The Art of Scanning the Environment

by Chun Wei Choo

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Environmental scanning is the acquisition and use of information about events, trends and relationships in an organization's external environment, the knowledge of which would assist management in planning the organization's future course of action. Organizations scan the environment in order to understand external forces of change so that they may develop effective responses that secure or improve their position in the future. To the extent that an organization's ability to adapt to its outside environment depends on knowing and interpreting the external changes that are taking place, environmental scanning constitutes a primary mode of organizational learning.

Environmental scanning is complementary to but distinct from information gathering activities such as competitor intelligence, competitive intelligence and business intelligence.

- The objective of *competitor intelligence*, Michael Porter writes, is "to develop a profile of the nature and success of the likely strategy changes each competitor might make, each competitor's probable response to the range of feasible strategic moves other firms could initiate and each competitor's probable reaction to the array of industry changes and broader environmental shifts that might occur." Competitor intelligence is therefore focused on the actions, behaviors and options of one or more existing or potential competitors.
- *Competitive intelligence* refers to the analysis of competitors as well as competitive conditions in particular industries or regions. The Society of Competitive Intelligence Professionals defines competitive intelligence as "the process of monitoring the competitive environment" that "enables senior managers in companies of all sizes to make informed decisions about everything from marketing, R&D and investing tactics to long-term business strategies."
- *Business intelligence* has a similarly broad scope and has been described by Benjamin Gilad as "the activity of monitoring the environment external to the firm for information that is relevant for the decision-making process in the company." In practice, business intelligence often concentrates on current competitors as in competitive intelligence, but may also include areas such as analysis of potential acquisitions and mergers and risk assessments for particular countries.
- *Environmental scanning* casts an even wider net and analyzes information about every sector of the external environment that can help management to plan for the organization's future. Scanning covers not only competitors, suppliers and customers, but also includes technology, economic conditions, political and regulatory environment, and social and demographic trends.

Research on Environmental Scanning

What may be gleaned from the research that has examined environmental scanning? Figure 1 presents an information-seeking framework that summarizes important findings. These findings fall into the following categories:

- Situational dimensions:
- Organizational strategy and scanning strategy
- Information needs, seeking and use
- Managerial traits

Situational dimensions: the effect of perceived environmental uncertainty. Managers who perceive the environment to be more uncertain will tend to scan more. Several studies have found that perceived environmental uncertainty is a good predictor of the amount and intensity of scanning. Perceived environmental uncertainty is a function of the perceived complexity (number of factors, opacity of causal relationships) and perceived dynamism (rate of change) of the external environment. Furthermore, if the perceived importance of the environment is included in a measure of perceived strategic uncertainty, the association between environmental uncertainty and scanning is even stronger.

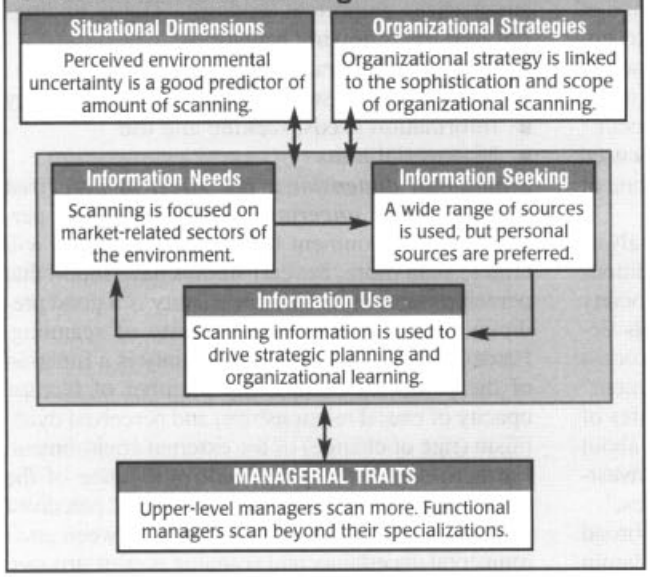
Organizational strategy and scanning strategy. An organization's overall business strategy is related to the sophistication, scope and intensity of its environmental scanning. An organization that follows a particular strategy, such as a product differentiation, cost leadership or focus strategy, or adopts a certain strategic stance, such as prospector, analyzer or defender, is likely to operate a scanning mode that provides the required information and information processing capabilities to pursue its desired strategy. There is also tentative evidence to suggest that a balanced organizational culture is likely to encourage managers to scan more frequently and take on a more adaptive outlook.

Information needs, seeking and use. Business organizations focus their scanning on market-related sectors of the environment. Information about customers, competitors and suppliers is seen to be the most important. In industries where other sectors of the environment, such as technology or demographics, are perceived to be having a large impact, these sectors would also be considered high scanning priorities.

Although managers scan with a wide range of sources, they prefer live information from personal sources when seeking information about market-related environmental sectors that are highly fluid and equivocal. There is some evidence to indicate that source selection for scanning is influenced by the perceived quality of the source and not just its perceived accessibility.

