introduce pertinent information about their changing environments into strategic decision processes have the brightest prospects for long-term survival (see Hedberg, Nystrom and Starbuck, 1976; Bourgeois, 1978).

During the past few years executives in several organizations have experimented with specialized organizational units designed to enhance their firm's capacity to sense and act on environmental intelligence. These components are usually referred to as environmental scanning, or analysis, units. The central functions of these units are to gather and interpret pertinent environmental information and introduce the results of analyses into an organization's decision processes. Thus far, the results of these experiments are inconclusive. A few studies raise serious questions about the long-term viability and effectiveness of specialized environmental analysis units. Other research and recommendations of academicians and consultants urge the continued development and widespread adoption of such units for aiding strategic decision-making activities.

0143-2095/86/010069-21$02.10

Received 25 January 1984
Revised 10 August 1984

The field study that gave rise to this paper was undertaken with the intent of extending the line of research on environmental analysis units in major corporations. Of central concern was further investigation of issues identified in previous studies as well as theoretical questions regarding the concept of environment. Throughout the study emphasis was placed on administrative problems associated with structuring, sustaining and using such units. By increasing knowledge about these ongoing organizational experiments it should be possible to gain greater insight into the feasibility of this approach for improving the capacity of organizations to bring environmental information into strategic decisions.

LITERATURE REVIEW

Researchers have focused on a variety of different issues relating to the global problem of obtaining environmental information and using it to make strategic decisions. In some studies attention centers on the information-gathering activities of senior-level executives (Aguilar, 1967; Keegan, 1974; Hambrick, 1982; Kefalas and Schoderbek, 1973; Hegarty and Hoffman, 1983; Miller and Friesen, 1983; Segev, 1977). Others have studied various analytical techniques and formal strategic planning systems (Steiner, 1979; Lorange, 1982; Post, 1973). A growing body of research focuses attention on social and psychological processes associated with organizational learning and executive decision-making (Dutton and Duncan, 1983; Weick, 1979; McCaskey, 1982; Dill, 1962). Only a few studies, however, have investigated the use of specialized formal organization units for environmental analysis. Within this stream of research there are conflicting findings that raise serious questions about the practical utility of such units.

Ansoff (1980), Porter (1980) and Wilson (1982) suggest that executives create a specialized administrative component for systematic scanning and analysis of the organizational environment. The exact terminology varies in accordance with each author. Nevertheless, there is agreement that environmental analysis should be an independent staff function positioned among the top levels of an organization's hierarchy. Most agree that organizational environments should be subject to wide-angle scanning by a corps of analysts that goes beyond factors in and around current product line thrusts. This process of scanning and identification of pending change should occur on a continuous basis, rather than being driven by the regular schedule of the planning cycle.

Porter suggests that results of environmental analysis be fed directly into the strategic planning process. Ansoff and Wilson concur on this point, but place greater emphasis on strategic issues management, rather than strategic planning, as the ongoing focus of executive action. In their views, members of a specialized environmental analysis unit should monitor the macro-environment for weak signals that are harbingers of potential threats or opportunities. The role of this unit is to identify and analyze issues in order to facilitate executive action on a continuing basis. Thus, strategic issues management does not replace formal planning. Instead, it supplements this process by addressing issues which, due to their nature or the timing of their recognition, do not fit into the regular planning process.

Thus far there have been five studies of environmental scanning and analysis activities in corporations—two of which were replications and extensions. The primary focus of these efforts has been to assess the state-of-the-art of environmental analysis among a variety of organizations.

In 1975 Fahey and King (1977) conducted field interviews with executives in 12

organizations. From their data they developed a taxonomy of environmental scanning models: irregular, regular and continuous. Each model represents a different level of sophistication and complexity. Of the 12 firms in the study, only two used a continuous environmental analysis process. Although executives were intent on improving their capabilities in this area, none had succeeded in integrating their environmental analyses with the strategic planning process. In 1978, Stubbart (1982) conducted a replication of this study on the same 12 corporations. Of these, five firms exhibited no change, three increased the sophistication of their scanning activities, and four had regressed to less systematic analytical systems.

Fahey, King and Narayanan (1981) used the taxonomy of environmental scanning models to extend their research. A sample of 36 'aware professionals' were surveyed and their responses considered in conjunction with the previous field interviews of practitioners. They found scenario writing to be the most widespread analytical method, and a direct relationship between the level of capital intensity and the length of the time horizon for forecasting. However, there was no consensus about how to organize for environmental analysis activities.

There have been two mailed surveys of environmental analysis units in selected *Fortune* 500 firms. Based on data gathered in 1977, Diffenbach (1983) found that larger corporations used a greater variety of techniques for environmental analysis, and executives were more inclined to use the results of analyses than in small firms. However, he found no systematic relationship between organizational size and the perceived usefulness of environmental analyses, the amount of effort spent on analysis, or the time horizon used for scanning. In a survey of 186 firms conducted prior to 1979, Jain (1984) reported substantially different findings. Like Fahey and King (1977), he developed a model for describing different levels of sophistication in environmental scanning activities. It consists of four phases: 'primitive', 'ad hoc', 'reactive', and 'proactive'. Jain provides no commentary on the relationships between his model and that of Fahey and King (1977). However, in accordance with Diffenbach (1983) and Stubbart (1982), he found that analysts have difficulty discerning which parts of the environment to scan, and in establishing the legitimacy of their efforts in the eyes of line executives.

