

# Obtaining Business Intelligence on the Internet

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**T**HE INTERNET IS A gateway to vast and varied information and it could revolutionize the way organizations seek and use information. Firms such as General Electric, IBM, J. P. Morgan, Merrill Lynch, Motorola, Schlumberger and Xerox already use it. However, the Internet is a complex collection of information sources and information utilities. It has a vast potential for meeting a firm's information requirements but it can waste time and cost if used unsystematically. In this article we outline a framework to guide practitioners in using the Internet for one specific purpose—the acquisition of external information for strategic decisions.

Figure 1 presents our proposed framework for viewing the various components of the Internet in the context of a firm's external information requirements for strategic decisions.

The choice of specific Internet tools and resources is influenced by the content of information required. The choice of the Internet utilities is also influenced by the modes of information acquisition used by an organization. The framework further suggests that there may be firm-specific variations in using the Internet due to three factors. First, over a period of time, a firm may use its experience to rate various sources of information and the Internet utilities to develop its own optimal pattern for using these utilities. Second, the choice of a planning process by a firm would influence the nature of its information search and the consequent use of the Internet. Third, different emphasis on environmental scanning due to different strategic orientations may lead to variations in the patterns of Internet use. The subsequent parts of this article expand this framework and present a set of viable guidelines for organizing an Internet-based environmental scanning system.

To the best of our knowledge, this article is one of the first attempts to synthesize the strategic infor-

**External information required for strategic decision making originates at multiple sources and its occurrence is not as controllable as internal information. In the light of this, researchers have suggested that there is an important role for advanced information technologies in meeting the external information requirements for strategic decision making. In this article we suggest that the Internet could play a key role in providing external information for strategic decisions. We highlight the types of external information required for strategic decisions and outline the search modes that firms should use to acquire this information. We then examine the suitability of the Internet utilities for meeting these requirements. Finally we discuss some of the factors which might lead to changes in the use of the Internet from the approach which we are suggesting. © 1997 Elsevier Science Ltd. All rights reserved**

mation needs with the capabilities of the emerging information superhighway. The process specified here can be adopted to evaluate the possible use of other future technologies for environmental scanning.

This article is organized as follows. First, some of the issues associated with the existing environmental scanning systems are highlighted. We then present a brief profile of the Internet and the various utilities associated with it. Next, we outline the content of external information required for strategic decisions and the modes that are used by firms in collecting this information. We subsequently point out the suitability of different Internet utilities in meeting these