Information derived from environmental scanning is increasingly being used to drive the strategic planning process in business and public-sector organizations. Research suggests that environmental scanning is linked with improved organizational performance. However, the practice of scanning by itself is insufficient to assure performance-scanning must be integrated with strategy, and scanning information must be effectively employed in the planning process. An important effect of scanning is to increase and enhance communication and discussion about future-oriented issues by people in the organization. Coupled with the availability of information on external change, scanning can promote generative organizational learning.

Figure 1. Summary of Research on Environmental Scanning



Managerial traits. The effect of a manager's job-related and cognitive traits on scanning is an area in need of further research. There is tentative evidence to suggest that managers scan widely, covering not just their functional specialties but also other areas, and that upper-level managers scan more and more broadly than lower-level managers do.

Modes of Environmental Scanning

Scanning is not a monolithic activity. Environmental scanning includes both *looking at* information (viewing) and *looking for* information (searching). Research in organization science suggests that it might be helpful to distinguish between four modes of organizational scanning: undirected viewing, conditioned viewing, informal search and formal search.

In *undirected viewing*, the individual is exposed to information with no specific informational need in mind. The goal is to scan broadly in order to detect signals of change early. Many and varied sources of information are used, and large amounts of information are screened. The granularity of information is coarse, but large chunks of information are quickly dropped from attention. As a result of undirected viewing, the individual becomes sensitive to selected areas or issues.

In *conditioned viewing*, the individual directs viewing to information about selected topics or to certain types of information. The goal is to evaluate the significance of the information encountered in order to assess the general nature of the impact on the organization. The individual wishes to do this assessment in a cost-effective manner, without having to dedicate substantial time and effort in a formal search. If the impact is assessed to be sufficiently significant, the scanning mode changes from scanning to searching.

During *informal search*, the individual actively looks for information to deepen the knowledge and understanding of a specific issue. It is informal in that it involves a relatively limited and unstructured effort. The goal is to gather information to elaborate an issue so as to determine the need for action by the organization. If a need for a decision or response is perceived, the individual dedicates more time and resources to the search.

During *formal search*, the individual makes a deliberate or planned effort to obtain specific information or information about a specific issue. Search is formal because it is structured according to some pre-established procedure or methodology. The granularity of information is fine, as search is relatively focused to find detailed information. The goal is to systematically retrieve information relevant to an issue in order to provide a basis for developing a decision or course of action. Formal searches could be a part of competitor intelligence gathering, patents searching, market analysis or issues management among other activities. Formal searches prefer information from sources that are perceived

Table 1. Modes of Scanning

Scanning Modes	Information Need	Information Use	Amount of Targeted Effort	Number of Sources	Tactics
Undirected Viewing	General areas of interest; specific need to be revealed	Serendipitous discovery **"Sensing"**	Minimal	Many	· Scan broadly a diversity of sources, taking advantage of what's easily accessible · **"Touring"**
Conditioned Viewing	Able to recognize topics of interest	Increase understanding **"Sensemaking"**	Low	Few	· Browse in pre-selected sources on pre-specified topics of interest · **"Tracking"**
Informal Search	Able to formulate queries	Increase knowledge within narrow limits **"Learning"**	Medium	Few	· Search is focused on an issue or event, but a good-enough search is satisfactory · **"Satisficing"**
Formal Search	Able to specify targets	Formal use of information for planning, acting **"Deciding"**	High	Many	· Systematic gathering of information on a target, following some method or procedure · **"Retrieving"**

to be knowledgeable or from information services that make efforts to ensure data quality and accuracy. The four modes of scanning are compared in Table 1.

In order to be effective, environmental scanning needs to engage all four modes of viewing and searching. Undirected viewing helps the organization to scan broadly and develop peripheral vision so that it can see and think "outside the box." Conditioned viewing tracks trends and gives the organization early warning about emerging issues. Informal search draws a profile of an issue or development, allowing the organization to identify its main features and assess its potential impact. Formal search systematically gathers all relevant information about an issue to enable intelligent decision making.

Figure 2 shows how the four modes of scanning are supported by a continuum of online information gathering and communication methods that range from

- information characterized by novelty and variety to information characterized by accuracy and focus;
- secondary sources to primary sources;
- many-to-many communications (newsgroups, mailing lists) to one-to-one communications (e-mail,telephone, face-to-face meeting); and
- the chaotic, informal World Wide Web to the structured, formal on-line databases.

Learning from Best Practices

Surveys of effective scanning practices in organizations appear to converge on a set of common best-practice principles.

Plan and manage scanning as a strategic activity. As an engine of organizational learning, scanning should be managed as a strategic activity. In many ways, the scanning function is like a research and development program, where the investment is for the longer term, but the payoff may be spectacular. Like R&D, scanning needs to be given a critical mass of talent and resources in order for it to take off, and it needs time to develop its knowledge and expertise. Leonard Fuld suggests that successful programs take 3-5 years to mature: his study found that the most effective scanning departments were at least five years old or were run by executives with tenures of five or more years.