When considered collectively these studies reveal a disparity between the 'ideal' and the 'real'. Academicians and consultants urge the development of formalized and sophisticated environmental analysis as a vehicle for improving strategic management practices. Their implicit assumption seems to be that current organization structures and processes are partly to blame for some recent failures of corporations to sense and respond to pertinent environmental information. Many executives readily subscribe to this notion. In practice, however, firms are experiencing difficulties in implementing and effectively conducting environmental analysis. Of particular concern are problems associated with designing environmental analysis units, positioning them in the context of an organization, and linking them with strategic decision processes. To some extent these problems are similar to those found in research on the implementation of strategic planning systems, and management science and operations research units. Resistance from existing power structures, the quality of executive support, and the capacity of such units to make tangible contributions to important management decisions are problems often accompanying the initial introduction of organizational units of this kind (see Lenz and Lyles, 1985; Lyles and Lenz, 1982; Ewing, 1969; Mintzberg, 1972; Fuerst and Cheney, 1982).

Despite the contributions provided by extant research on environmental analysis units, it affords limited insight into several critically important issues. There is, for example, little or

no specification of contingencies influencing organizational designs and conceptions of environments sufficient for guiding scanning and analysis activities. Previous studies drew no distinction between firms that could reasonably be expected to be very good or deficient at this type of analysis. Due to the methodologies employed there are few insights into the details of alternative administrative structures and their relative strengths and weaknesses. Therefore, the findings reveal overall practices, but mask experiences of particularly capable enterprises that are of greatest interest to executives.

In order to gain a more thorough understanding of these problems and the prospect for using specialized organizational components for environmental analysis, a field study was undertaken on a sample of 'leading-edge' business corporations. Attention centered on the following questions.

1. How are environmental analysis units organized and staffed, and where are they positioned within the hierarchies of corporations?
2. What contingencies are of central importance when deciding on the organization and position of environmental analysis units?
3. What conceptions of the organizational environment are used to guide environmental scanning and analysis activities?
4. What are the advantages and disadvantages associated with various ways of organizing an environmental analysis unit?

METHOD

Sample

There was no attempt to select a random sample of corporations for the study. This procedure was not followed because the investigators were not attempting to contribute to the existing theoretical knowledge base about features of organizations as a general population of social entities. Instead, primary emphasis was placed on investigating corporations that represented the most advanced administrative practice. The purpose of doing so was to gain a better understanding of the benefits and problems experienced by corporations that, on an *a priori* basis, were known for their serious commitment to environmental analysis activities.[1]

A central concern when engaged in sample selection was determining which firms could reasonably be described as 'leading-edge' (i.e. representing the most advanced current practice). Economic performance is too far removed from decision practices to serve as a criterion, and size was not a systematic predictor. In an effort to identify leading-edge companies, individuals were sought who were the most advanced in terms of their thinking and practice in this area. This approach is based on the assumption that leading-edge companies are in fact on the leading edge because of the activities of the directors of their environmental analysis units. A panel of management consultants, academicians, and

[1] The methodology employed in this study is somewhat exploratory and raises a critically important question for the development of theory. Simply stated, can theories of organization ever be more than the best of current practice? If research on environmental analysis units (or other aspects of organizations) never goes beyond the methodology employed, the answer to this question is probably no. In the authors' opinions, extant theories of organization are cast at too general a level for developing hypotheses about such specialized organizational components; therefore, this research program only begins with a field study. Based on the findings it is already clear that discipline-based research on organizational learning, decision-making and political processes can be used to develop propositions that will eclipse current practice. These should serve as guidelines for executives and contribute, in the longer run, to the further development both of theories of organization and theories of management.

Table 1. Gross sales and major lines of business for companies in the sample

Company	Gross sales	Major lines of business
Pipeco	$4.5 B	Gas pipeline, liquid fuels, petrochemical operations, coal, natural gas exploration
Retco	$30.0 B	Mass merchandizing, international trade, consumer financial services
Foodco	$7.8 B	Fast foods
Servco	$7.5 B	Full-line insurance
Chemco	$6.3 B	Diversified chemicals
Consco	$2.1 B	Food and beverages
Telco	$65.8 B	Communications services
Diverco	$26.5 B	Factory automation, electrical products, appliances, defense, nuclear energy
Enerco	$5.2 B	Petroleum drilling and production, gasoline refining, chemicals, coal and synthetic fuels production
Appco	$2.3 B	Major home appliance manufacturing

practitioners was used to identify and evaluate potential candidates for the study. From this pool 10 individuals within multi-billion-dollar corporations were selected as leading practitioners of environmental analysis. One firm was based in Canada, and the remaining firms were in the United States. The sample selection was also constrained by entry, research funding, travel time and a firm's potential interest in the research program. Table 1 provides a summary of the characteristics of the sample.

Design

Field interviews were conducted at corporate headquarters offices with individuals in the ten firms. Where possible, both the director of the environmental analysis unit and analysts were interviewed. Discussions lasted from a minimum of 3 hours to a maximum of 5 hours. A questionnaire which had been pre-tested on a separate sample was used to gather responses during carefully structured interviews. Where pertinent, corporate documents (e.g. strategic planning models, procedures for data analysis, internal reports, and organization charts) and discussions with other corporate staff were used to confirm the accuracy of verbal reports. In order to encourage candid responses, all members of the sample were assured anonymity.