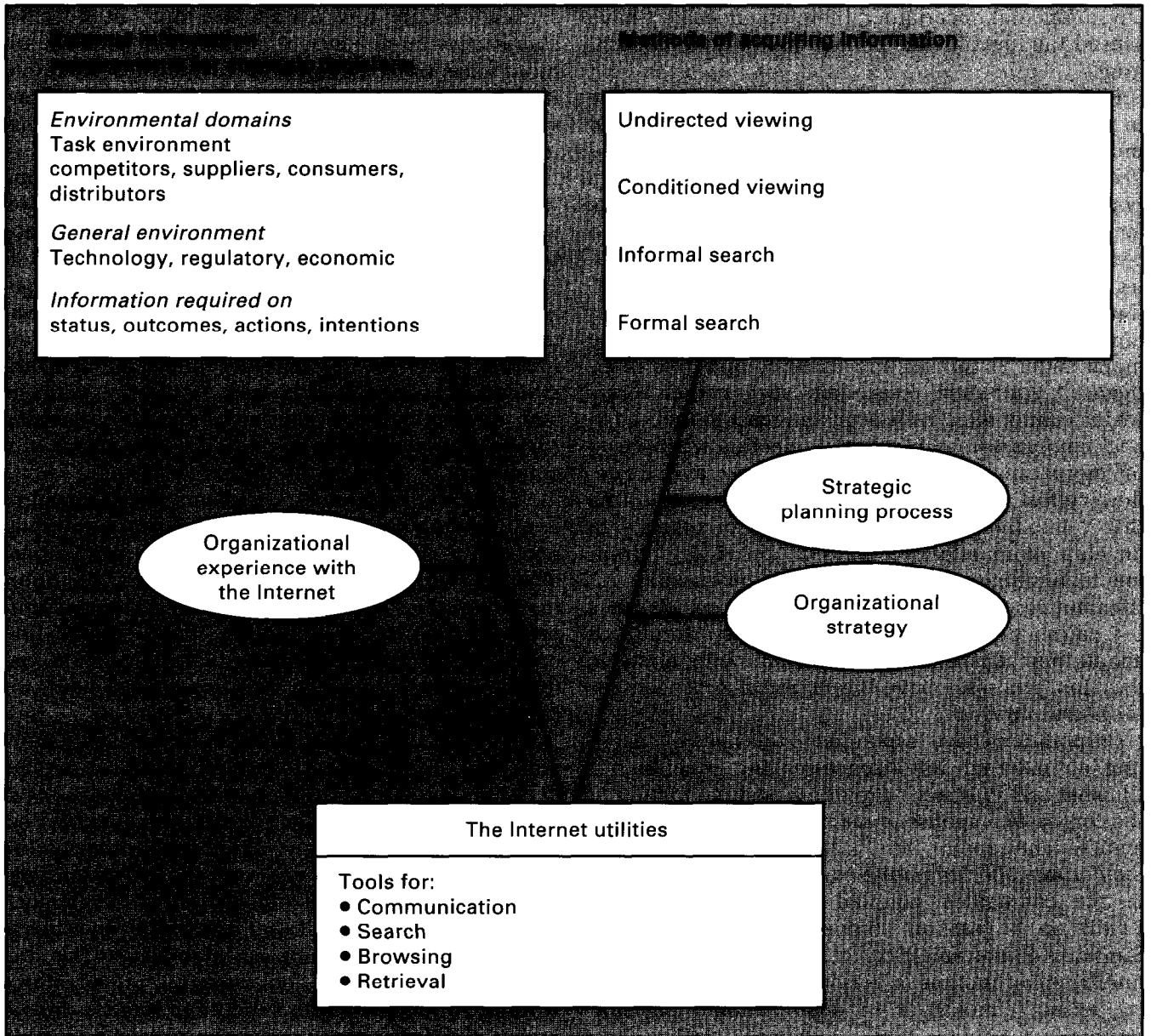


Figure 1. The Internet as a source of information for strategic decisions: a framework for management.

information requirements. Finally, we outline some of the possible factors that might lead to firm-specific variations in the use of the Internet.

## Using Information Technology for Strategic Information

### *Strategic Decisions and the Need for External Information*

External information is a key input in strategic decision making. Organizations collect this information through activities which have come to be

termed as competitive analysis, business intelligence, competitive intelligence or environmental scanning.<sup>1-4</sup> Hambrick<sup>5</sup> suggests that “environmental scanning can be conceived of as a key step in the process of organizational adaptation”. He notes that executives can only process and disseminate the information that comes into the organization. Herring<sup>6</sup> concurs by pointing out that “business intelligence is a natural extension of corporate strategy activities”.

There is a positive association between environmental uncertainty and the intensity of environmental scanning activity.<sup>7,8</sup> With the increasing

environmental uncertainty, therefore, managers have sensed the need for intensified environmental scanning.

Researchers have indicated that since its emergence in the 1960s, environmental scanning has acquired increasing importance. For instance, Russell and Prince<sup>9</sup> note that "environmental scanning became a popular term during the 1960s . . . Gradually, the focus shifted from scanning as a discrete activity to consideration of scanning as one component of strategic planning". In the context of competitive intelligence, Bernhardt<sup>10</sup> points out that "most managers now recognize that their organizations must become much better at gaining and using competitive intelligence". And some researchers suggest that "firms which cannot effectively scan and react to their business environment can expect to decline when faced by more capable competition".<sup>11</sup> Lenz and Engledow<sup>12</sup> effectively echo the above views by suggesting that ". . . there is a growing sense of urgency to develop more effective ways to provide environmental intelligence to strategic decision makers . . . 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 . . .".

Corporations have responded to this need by installing an external intelligence-seeking function.<sup>13,14</sup> Ghoshal and Westney<sup>15</sup> provide a positive picture of the corporate response to the need for external information. They report that "a 1985 survey of some of the *Fortune* 500 companies revealed that over a third of the companies sampled were spending over \$1 million a year on competitive analysis . . .". Similarly, Simon and Blixt<sup>16</sup> note that the competitive intelligence function is poised to evolve as a major supporting contributor to organizational decision makers.

Thus, the demand for competitive or business intelligence and, therefore, for environmental scanning activities, is high. Many firms have taken steps to install systems to carry out these activities. However, the availability of suitable systems is less than adequate. Some have noted that "the scanning units that evolved were only partially successful and many writers criticized them for being isolated from the real world of the corporation, unable to incorporate the information they collected into the planning process of the organization and likely to vanish without a trace when the executive who introduced the unit moved on".<sup>17</sup> Similarly, in the context of competitive intelligence activities, Bernhardt<sup>18</sup> notes that "Unfortunately, despite the growing need of companies for more accurate, more strategically relevant information about the future direction, plans, and intentions of emerging and existing competition, my experience suggests that what headway European

firms are making towards the development of formal competitive intelligence programmes is, with a handful of exceptions, largely incremental, and therefore inadequate". Herring<sup>19</sup> also makes a similar observation by suggesting that on the whole, the external intelligence activities have not been systematized.

This article's focus is on environmental scanning which is predominantly an information acquisition activity. In a few places we have also made a reference to competitor intelligence systems or business intelligence systems. These intelligence systems in general, however, are broader in scope than environmental scanning systems. Such intelligence systems include activities not only for information acquisition, but also for information processing, analysis and dissemination.<sup>20</sup> An environmental scanning system, thus, can be regarded as a component of a competitor or business intelligence system.

Management information systems are designed to apply information technology to facilitate individual decision making in order to improve organizational effectiveness.<sup>21</sup> Considering this role of the information systems and the criticality of external information in strategic planning, it is natural that organizations expect and hope that information systems would meet their information requirements for strategic decisions.

While information systems have not adequately met the information requirements for strategic decisions in the past, optimistic predictions have been made recently about the future possibilities. Huber<sup>22</sup> suggested a theory of advanced information technology's impact on various organizational aspects. He argues that organizational intelligence activities would be significantly altered by the emerging information technologies. In particular, he suggests that with these technologies, organizations would be in a position to collect information from a wider range of sources and be more swift in their information acquisition activities. A specific form of this advanced information technology—the Internet—is already helping organizations to access a wider range of information sources and to improve the speed of information acquisition.