Implement scanning as a formal system. A formal scanning system is one that is planned, sustained and coordinated. Planning ensures that information gathering is based on the organization's goals and critical information needs. Continuous monitoring enables the organization to detect deviations from the norm and sense early warning signals. Sustained monitoring also allows the system to grow its information networks and build up its knowledge base. Coordination minimizes duplication and maximizes the scope and efficiency of information gathering.

Partner with domain experts and IT specialists in designing the scanning system. Effective scanning requires the partnership of three groups of knowledge workers in an organization:

- domain experts who have deep knowledge about the business;
- information experts who organize information into useable and useful resources; and
- IT experts who build the technical infrastructure to support information management.

Domain experts transform information into intelligence that can guide action and decision making. They are not just consumers of the end products of scanning but active participants in the collection and analysis of information. Information specialists add value to information in various ways to signal its significance and enhance its accessibility and utility. IT specialists implement systems that accelerate and simplify the movement and sharing of information.

Figure 2. Modes of Scanning (2)

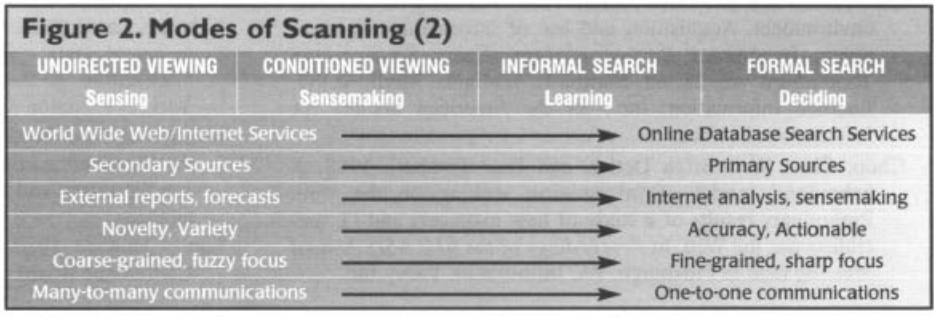
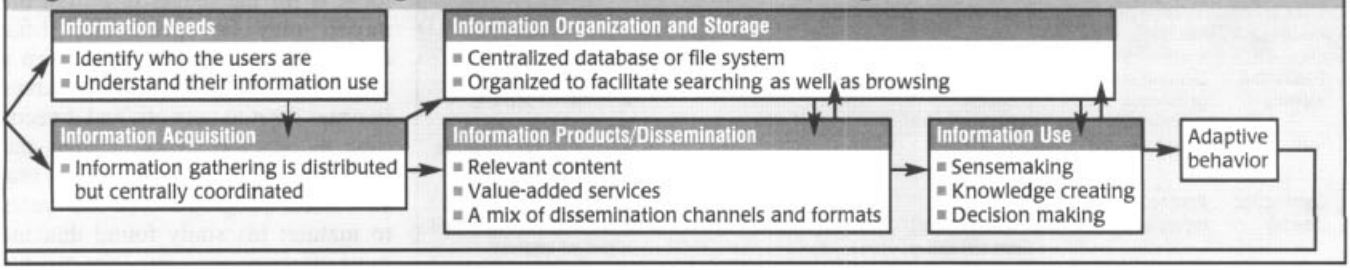


Figure 3. Information Management in Environmental Scanning



Manage information as the core of the scanning function. As shown in Figure 3, information management is a network of six interrelated processes: identifying information needs, acquiring information, organizing and storing information, developing information products or services, disseminating information and using information.

In identifying *information needs*, key groups of information users are clearly identified and the situations in which they will use the scanning information carefully understood. *Information acquisition* is a widely distributed organizational activity, in which virtually everyone participates. At the same time, the information collection network is coordinated, usually at a single locus, to properly manage issues relating to coverage, redundancy and economies of scale and specialization.

Information organization and storage is accomplished using a central database or repository where information is structured to facilitate both searching (retrieving information) and browsing (connecting information). *Information products* should be "relevant" not only in the sense of being on topic, but also "right" in their focus, orientation, format and other value-added attributes. Products could exploit a mix of dissemination channels, including face-to-face briefings, workshops, written reports and special exhibits.

Information use in organizations takes place in three linked arenas: sensemaking (what do the external signals mean?), knowledge-creating (what knowledge do we need and how can we develop it?), and decision-making (what course of action is best for the organization?). Information from scanning is a vital resource in all three arenas.

What these best practices suggest is that environmental scanning has to balance the tensions between control and creativity, centralization and decentralization, focus and exploration. While scanning is a formal, planned activity, it should also provide the space and freedom for participants to challenge assumptions and create new interpretations. While the scanning program is centrally coordinated, it is also a distributed activity where many groups and individuals gather and share information. While scanning is focused on the organization's information needs, it should also provide the peripheral vision and long-range perspective for the organization to grow. Ultimately, scanning as information seeking in support of organizational learning will always remain much more of an art than a science.

Further Reading

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