FINDINGS

The organization of environmental analysis units

The overall structural characteristics of the environmental analysis units are summarized in Table 2. The table shows the corporate level staff activity or line function with which each unit was affiliated, the title of the manager responsible for environmental analysis activities

Table 2. Formal and operating structures of environments analysis units

Company (year established)	Formal structure					Operating structure	
	Department affiliation	Manager's title	Manager's time(%)	Full-time equivalent analysts	Analysts' specialization	Internal	External
1. Pipeco (1978)	Corporate planning	Director, sociopolitical planning	100	0	None	Varying numbers of corporate monitors *Ad hoc* task forces	*Ad hoc* seminars by consultants/academicians Limited use of information services
2. Retco (1980)	Corporate public affairs	Director, public affairs planning and research	50	1	None	Limited input from corporate planning	Heavy reliance on information services/ consultant's reports
3. Foodco (1982)	Corporate communications (within marketing)	Director, public policy	50	1	None	Twenty corporate monitors One-time use of 'brainstorming' exercise with key executives	Heavy reliance on information services/ consultant's reports Director participation in national taskforces
4. Servco (1978)	Corporate planning	Director, issues management	100	0	None	Standing 'trend analysis' committee of selected line executives	Limited reliance on information services Director participation in national taskforces
5. Chemco (1977)	Corporate public affairs	Director, corporate social responsibility	100	1/2	None	One hundred and twenty corporate monitors Inputs from: government affairs, marketing research, sales departments	Commissioned consultant reports Heavy reliance on information services *Ad hoc* seminars

6. Consco (1976)	Corporate planning	Vice-president, planning and development	50	1	None	Informal inputs from marketing services	Heavy reliance on one consulting firm Heavy reliance on information services *Ad hoc* seminars
7. Telco (1977)	Corporate planning	District manager, emerging issues	100	4	None	None	None
8. Diverco (1978)*	Government affairs	Manager, government affairs and issues operations	50	1/2	None	Thirty-five corporate monitors Membership on corporate and business level issues committees	Selective use of information services by corporate staff and monitors
9. Enerco (1980)	Corporate planning	Manager, macro-environment	100	6	Social Political Economic Technology Industry Scenario	Joint committee with strategy development group Workshops with line and staff to review scenarios	Selective use of information services by analysts in each area
10. Appco (1967)†	Research and engineering	Director, engineering advanced development	100	1	None	Twenty-five technically sophisticated corporate monitors	Little reliance on information services Commissioned reports Research-for-research agreements

* Originally established in the mid-1960s and extensively restructured in 1978.
† Originated in a technological forecasting unit.

and the approximate percentage of time he/she devoted directly to environmental analysis activities. Also shown are the number of FTE (full-time equivalent) environmental analysts in the unit and the degree of specialization of their activities. In addition to the formal structure of these units are salient aspects of their operating structure. Operating structure refers to the network of working relationships that transcend the formal structure and memberships of the environmental analysis unit. The 'internal' operating structure is comprised of organizational members. In contrast the 'external' operating structure is made up of individuals and organizations (e.g. consulting firms) that provide commissioned reports, advice, information services, periodic reports and digests on a subscription or contractual basis. Operating structures, both internal and external, were ways in which managers of environmental analysis units sought to extend their unit's intelligence-gathering capability and enhance analytical expertise.[2]

When considering both formal and operating structures, there is considerable variety in the designs of environmental analysis units. There is no evidence of contingent relationships among such factors as corporate strategy, overall corporate structure, or industry competitive conditions. Instead, a variety of positions within organizational hierarchies serves as the primary locus of environmental intelligence-gathering and interpretation. These units range from newly formed activities to corporate functions that are almost 20 years old.

Directors of environmental analysis units bear a diverse array of titles. For 40 per cent of these individuals environmental analysis is only a part-time job. Other functions include managing public affairs, corporate research, strategic planning, overseeing corporate giving programs, directing social responsibility activities, or product engineering. In short, managing the environmental analysis function is a responsibility that often must be dealt with among a series of other job demands.

Two organizations used no environmental analysts at all. This meant that the manager of the environmental analysis function was also the analyst (i.e. a 'one-person show'). In general, there was little specialization of environmental scanning and analysis activities within these units. Only two corporations had more than one full-time equivalent analyst on staff, and among these firms there was no consistency with respect to specialization. Telco had four corporate-level analysts, but none were assigned specific scanning and analysis activities. Instead, projects were self-defined and based largely on an individual's interest in a topic or issue. Six analysts comprised a macro-environmental analysis unit at Enerco. Except for one, they were specialized in accordance with relatively conventional conceptions of the sectors of organizational environments (i.e. economic, technological, social and political).

With respect to the 'internal' operating structures of environmental analysis units, 50 percent of the organizations relied on corporate monitors. These were organization members occupying a variety of jobs who typically scanned assigned publications (e.g. *Time*, *Scientific American*) with the purpose of identifying emerging trends. In all but one case, Appco, monitors were usually non-technical personnel, many of whom volunteered to take part in the scanning effort. When monitors noted something of potential interest they would typically prepare an abstract of the article and forward it to the environmental analysis unit. In addition to corporate monitors, an array of informal mechanisms were used to enhance intelligence-gathering. Information-sharing among corporate-level staff

[2] During the study it was learned that an entire industry has formed whose 'products' are information on certain aspects of organizational environments, and techniques for analyzing information and introducing it into strategic decision processes.

departments, *ad hoc* task forces, and standing committee memberships were also employed, but with little consistency and varied results across the sample.