## The Internet as a Force of Business Intelligence

### *The Internet: a Brief Profile*

The Internet is a set of interconnected networks and includes several million computers attached to these networks. Some authors<sup>23</sup> have been more metaphorical in suggesting that it is a "mammoth interwoven electronic maze linking millions of computer users around the world . . .". In the simplest form, the Internet could be viewed as consisting of three parts. First, there is a large number of sites which

hold varied information including government documents, statistics, news, research reports, books etc. Second, it consists of a set of tools such as gopher, WWW, WAIS and search engines which help locate and retrieve information. Third, there are special utilities or services that allow formation of topic-centred discussion groups, bulletin boards etc.

While some have been quick to appreciate its value as a pool of vast information, others have expressed caution against unsystematic use of it. Some professionals have acknowledged its increasing popularity and in support of it have indicated reasons such as "there is nothing else like it"<sup>24</sup> or have suggested that it holds a potential for a commercial revolution.<sup>25</sup> Some have described it as "a highway of ideas, a collective brain for the nation's scientists, and perhaps the world's most important computer bulletin board".<sup>26</sup> Organizations such as General Electric, IBM, J. P. Morgan, Merrill Lynch, Motorola, Schlumberger and Xerox are already using the Internet.<sup>27</sup> Others have, however, sounded caution by suggesting that it can also become a pit into which time and money sink.<sup>28</sup>

This caution about the unsystematic use of the Internet is valid because each of the tools or data retrieval utilities available on the Internet has its own characteristics and capabilities in leading a user to the required information. This has implications for the time taken by the search as well as the quality of the information produced. In order to appreciate the cost- and quality-related implications of unsystematic use of the Internet utilities, it is necessary to grasp some basic distinctive features of some of these utilities. With a view to facilitate this, a brief profile of the main features of some of the Internet utilities is provided below.

Internet utilities can be regarded as consisting of four broad classes. These are outlined in Figure 2. One class consists of communication utilities such as E-mail, Internet relay chat (IRC) or web chat, mailing lists and newsgroups. E-mail provides a simple message transfer facility. IRC or web chat enables different users to interact with each other on a real-time basis. Newsgroups, a part of a large community of users termed Usenet, are organized around topical areas. Each newsgroup receives messages in the form of articles from its subscribers. The users have access to these articles and can respond to them by posting response messages. Tracking the response pattern on a topic in a newsgroup could be a valuable source of assessing emerging opinions, ideas and views on topical subject matters. Electronic mailing lists are also organized by topics. Usually, each Internet user who subscribes to a list receives every message which is sent to the list by various subscribers.

The second category of Internet utilities consists of various resource locator tools. Tools such as Archie, Veronica and netfind which were popular in 1993-

1994 have been replaced by the new resource locator and information retrieval tools used with the World Wide Web (WWW). A brief introduction to resource locator tools, however, is justified in understanding the evolution of the Internet utilities. Archie is a search utility which can locate a site where a file or document of interest may be available. It does not allow actual retrieval of the document. Veronica is similar to Archie in that it also locates a site where the information of interest is available. Veronica, however, searches menus of various gophers (to be explained in the subsequent paragraphs) in the gopherspace and the information can actually be accessed from the sites located by Veronica. Thus, it serves as an information source locator as well as browser utility. Netfind helps locate information on the Internet users.

The third category of utilities consists of information retrieval tools such as file transfer protocol (FTP) and wide area information server system (WAIS). The FTP utility allows actual transfer of copies of documents from one site to another. However, the user has to know the exact source or a site where the document is to be extracted from or placed. WAIS provides two capabilities. It first locates a server site where the document of interest is available. In locating the document it takes a user-specified keyword or string and goes through file texts to find a match. It further allows browsing and retrieval of the document so located. The new WWW-based search and retrieval tools make this process even simpler. Information available on the WWW may be accessible through a uniform resource locator (URL) specifying the location of information, indexes developed by search engines<sup>29</sup> such as Alta-Vista,<sup>30</sup> or through meta-indexes such as Yahoo.<sup>31</sup> Search and retrieval tools for the WWW allow the use of a set of keywords to locate the information of interest. Searches sometimes have to be successively refined before the information is located.

The fourth category of tools, termed browser tools, includes telnet, gopher and WWW. Telnet allows a user to access a remote site of interest. Subsequent to a successful remote login, the user can access information at the remote site as any local user of that site would do. Although it is necessary to have an authorized account with the remote sites that a user wishes to access, there are some sites open for any Internet user. For instance, the entire US Congress Library System and hundreds of university library systems around the world can be accessed through the WWW. Gophers provide access to various sites which maintain information in a systematically organized hierarchy of menus. The gophers in the gopherspace are linked and allow a seamless movement from one gopher site to another across the world. While gophers were prominent in 1993, the WWW has since taken over the Internet browsing tools

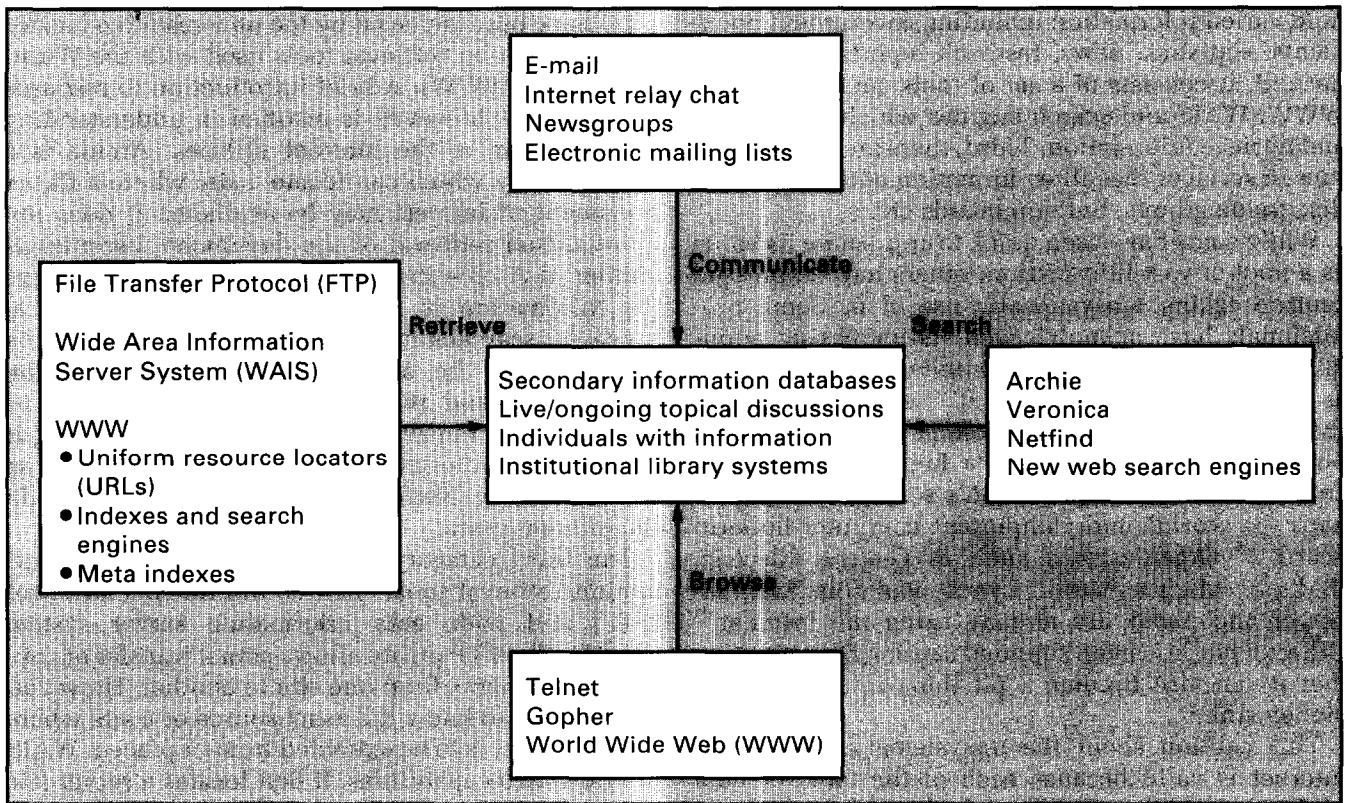


FIGURE 2. The Internet utilities.

category. The WWW also provides access to other Internet utilities. The hypertext-based capability of the WWW allows linking of the various Internet resources as well as search and retrieval tools so that the end user can navigate from one Internet information site to another even by using different utilities within the same user environment of the WWW. This simplicity of navigation has made the WWW almost synonymous with the Internet.

Thus, each of the above utilities has a distinct set of capabilities which vary across several dimensions. First, some utilities require a user to know the source where the required information is available while others do not. Second, when a user does not know the source of information and seeks to locate it, different utilities provide varying levels of guidance and information. Third, some utilities require a user to make an active search effort (e.g. web search tools) while others automatically make information available to him/her (e.g. electronic mailing lists). Fourth, some utilities provide access to information that is available on a regular basis and maintained by someone systematically (e.g. WWW) whereas others provide access to information that is generated by several individuals and is not likely to be permanently available, nor is its occurrence likely to be predictable (e.g. newsgroups).

The use of an optimal set of utilities to meet infor-

mation requirements will obviously determine the efficiency of the information acquisition. In fact, the lack of confidence in the efficiency of the existing formal competitive intelligence systems has been one of the main reasons for their slow adoption.<sup>32</sup> Given this, and the distinctive capabilities of the various Internet utilities, it is necessary to point out how some of the individual Internet tools and resources can be used to maintain efficiency in acquiring external information. We do this in the following sections. We briefly highlight the content of information required for strategic decision making. We also characterize the typical modes that firms adopt to obtain the required information. We then map the Internet utilities onto the information content and information acquisition modes identified. In this context the term 'Internet utilities' is used to refer to tools, services and resources. Since new utilities are being added rapidly to the Internet, our proposal may be considered 'dated'. However, the process outlined in our framework to map the utilities onto information acquisition modes is also applicable for evaluation of the new utilities and associated developing technologies.

#### *Defining your Information Requirements*

The external environment of a firm consists of two parts, namely: immediate task environment and

general environment.<sup>33</sup> Broad sectoral elements in each of these two categories have been pointed out by researchers.<sup>34-36</sup> These elements include regulatory, economic, technological and market in the general environment category. In the task environment category, the focus is mostly on the elements such as suppliers, competitors, customers etc. Identification of detailed pieces of information required on each of these environmental elements may yield a list. Such a list, however, would be large in size, and industry- and time-specific in terms of applicability. It may, therefore, be convenient to consider the generic aspects of information required which are applicable to each of these environmental elements.