The corporations visited spent hundreds of thousands of dollars on information services and consultants' reports. The former consisted of subscriptions to organizations providing data on one or more aspect of the organizational environment (e.g. economic, social trends). Consultants' reports typically dealt with a specific topic and an accompanying interpretation for the subscriber. Reliance on these inputs varied greatly among firms in the sample. One organization, Telco, considered such information to be useless for its purposes and, as a consequence, did not subscribe to any services or reports. Other analysis units depended heavily on such sources and developed in-house information systems for storing and referencing a diverse array of environmental trends and conditions. In addition to consulting services, *ad hoc* seminars and commissioned task force studies, information-gathering via professional networks was also used. Overall, however, there was no pattern in the external operating structures of the environmental analysis units that was systematically related to other aspects of organization or the director's influence in decision-making processes.

Alternative organizational roles

When the gross structural features of each environmental analysis unit were evaluated independent of their organizational context there was little evidence of regularities or distinct patterns. However, when the data on structural features were considered in the midst of information pertaining to the functions of these units and their linkages with strategic planning and executive decision-making, three broad roles emerged. It would be misleading to refer to these roles as models or archetypes, for there was no evidence that a clearly conceived range of ideal types of alternatives for organizing environmental analysis activities guided these designs. Instead, they should be considered as administrative structures toward which firms had gravitated. They constitute a taxonomy of emergent organizational roles that derive from the functions performed by these units within the broader context of decision-making. Table 3 contains an outline of essential characteristics of the environmental analysis units cast in three different roles. For purposes of discussion, each bears a label intended to capture its basic character.

Public policy role

Five corporations exhibited this form of organization. The environmental analysis unit was assigned the job of scanning, relating and interpreting relevant environmental information. Primary emphasis was placed on the early detection of emerging issues that were suspected to be harbingers of broad-scale shifts in societal attitudes, laws, social norms and roles, etc. Of particular interest were public policy issues likely to affect the corporation as a whole (e.g. urban decay, women's rights). In the terminology of extant theory, the general environment was the principal focus of analysis. Task environment phenomena were typically analyzed by other organizational units, such as a strategic planning department.[3]

Within a unit of this kind, environmental assessments are not guided by strategic issues of current importance to senior-level executives. Instead, environmental analysis usually consists of nearly random and highly intuitive search processes. Much time is spent on

[3] The terms 'task' and 'general' environment are used as labels for those aspects of environment that were analysed by environmental analysis units. Respondents did not use these terms nor, for fear of biasing responses, did the investigators. The purpose of using such terminology is to draw connections between extant theories and administrative practice. Those unfamiliar with these concepts should see Thompson (1967) and Bourgeois (1980).

Table 3. Organizational roles of environmental analysis units

Characteristics	Organizational roles		
	Policy-oriented	Strategic planning integrated	Function-oriented
Scope of environmental analysis	General environment	General environment	Task environment
		Task environment	Specific functional area concerns Product development Public affairs Public relations, etc.
Focus of analysis	Broad societal trends	Economic and legislative conditions	Per functional area, as: Products use and technology Legal structure
		Business-level strategic issues	Public opinion
Locus of analysis and interpretation	Board subcommittee	Corporate management	Per functional area, as: Product line managers
	Corporate management	Group management	Functional department managers Legal, public policy staff
		Business management	
Use of environmental analyses	Condition thinking of CEO and board	Statements on public policy issues	Per functional area, as: Product design and materials section
	Help CEO and board define relevant environment	Multi-level strategy formulation	Public policy lobbying/ compliance Public relations programs
	Public policy formulation		
Link with strategic decision processes	No linkage (or)	Integral part of the strategic planning process	Per functional area, as: Product development system
	Memberships on inter-departmental committees		Reports to function managers & planning staff Legal guidelines, policies
Primary users of environmental information	Board	Corporate and group line executives	Per functional area, as: Functional and business line executives
	Chief executive and operating officers	Strategic planning staff	Product development staff, teams Legal staff

seeking out discrete bits of information and fashioning these into trends. Analysts functioning in this role seek to add value by identifying emerging trends that are not revealed by conventional analytical techniques (e.g. competitive analysis), and bringing these to the attention of line executives and board members.

Most units organized in this way had direct access to the top-level power structure of the corporation. Directors were frequently involved in the formulation of corporate policies on public issues of national importance. Their primary function was twofold. Most had been charged with preventing the CEO from being surprised, or 'blindsided', by an emerging issue. Of secondary importance was stimulating managerial thinking via unconventional perspectives with the intent of creating awareness among executives of broad-scale environmental shifts.

Linkages with the strategic planning process were tenuous and in some cases virtually nonexistent. Thus, there were few opportunities to have an explicit impact on key strategic decisions. In most companies using this form of organization strategic planning is a separate function (see Appendix 1). The principal opportunities to affect business strategy decisions were by way of memberships on multi-departmental committees and occasions on which top management's thinking could be influenced by presentations or discussions. The locus of analysis and interpretation of long-term environmental intelligence is at the corporate staff and board subcommittee levels.

Strategic planning integrated role

Environmental analysis units displaying this type of administrative structure played an integral role in the corporate-wide strategic planning process. Analysis focused on both general and task levels of the environment. A variety of techniques was used to help ensure multi-level integration of environmental issues with strategic decision processes. The environmental analysis unit was typically required to prepare an environmental forecast for the entire corporation. This forecast, and its attendant assumptions, were distributed to line and/or staff executives at the beginning of the planning cycle. Subsequently, there was interaction at key decision points in the strategy formulation phase. Appendix 2 contains a description of one such process.