Each of the above suggested elements in an organization's external environment can be viewed as an entity that acts purposefully and, therefore, its actions as well as intentions alter a firm's environment which in turn warrants a change in the firm's strategic response. Environmental scanning, therefore, needs to focus on the present and likely future actions of these entities. Consistent with this, Herring<sup>37</sup> suggests that the focus of such scanning has to be on providing early warnings of opportunities and threats. Information on future actions of the environmental entities, thus, would be of just as much value in strategic decision making as would be the present actions and their already manifest outcomes.

While the present actions and their outcomes are crystallized and in principle observable, future actions could only be inferred. Porter,<sup>38</sup> while focusing mainly on competitors, suggests that firms need to look for signals that may provide some indication of intentions, motives and goals of the competitors. This also applies to other environmental entities such as regulatory agencies whose actions can alter the industry structure and create a need for changes in a firm's strategic response. Additionally, Porter suggests that general commentaries from competitors are also valuable. These expressions, although not as specific as intentions, serve as pointers to other firms' assumptions about the industry and could, therefore, be indicative of the likely future actions by them. Thus, external information on the opinions of the entities in the environment also forms a valid content

of a firm's external information requirements for strategic decisions. From this it could be suggested that a firm requires information on the status of the environment, intentions and ongoing actions of the entities in the environment, manifest outcomes of these actions and general opinions about the industry held by the entities in its environment.

Linking these generic aspects of information requirement to external segments/entities yields the matrix of an organization's external information requirements presented in Table 1. Each cell in this matrix is marked with our estimates of the suitability of the Internet in providing the corresponding type of information. This table suggests that the Internet could become a viable source of meeting many of the external information needs for strategic decisions.

One of the features of the Internet is that information can be extracted from a vast pool which has been contributed to by a large number of individuals or organizations. This is, however, also one of the limitations of it. A user organization cannot decide or even influence what others should place into this pool of information from where one could potentially draw the required information. Information on broader and more general aspects such as economic and regulatory policies, and the associated outcomes, is of general interest and is, therefore, maintained at several Internet sites. Therefore, on the whole, the Internet is likely to be relatively more suitable for acquiring information on the general environment than on the task environment as reflected in Table 1 above.

Also, a considerable part of the information captured on the Internet is mostly coded from secondary sources such as newspapers, journals, special publications and reports. Therefore, information richness is likely to be less than other competing sources of information such as face-to-face personal contacts or addressed communications.<sup>39</sup> Consequently, the information is likely to be more suitable for the status and action part of the vertical dimension in Table 1 above than the opinion and intention part.

### *Choosing the Search Mode*

The above assessment is based on the generic *content* of a firm's external information requirements. The

**TABLE 1. The value of the Internet as a source for potential different types of information**

Information content	Task environment				General environment entities		
	Competitors	Suppliers	Consumers	Distributors	Technological	Regulatory	Economic
Status	Medium	High	High	High	High	High	High
Outcomes	High	High	Low	High	High	High	High
Actions	Low	Low	Low	Low	High	High	High
Intentions and opinions	Low	Low	High	Low	High	High	High

The term (high, medium, or low) in each cell indicates the relative level of suitability of the Internet utilities for the acquisition of external information on the environmental entity and for the information content associated with that cell.



**TABLE 2. Scanning for external information**

Scanning mode	Information requirements	Extent of structure	Focus	Nature of Search	Information Source
Undirected viewing	Not known	Unstructured	No focus	Exploratory	Not known
Conditioned viewing	More or less clear	Unstructured	Signals to possible needs	Exploratory with alert receptivity	Partly known
Informal search	Specific	Unstructured	Information on present needs	Active/focused vigilance	Known and selected
Formal search	Clear and specific	Structured	Information on specific recurring issues	Deliberate effort	Prespecified

suitability of the Internet for an organization's acquisition of external information can be further assessed by considering the *process* through which organizations scan their external environment. Aguilar<sup>40</sup> points out that organizational scanning for information takes place in four modes, namely: undirected viewing, conditioned viewing, informal search and formal search. Based on and in extension of Aguilar's<sup>41</sup> description, the characteristics of these four modes of search are indicated in Table 2.

In Aguilar's work, undirected viewing is defined as "general exposure to information where the viewer has no specific purpose in mind with the possible exception of exploration". Awareness of the issues is low, information sources are several, information relevance is distant and screening is coarse. Conditioned viewing, according to Aguilar, is "directed exposure, not involving active search, to a more or less clearly identified area or type of information". Aguilar notes that it differs from undirected viewing in that here "the viewer is sensitive to particular kinds of data and is ready to assess their significance as they are encountered". Informal search, as specified in Aguilar's work, is "a relatively limited and unstructured effort to obtain specific information or information for a specific purpose". Aguilar points out that it differs from conditioned viewing in that here "the information wanted is actively sought". Finally, formal search, according to Aguilar, involves "a deliberate effort—usually following a pre-established plan,

procedure, or methodology—to secure specific information or information relating to a specific issue". From the above description, it could be suggested that the search for signals is made through undirected viewing and conditioned viewing whereas the search for facts and concrete information is made through the informal or formal search modes. Based on the features of the Internet utilities, and the characteristics of information search modes described above, the relative suitability of the Internet utilities for undertaking the four modes of search is proposed in the Table 3.

Newsgroups are suited for conditioned viewing because the information is readily available here and the user does not have to make an active effort. The information seeker is merely required to be alert to spot a particular piece of information which may occur in some newsgroup article and may serve as a pointer to possible needs or issue identification. Lists require even less effort in active search since the information automatically comes to the user and may be viewed without having a specific issue in mind or without exerting a special search effort. They are, thus, appropriate for undirected viewing as indicated in Table 3.

E-mail is better suited for the informal search mode of scanning where information might be actively sought from a person or persons expected to be informed or knowledgeable about the issue under consideration. Thus, the information requirements are

**TABLE 3. Scanning modes for external information acquisition and the suitability of the Internet utilities**

Internet utility	Undirected viewing	Conditioned viewing	Informal search	Formal search
Newsgroups	Low	Medium	Low	Low
Lists	Medium	Medium	Low	Low
E-mail	Low	Low	High	Low
Telnet	Low	Low	Low	High
FTP	Low	Low	Low	High
Gophers	High	High	High	High
WWW and Gophers	High	High	High	High
WAIS	Medium	Medium	High	High

clear, the issue at hand is concrete, and the source is tentatively known. However, since it is not certain who has the required information on a new issue, this search procedure cannot be routinized. Therefore, for every issue, there would be a tentative set of people who might be actively approached. This element of uncertainty maintains E-mail-based search at the informal search level and prevents it from being routinized into a formal search procedure. Also, the E-mail-based search is not suited for undirected viewing or conditioned viewing because it involves active pursuit of information which is inconsistent with the characteristics of these two modes of search.

The use of Telnet and FTP presupposes a decision to seek information from a specific site or source. This implies that the information requirements are clear and the source of information is known. These preconditions of Telnet- and FTP-based search match with the characteristics of the formal search. These utilities, thus, would be suitable for performing a formal search.

Gophers and the WWW can be used to perform an exploratory search of the entire Internet information space. They can also be used to access a specific site where both the source and information requirements are known. They are, thus, suited for all four modes of external information collection. WAIS requires a specification of the server site to be searched and thereafter it allows an exploratory search. It is thus not very suitable for undirected or conditioned viewing and is better suited for the other two modes of external information collection.

This description of the Internet tools and utilities they use for accessing the different types of information and for different methods of acquiring information suggests that it would be beneficial for firms to use the Internet for environmental scanning. Consistent with this, several firms have already adopted the Internet to scan their business environment for gathering information on the relevant markets, competitors, customers or technologies. Hise<sup>42</sup> provides some examples outlining how firms have been using the Internet to collect information in various areas. In one of the examples, Hise indicates that Invitrogen uses the Internet to provide customer service and has assigned a customer service representative to scan the appropriate Usenet groups for messages about the company and its products. This representative also reads some of the newsgroups covering molecular biology research. This use is consistent with the suggestion in our framework that newsgroups are appropriate for the conditioned viewing mode of information acquisition where the information seeker is required to be alert to spot a particular kind of information that he/she is interested in. Another example by Hise indicates that Art Anderson Associates, a firm in the engineering and architecture business, uses the WWW and newsgroups maintained by

overseas tourism boards to identify possible new markets. Here, the information search is consistent with the suggestion in our framework that the WWW is appropriate for all four modes of information acquisition ranging from the exploratory and passive mode of undirected viewing to a structured and active mode of formal search. In this example, the user can structure the information acquisition process because the information requirements seem fairly specific. However, the search may still have an exploratory aspect because the geographic sites searched are likely to vary from time to time. Hise also describes how Mobius Computer Corp. uses the Internet to access the relevant companies' 10K reports to identify the companies that might upgrade their computer systems or need new systems, and thus may constitute a potential market for its products. Here, both the information requirement and source seem to be reasonably specific and clear. Thus, the information acquisition is likely to be characterized by the formal search mode and, therefore, any of the Internet utilities with 'high' suitability level marked under the formal search mode in our Table 3 would be appropriate. Depending on their information needs, different companies would tend to focus on one or more Internet tools for their environmental scanning needs. The framework proposed here could be of help to information seekers in selecting the Internet tools that are most appropriate for acquiring the required information.

#### *Possible Firm-specific Variations*

The above suggested pattern of Internet use is generic in nature. A firm may use only a subset of the Internet utilities highlighted in the framework or use them in a manner that varies to some extent from the one suggested here. The factors that might induce such variations include a firm's experience in using the Internet, the nature of its strategic planning process and the type of strategy it pursues. Each of these factors is discussed below to outline the nature of its influence on a firm's pattern of Internet use for meeting external information requirements.

#### *Organizational Experience*

Earlier it was suggested that, in general, the Internet is more suitable for seeking information on the general environment than information on specific parts of the task environment. However, it is likely that the specific information relevant to an organization and its task environment appears at a regular frequency at some site or source accessible through the Internet. For instance, traded stock prices for a competitor or percentage stockholding of a competitor in another firm could be regularly available at some sites because of some contextual attribute of the competitor such as size or membership of a particular industry.

Consequently, in addition to the above two generic



matrices, it is necessary to suggest an organization-specific matrix where organization-specific utility of the Internet could be depicted. Here, an organization could, on the basis of its experience with the use of the Internet, use two parameters—availability of information at a site or through a resource and the predictability of its occurrence—to arrive at an assessment of the usefulness of the various Internet resources for meeting its external information requirements. This would be useful considering that individuals conducting environmental scanning prefer to use the information sources which are perceived to be accessible rather than the ones which are most suitable.<sup>43</sup> In fact, Huber<sup>44</sup> has raised the interesting possibility that computer-assisted communications and information acquisition could possibly influence the user's tradeoff between the perceived quality and perceived accessibility of information. An Internet-based environmental scanning system could encourage the use of high quality information sources by improving and highlighting their accessibility through the development of organization-specific matrices as suggested above.