Unlike the public policy role, environmental analysis units in the strategic planning integrated approach were relatively tightly linked to strategic decision-making. Their function was not only to condition top management's thinking about broad issues, but also to affect decisions on the most basic elements of business-level strategies. Considerable emphasis was placed on identifying corporate- and business-level strategic issues. These issues served as a central focus of planning and were used to evaluate the performance of line executives during subsequent strategy review sessions. A working list of critical environmental issues served as a linking pin between corporate and business strategic plans.

Function-oriented role

In one sense the function-oriented role is at the opposite end of the continuum from the public policy role. The latter is concerned with evaluating the general environment for emerging societal trends. The former centers attention on only those aspects of the environment that impinge directly on the activities of the function within the organization as a whole (e.g. product development, public relations).

Environmental analysis units employed in this role can be housed in functional departments at either the corporate or division level of an organization. Their scanning and analysis activities are confined to factors related to current tasks and future concerns of the

functional department in question. Therefore, the relevant environment consists of factors thought to affect the activities and responsibilities of the department. The corporation using this type of environmental analysis unit housed it in the product development group. Its analyses were typically confined to environmental factors affecting product functions, features and usage. Thus, available raw materials, the relevant spectrum of production technologies and changing consumer tastes and lifestyles were of central importance. Technically sophisticated corporate monitors (e.g. Ph.D.s in research activities), research-for-research agreements with laboratories and universities, and commissioned task forces of consultants and academicians were typically used to facilitate environmental analyses. Scanning and analysis are issue-driven; that is, they are carefully targeted with the intent of providing answers to specific questions or issues.

Managers of environmental analysis units employed in this role do not attempt to condition top management's thinking about broad-scale societal change. Neither are there attempts to provide a general forecast of the environment for the entire corporation. Instead, the function-oriented unit is linked to the strategic planning process via its normal departmental reporting relationships. Thus the benefits of its activities are reflected in improved outputs of the function (e.g. product innovation). In this way it does not have to compete with other organizational units for management's attention during strategic planning and decision processes.

Design contingencies

As alluded to previously, no contingent relationships were noted between the structure of an environmental analysis unit and such factors as size, strategy and organization structure. The same is true when considering the environmental analysis unit in the broader context of other administrative processes. Among diversified corporations, for example, the range of structures included everything from a single director/analyst serving a board subcommittee to an integrated staff group of six persons whose sole task is environmental analysis. In functionally structured firms there were also no indications of contingent relationships between conventionally prominent theoretical variables.

The most significant design contingencies (which were encountered repeatedly) are the preferences of one or more top-level executives. Virtually every environmental analysis unit was sponsored, or 'owned', by at least one top-level executive officer in the organization. Most of these units were recent additions to their organizations. They had few constituencies other than their sponsoring executive—from whom they marshalled necessary support to survive. As a consequence of these circumstances the structure of a unit and its role and functions in an organization were largely defined by the sponsoring executive. This individual was the principal market served.

In general, environmental analysis units added value via interpretation, not data collection. Effectiveness hinged on the capacity of these units to discern the significance of environmental trends and conditions for the corporation as a whole and for its individual businesses, products and services. Prior to the conclusion of the field study, three of the 10 environmental analysis units surveyed were, essentially, disbanded. Their functions were subsequently distributed among other organizational subunits.

Conceptions of environments

During on-site interviews each respondent was asked whether efforts at environmental analysis are guided by a shared conception of their organization's environment. A series of questions were used to explore beliefs and assumptions regarding environmental structure,

scope and dynamics. Responses to these questions were vague. Many of the executives indicated that it was a question they had not been asked before, despite the fact that they were engaged in environmental analysis on an almost daily basis. Only two firms revealed some attempt to systematically structure thinking about their environments. One firm, Consco, is a consumer products producer that developed an empirically based proprietary model composed of variables statistically related to the level of demand for current product lines (e.g. disposable personal income). The other firm, Enerco, specialized its analysts' scanning activities in accordance with frequently used sectors of organizational environments (i.e. economic, technological, social, political). Analysts assigned to these sectors, however, had no coherent notion of how their portions of the environment were structured, or what caused them to change. Despite such efforts, neither of these two firms laid claim to a unified conception of their environment sufficient for guiding a systematic and comprehensive environmental analysis. Responses from executives at the remaining eight firms were even less specific. Answers usually consisted of oblique references to such factors as demographics, economics and lifestyles that were interspersed by descriptions of analytical techniques. Although each executive was convinced of the need to analyze the environment, there was no agreement of how to organize and focus such an analysis.

Table 4. Advantages and disadvantages associated with alternative roles for environmental analysis units

Role	Advantages	Disadvantages
Public policy role	Direct access to power structure	Establishing legitimacy
	New perspectives for top executive group	No direct planning linkage
	Stimulates long-term strategic thinking	Survival depends on 'sponsoring' executive
	Access to the 'corporate vision'	Must compete with strategic planners for top management's attention
Integrated planning role	Direct access to strategic planning process	Pressure to become short-range in analyses
	Can integrate corporate and business level environmental issues	Need to conform to planning procedures and formats
	Opportunity to directly influence corporate strategy	Tension between line and staff viewpoints
Function oriented role	Environment is more easily defined	Restricted environmental focus
	Direct input to key strategy decisions	Limited prospect for unconventional thinking
	No competition with planning for management attention	Short-term orientation
	Close line-staff interaction	Requires clear and stable concept of strategy

Advantages and disadvantages of each approach to environmental analysis

The three roles of environmental analysis units show different points at which a balance has been struck between the related tasks of sensing and acting on environmental intelligence. As a consequence it is possible to comment on their relative effectiveness in fulfilling these necessary functions.