### *The Strategic Planning Process*

Different strategic planning processes seem to have different modes of information acquisition associated with them. In particular, the work of Camillus and Datta<sup>45</sup> indicates that the two processes associated with two systems of strategic planning—strategic planning systems (SPS) and strategic issues management systems (SIMS)—use different patterns of information acquisition. SPS relies on directed environmental scanning involving a focus on issues which are directly relevant to the organization. Also, the scanning is done periodically before every planning cycle. Camillus and Datta note that SIMS, in contrast, involves continuous monitoring even for the weak signals. It is, therefore, likely to involve undirected or semi-directed but continuous search processes. Their work further suggests that an integration of the above two systems requires semi-directed continuous scanning.

The strategic planning process in an organization may be based on either one of the two systems indicated above or may use a blend of them. Consequently, the modes of external information collection would also vary. Since the different Internet utilities are associated with different modes of information collection, the pattern of Internet use would also vary.

### *The Organizational Strategy*

External information is required to help an organization formulate adaptive responses. Different firms, however, adopt different adaptation strategies. One of the most extensively used schemes of strategic types<sup>46</sup> outlines four different adaptation forms termed as prospectors, defenders, analysers and reactors. Pros-

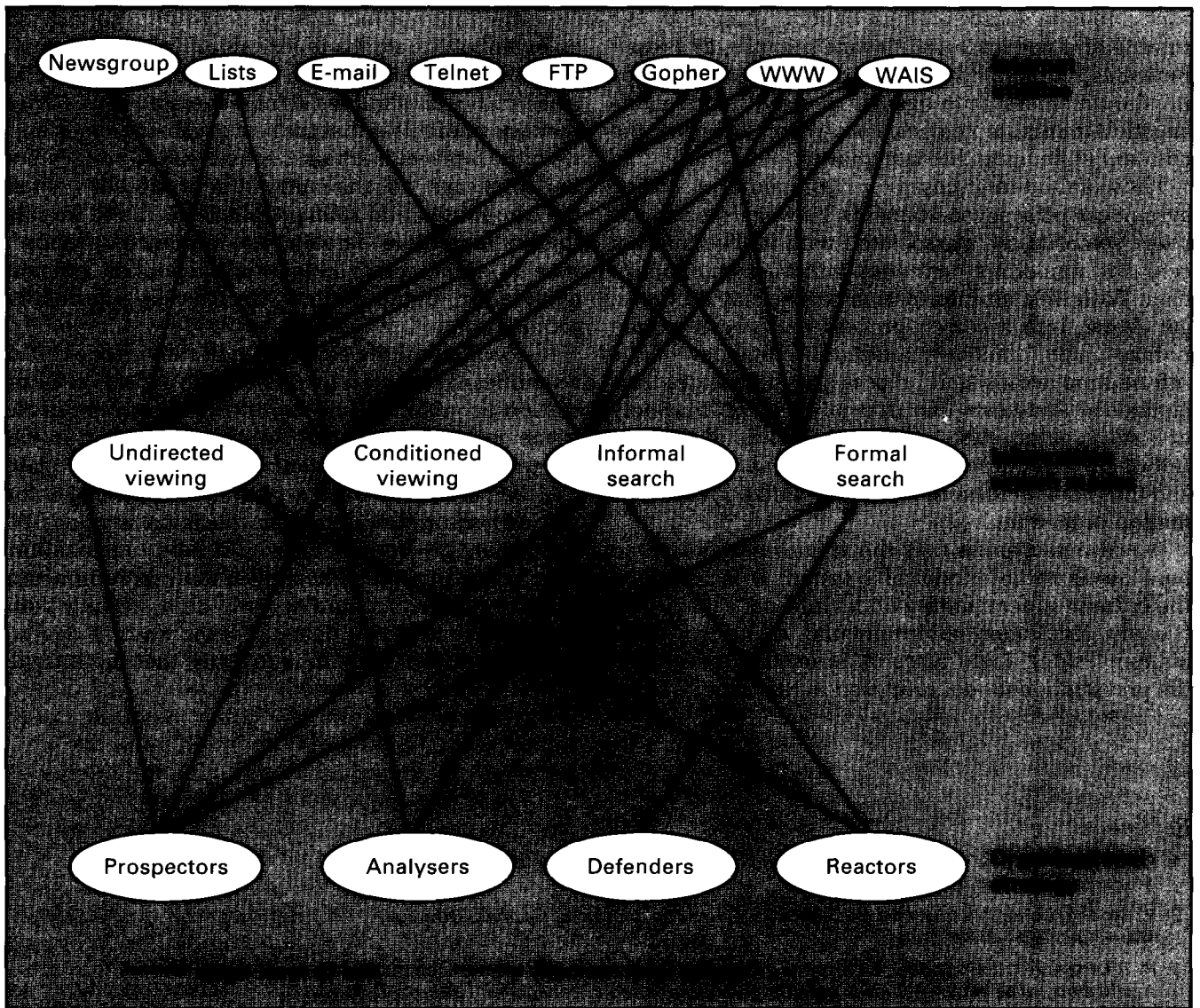
pectors are the firms which seek growth through exploration and utilization of external opportunities. Defenders, in contrast, focus more on improving internal efficiency than on spotting and utilizing external opportunities. Analysers strike a balance between the external and internal focus, while reactors do not have a predetermined consistent pattern of strategic responses. Thus, these four types are likely to differ in terms of the extent and kind of environmental scanning they carry out.

It seems likely that the prospectors would extensively use all four modes of scanning while emphasizing undirected and conditioned viewing. The defenders, on the other hand, would scan narrow parts of their environment efficiently using the formal search mode. The analysers strike a balance and avoid approaching any of these two types. They would, therefore, emphasize conditioned viewing and informal searches. The reactors are unlikely to use the formal search mode because it implies the existence of predetermined procedures for making strategic responses. They are also unlikely to make proactive issue-centred searches and therefore would not perform conditioned viewing. They would, thus, receive external information through the undirected viewing mode and perform informal searches if some specific information is required before making reactive strategic responses to the signals brought in by undirected viewing. This variation in the relative emphasis on the different modes of scanning would in turn be reflected in the different patterns of usage of the Internet utilities depicted in Table 3. Thus, different strategies of firms would lead to the use of distinct sets of Internet utilities. The linkages above outlined between the different types of adaptation strategies, the associated modes of information collection and the resulting use of the Internet utilities is presented in Figure 3.

## Conclusion

The increasing environmental complexity and consequent greater need for external information has created a need for efficient and effective environmental scanning. The promise held by the advanced information technologies in facilitating this can be partly realized by using the Internet utilities in locating and retrieving external information. However, the information available on the Internet is vast, the sources are varied and the access tools have peculiarities. The framework outlined in this article presents one way of understanding the role of the Internet for meeting external information requirements.

The proposed framework, however, is not the only one that is feasible and there are two reasons for it. First, the framework suggested here is generic. Firm-



**Figure 3. Organizational strategy, information search and the pattern of use.**

specific aspects such as the nature of business, strategy and other available scanning infrastructure would warrant modifications to it. Second, the Internet is evolving. The range of available utilities is increasing rapidly. Emergence of these additional utilities with their information search and retrieval features would certainly suggest a different picture. These aspects, however, would alter the contents of the suggested framework but not necessarily its outline structure.

The framework specified here has mostly focused on the compatibility between the capabilities of the Internet tools and utilities, and environmental scanning modes. The use of the Internet for environmental scanning, however, also has a positive aspect in terms of being economical. While describing the possible ways in which organizations have been using the

Internet for information acquisition activities, Hise<sup>47</sup> outlines the experience of a user who remarked that the Internet is appealing because it cuts his costs. In particular, this user indicated that "it allows us to do more preliminary research without the travel expenses we had before". Hise further notes that "most companies can justify a \$99 software package for getting around on the Net (starter kits usually contain E-mail programming, a browser and a few other on-line networking tools) and about \$20 a month for an Internet dial-up account for one computer. Compared to what a market research analyst charges for a single report, the Internet looks downright cheap, provided you have the time to hunt down what you're looking for". Sprague and Watson<sup>48</sup> note that in the process of competitive intelligence acquisition, the Internet offers economical, timely, direct and broad

access to data sources. These benefits offered by the Internet are particularly relevant because, as Press<sup>49</sup> indicates, external data acquisition is one of the steps in the business intelligence process; and value addition in this step comes mainly from lowering the cost and enhancing the data quality.

Thus, an Internet-based environmental scanning system can offer several benefits. However, it also has some potential costs associated with it. The Internet contains numerous data sites and vast amounts of data. With this, an information seeker may, at times, get drawn into a search process that could extend unreasonably. This will affect the efficiency of the information acquisition process due to the extra time consumed and costs incurred in an inappropriately extended search. Also, there is a likelihood that the information seeker may obtain excessive information and thus may increase the cost of organizational information processing.

We also recognize that the framework presented here needs to be empirically tested. It is based on the current understanding of the Internet capabilities (supply side) and environmental scanning needs (demand side). Field research is needed to validate the prescriptive model proposed in this article. How-

ever, the Internet technology is evolving so fast that an organization stands to lose significant competitive advantage by staying on the sidelines until the research has crystallized all of the related issues. Another aspect of this is that the cost of gaining experience with the Internet is small. Lucky,<sup>50</sup> a vice president at Bellcore, says "for the paltry sum of \$80,000 I get all the communication 3000 people need . . .". He calls this an 'incredible' bargain. The framework proposed here is aimed at making this bargain an efficient experience in the context of external information acquisition.

In conclusion, the emergence of the Internet holds a significant potential to alter certain aspects of information acquisition and use in organizations. In the framework proposed here, we have outlined one of the ways in which an organization can systematically use the Internet to seek a part of the external information required for strategic decision making. We hope that this framework would help organizations both to enhance the efficiency of their environmental scanning activities, and to provide a starting point from where they can develop other ways of dealing with and utilizing the new realities that the Internet offers.

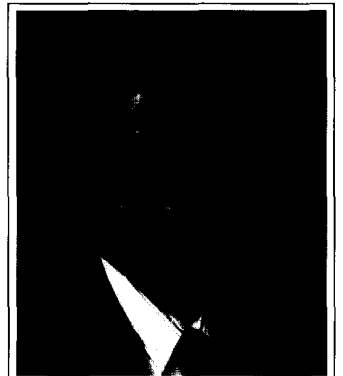
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