The public policy role for an environmental analysis unit is an effective arrangement for channelling unconventional thinking into discussions and decisions occurring among senior-level executives. Since much of the information flowing into the environmental analysis unit originates outside the organization and bypasses standard information channels, it arrives unsanitized and in unanticipated formats. Thus, one of its strengths is to stimulate ideas and foster novel perspectives among persons in positions of power. The counterpoints to these advantages, however, are several. First, environmental units of this sort do not fit standard ideas about legitimate corporate functions. As a consequence it has been espeically difficult for managers of such units to gain respectability for their work and a defensible position within organizational power grids. Problems with establishing legitimacy are exacerbated by limited access to the strategic planning process. Planners typically view inputs from analysts concerning the general environment as 'soft science' and much too long-term in nature to be of value for business planning decisions. In the absence of this vital connection, environmental analysts often find themselves competing with planners for the attention of top executives. Thus, it has proved difficult for environmental analysts operating in this role to have an influence on substantive aspects of strategic decisions. Instead, their principal influence has been limited to shaping corporate responses to emerging public policy issues on a case-by-case basis.

Environmental analysis units whose activities are integrated into strategic planning processes have a greater chance to influence directly the formulation of strategy. Due to the fact that environmental analysis activities in strategic planning include both general and task-level phenomena, analysts have a somewhat easier time identifying aspects of organizational environments that are of direct importance to line executives and planners. This eases the burden of demonstrating bottom-line results.

Despite the apparent reasonableness of integrating the environmental analysis unit's activities into the planning process, there remain some problems. First, in order to gain acceptance, outputs from the unit must be made to at least generally conform to the planning format. This can reduce the unconventional character of analyses that might be otherwise helpful to planners. For example, the need to shorten time horizons and quantify information which may be better left in a qualitative form can diminish the effectiveness of environmental analyses. This problem is particularly detrimental when attempting to spur innovation in response to qualitative information about lifestyles, values or emerging legislation. There appears to be a delicate tension to be maintained between time horizons of line and staff viewpoints. It can be lost if unconventional thinking is filtered out by standardized planning formats, definitions, data needs and analytical procedures.

The function-oriented role of organization for environmental analysis has several advantages. First, the environment is more clearly defined than in the other approaches. Therefore it is easier to carefully target analyses on aspects of the environment which impinge directly on the activities and interests of a department's function. The benefits of such specificity are revealed in greater acceptance by line executives of environmental analysis activities and results. When environmental information can be related directly to the institutionalized strategies pursued by line managers, the legitimacy and credibility of the environmental analysis function is greatly enhanced. This encourages close line–staff

relationships and avoids the problem of having to compete with strategic planners for top management's attention. Further, there are numerous opportunities to influence some of the more fundamental elements of business-level strategies.

A few disadvantages also attend this form of organization. There is the ever-present danger that environmental analysis will be focused so narrowly on incremental adjustments to existing departmental orientations that significant change will be missed. Structures of this form can screen out unconventional views which could afford insight into revolutionary environmental changes likely to affect current activities. In order for this structure to work there must be a clear concept of strategy that is sufficiently stable to warrant investments in personnel and developing external linkages (e.g. research-for-research agreements) necessary for information-gathering. Unless such conditions prevail this approach may not prove to be very effective.

DISCUSSION

The findings are generally consistent with conclusions of previous research concerning the problems of conducting environmental scanning and analysis. On specific issues there are, however, points of both commonality and contrast. Like Fahey and King (1977), the results indicate no association between capital intensity and the design and functioning of environmental analysis units. Nor, in accordance with Diffenbach (1983), does it appear that size or the length of planning horizons were systematically related to administrative structures for scanning and analysis. Unlike the Fahey and King (1977) study, the findings did not reveal the existence of 'irregular', 'regular' and 'continuous' scanning models. Each firm in the study was using a continuous process of environmental intelligence-gathering similar to the 'proactive' phase described by Jain (1984) and the 'discovery' mode hypothesized by Daft and Weick (1984). Neither Fahey and King nor Jain stratified their samples in order to focus attention on what we have termed leading-edge corporations. Instead, they sought to assess the state-of-the-art of environmental scanning among a general population of organizations. Therefore, the sample used in this study may not have been sufficiently heterogeneous to include firms using other scanning modes.

It is apparent that there is still considerable uncertainty about viable structures for environmental analysis units and significant administrative problems accompanying their use. The latter is made clear by the fact that environmental analysis units in three of the firms in the study—Foodco, Telco and Consco—were essentially disbanded after completion of the research. Subsequent interviews provided some insight into why this occurred.

There was no single factor that accounted for the demise of the three environmental analysis units. At Foodco a highly structured system introduced by a director hired from outside the corporation was never accepted by successful entrepreneurial-style line managers. Telco's unit was nominally disbanded because of a corporate reorganization. However, there was also an uneasiness between members of the environmental analysis group—all of whom were from outside the corporation and headed by an academician—and conservative executives used to a numbers-oriented planning system. The Consco unit functioned for 8 years under the administration of one CEO. When this sponsoring executive left, following the company's acquisition, the environmental analysis unit was disbanded. Standing alone these instances are insufficient to draw hard-and-fast conclusions. It seems, however, that the generic problems of implementing a novel

organizational structure are exacerbated by hiring an outside director who is unfamiliar with the culture and management style of an organization.

Respondents disagreed about whether an insider or outsider is more likely to succeed as head of an environmental analysis unit. Among directors of units that were still operating in the other seven corporations there were both insiders and outsiders. There was also considerable diversity among their educational backgrounds, career paths, knowledge and experiences. As Bower (1970) noted when studying the resource allocation process, credibility is necessary when seeking to affect key strategy decisions. Insiders derived credibility from previous accomplishments and possessed some power in their organization. Outsiders saw the need to establish credibility by adding value in decision processes and to gain influence by developing a network of managerial alliances. There was some evidence that credibility is a necessary but not sufficient condition for survival. It also required the support and power of the sponsoring executive. The necessity of this power source for survival may stem from ambiguity about the appropriate role of environmental analysis units and the difficulties encountered when trying to add value in strategy formulation processes.

These results pose serious questions about the long-term viability of some free-standing environmental analysis units as they are presently employed. The public policy role appears to be particularly vulnerable amidst the vagaries and demands of organizational life. Recall that two of the three disbanded units functioned in this role, and were by design the most loosely linked to strategic planning processes. The integrated strategic planning form is more promising. As now practiced, this type of structure is generally consistent with administrative arrangements recommended by Porter (1980), Wilson (1982), and Ansoff (1980). The emphasis placed on strategic issue identification in one company, in particular, closely approximates Ansoff's conception of 'strategic issues management'. This structure is quite new, however, and must pass the test of time.

It is worth noting that the oldest continuing environmental analysis unit in the sample was at Appco. The role of this unit was limited. It directly focused on maintaining the technological leadership of a company whose staff described it as a 'manufacturing organization'. This mode of operation is consistent with some notions of outstanding management practice (see Peters and Waterman, 1982). Whether it is a viable mechanism for long-term strategic change and adaptation is unclear. If, as some (e.g. Glover, 1966) suggest, environmental change is evolutionary, not revolutionary, this may well prove to be an effective structure for sensing and acting on environmental intelligence.

Conventional structural contingencies growing out of general theories of organization did not appear to have a direct or significant effect on the design of environmental analysis units. This may stem from the fact that organizations in the sample were extremely large and complex. With a multinational enterprise, for example, what are the relevant environmental contingencies (Lawrence and Lorsch, 1967), resource dependencies (Pfeffer and Salancik, 1978), or key transactions (Williamson, 1975) that should influence the design of an environmental analysis unit?

Field interviews revealed no evidence that environmental contingencies, resource dependencies, or the effectiveness and efficiency of transactions were considered, or even explicitly recognized, during the designing of environmental analysis units. Instead, the units were created to alter and supplement existing administrative structures in order to make them better serve the sponsoring executive and other managers, by enhancing information flows and decision-making about organizational environments. The central design contingencies were the preferences and power of the sponsoring executive(s). As

Bobbitt and Ford (1980) note: organizational designs reflect decision-maker choice. Sponsoring executives in the sampled firms were seeking to change their administrative context in order to enhance intelligence-gathering and improve the quality of strategic decisions. This process is not unlike that described by Chandler (1962) and Isenberg (1984) in which organization structures are manipulated to solve certain administrative problems.

The fact that members of environmental analysis units had no coherent concept of the environment to guide their scanning and analysis activities may be surprising to some. This finding is particularly disconcerting in view of the assumption that integrated strategic planning is assumed to include a comprehensive environmental analysis prior to the formulation of a strategy. However, as Lenz and Engledow (1984) found, extant theories of organization and much corporate planning literature afford little in the way of concepts that are sufficient for guiding practitioners in truly comprehensive environmental analyses. Frameworks by Porter (1980) and Freeman (1984) are helpful under certain conditions in and around the task environment level. However, broader conceptions of organizational environments concerning the general environment and its functional interdependencies with task-level phenomena are virtually nonexistent. Analysts attempting to determine the competitive implications of social and political events were acutely aware of this problem. The more wide-scale adoption of stakeholders analysis (Freeman, 1984), which does not employ the concept of hierarchy in describing environments of organizations, may solve these analytical problems; but it lacks the broad empirical base of industrial organization research (see Scherer, 1970). As a consequence there are few proven concepts and empirically grounded heuristics or generalizations for predicting environmental change. Thus, for now, many analysts are in the unenviable position of studying a phenomenon they have difficulty defining, describing or relating, in a systematic way, to their organizations.

CONCLUSIONS

The purpose of this study was to further understanding about the viability of specialized scanning units for introducing environmental information into strategic decision processes. The findings show that it is still a time of experimentation and that some of these units have failed. There is evidence that certain administrative structures are more promising than others; but much remains to be done before definitive answers to several problems are available.

With respect to other matters, one salient theoretical issue deserves immediate attention. There is a need for further progress in developing conceptual frameworks that make what is often referred to as the 'general' environment tractable for analysis. The paucity of useful frameworks for structuring thought and analysis at this broad level leaves even otherwise able environmental analysts groping. Effective analysis requires some means for better understanding how, for example, social and political change occur. Further, there is a need for theories that establish connections between changes in these aspects of the environment and the technological and economic characteristics of organizations. Industry analysis is helpful at the task environment level. However, it leaves unaddressed linkages with these broader contextual elements from which fundamental change is hypothesized to originate.

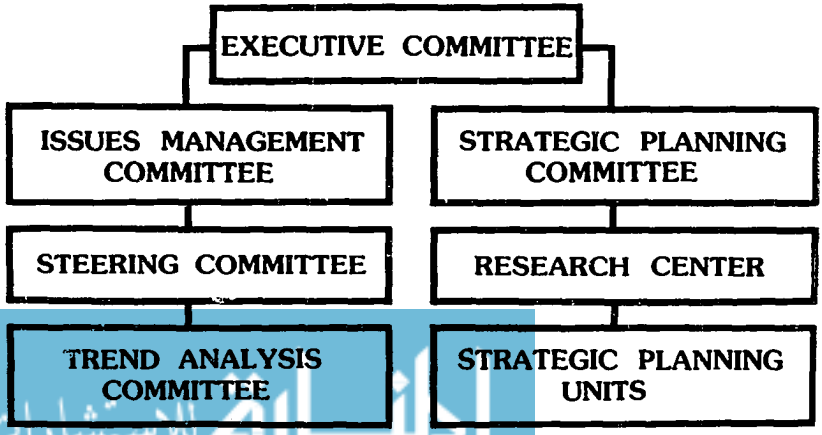
For practitioners there is one clear implication: the necessity of continuing to experiment with alternative structures and processes for enhancing environmental intelligence-gathering and self-reflective strategic decision-making. The use of a centralized environmental analysis unit is, to some, a mechanism *un*likely to facilitate critical and pertinent thinking

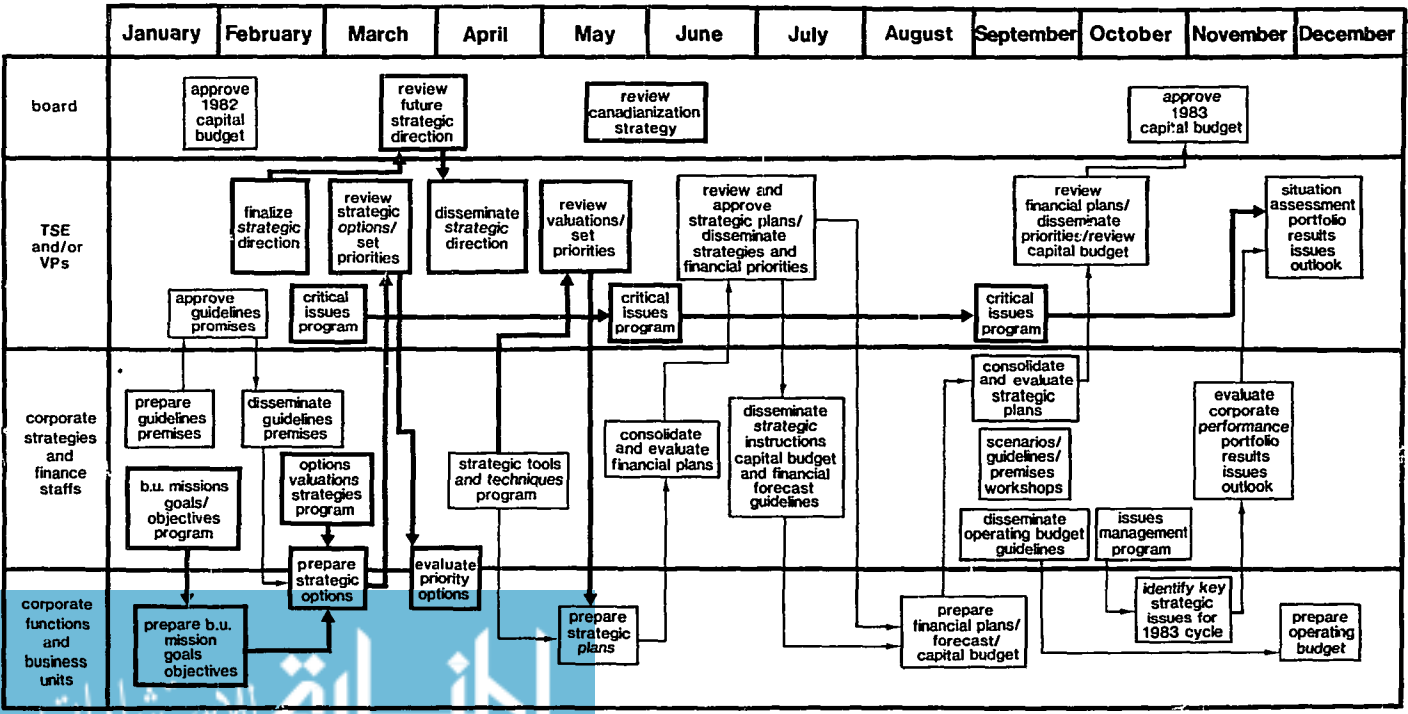
about the organizational environment. Such persons (e.g. Argyris, 1982) advocate, instead, efforts to foster trust and openness in decision processes. This advice, however, begs the questions of which aspects of environment to analyze and what kinds of structures and processes should be used and joined in ways that can reduce the incidence of corporate blind-sidings so common during recent years. One way to improve strategic management practice is to continue to extend knowledge of how to design and manage organizational structures and processes that facilitate strategic adaptation. This requires a fuller understanding of the related problems of sensing as well as acting on essential information. As Hambrick (1982) notes, firms often sense pertinent intelligence but fail to act on it. Specialized environmental analysis units may have a contribution to make in resolving the sensing–action problem. But for organizational adaptation to be genuinely effective, other mechanisms will be needed as well.

ACKNOWLEDGEMENTS

The authors would like to gratefully acknowledge financial support from the Strategy Research Center at Columbia University, the Graduate School of Business of Indiana University and to thank executives participating in this study for their generosity and cooperation.

APPENDIX 1





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