Scanning the business environment for information: a grounded theory approach

Zita Correia   and   T.D. Wilson

Centre for Technical Information for Industry
National Institute for Engineering and Industrial
Technology
Lisbon, Portugal

Department of Information Studies
University of Sheffield
Sheffield, U.K.

Introduction

This paper summarizes the principal findings of research that sought to provide a comprehensive understanding of the environmental scanning process. The methodology used was of major importance in obtaining data that are grounded largely in the personal experience of managers, but also in documentary evidence and in direct observation by the researcher. The purpose of the study was to investigate how managers in the Portuguese chemical industry scan their environment for information, what are the contextual factors that affect this activity, and also how managers' perceptions of environmental change affect the strategic change they implement.

Methodology and research design

Methodology

In the context of this research, the case study was considered appropriate for providing a holistic approach to the study of environmental scanning in industrial organizations operating in the chemical industry. In creating the case study, several types of data and information were collected, including general data about the industry and specific information about the companies that agreed to participate.

The data about the companies included:

- formal data concerning the character of the company (official designation, address, telephone and fax number, name of the managing director, SIC code of the main industry, sales volume, number of workers, social capital and distribution, type of ownership) obtained through the two business databases consulted, Dun & Bradstreet and MOPE (Informação para Gestão de Empresas);
- publicly available data provided by the annual reports of the companies, promotional material and newsletters;
- historical and cultural information provided by the managers interviewed, either orally - as an introductory part of the interview - or in printed form, when available, as well as organizational charts.

All this information was of great importance to contextualize and illuminate the core data regarding the environmental scanning phenomenon in the companies analyzed. Not all cases, however, provided equally rich frameworks.

Strauss (1987) emphasizes the usefulness of the case study approach when used with grounded theory. Grounded theory seeks to generate theoretical statements and, ultimately, complex theories based on empirical evidence, although it can be used in different ways and reach various degrees of complexity. The research design framework adopted in this study can be described as a multiple case study, composed according to the theory building structure, as described by Yin (1989), *i.e.*, where the sequence of chapters follow a theory-building logic, and using the grounded theory method of qualitative data analysis.

Research design

The sample used in this study did not obey the principles of statistical sampling, but the principles of *maximum variation sampling*, as defined by Patton (1990) and those of *theoretical sampling*, as defined by Strauss and Corbin (1990), *i.e.*, sampling on the basis of concepts that have proven theoretical relevance to the evolving theory. Our sample incorporated nineteen companies: five small companies (with more than 10 and less than 99 workers), ten medium-size companies (with up to 399 workers) and four large companies (with more than 400 workers). This classification was adapted from that used by IAPMEI (Institute for the Support of Small and Medium-size Enterprises and the Investment) and reflects the characteristics of Portuguese industry, where very small (up to 10 workers), small and medium-size companies make up more than 90% of the total number of companies established in the country.

The main tool used for collecting the core data for this research was the semi-structured interview, a tool flexible enough to favouring adaptation to each context, organization and individual, and also to pursuing unexpected paths and cues suggested by the *theoretical sensitivity* (Glaser & Strauss,1967) developed by the researcher throughout the research process.

Forty seven interviews were carried out, although seven of them - the so-called "complementary interviews" - did not account for statistical purposes. These interviewees were not questioned about the issues approached in the interview schedule, but about other related issues that needed to be clarified; Table 1 details the job titles of all the interviewees, as well as the number of interviewees by job title.

Observation played a minor, but non-negligible role. Visits to the premises, including the factory plants in some cases, meals in the canteens of some of the organizations, attention paid to the way-of-doing-things in the several companies - how visitors were announced, how meetings were scheduled and cancelled, absence or frequency and type of interruptions in the course of the interviews, degree of formality or informality in interpersonal relations - contributed to consolidate impressions or confirm information based on documentary evidence or on the interviews.

Conceptual framework: the categories and the model

The information that emerged out of the data provides an empirical basis for the articulation of a grounded theory of environmental scanning. The articulation of the theory implies the identification and description of a set of categories and relationships, which explain a significant part of the phenomenon under study. Those categories and relationships must be clearly defined and easily measurable, and the theory itself should be meaningful for both organizational theorists and information scientists.

JOB TITLES	N	%
Managing Director *	19	47.5
Marketing & Commercial Director **	14	35.0
Deputy-Director ***	2	5.0
Financial Director	2	5.0
R & D Director	1	2.5
Technical Director	1	2.5
Planning Director	1	2.5
Planning Officer	(2)	
Information Officer	(4)	
Computer Officer	(1)	
Total	40+(7)	100

Table 1 - Number, *N*, Of Interviewees By Job Titles

(* Refers to top managers performing the roles of chief executives, general directors or managing partners.
** These jobs were grouped together because there was an overlapping of functions in many cases.
*** These job titles correspond, in one of the cases, to the function of planning director and, in the other case, to a commercially-oriented responsibility. The brackets denote complementary interviews that were not included in the

statistics)

The grounded theory proposed comprises three main components: the *categories* (the core category and the subsidiary categories)**,** the *principal relationships* among them, and the *contextual factors* that shape the categories and relationships. From an internal perspective, these factors include corporate history and culture. From an external perspective, these contextual factors include the overall economic, social, cultural and political conditions that characerize modern Portugal and shape, at least to a certain extent, the organizations operating in that reality.

The model of organization implied by the theory is that of an open system. The components that make up the grounded theory are shown in Figure 1.

The core category identified was that of *environmental scanning*, to which a set of subsidiary categories was related. Environmental scanning refers to the exposure to and acquisition of "information about events and relationships in a company's outside environment, the knowledge of which would assist top-management in its task of charting the company's future course of action." (Aguilar, 1967: 1). This interrelated set of categories contributes to understanding how contextual factors - external and internal to the organization, influence the scanning activity, and also how perceived environmental change affects strategic change. The task of explaining variance among companies resides with a few key relationships among those categories.
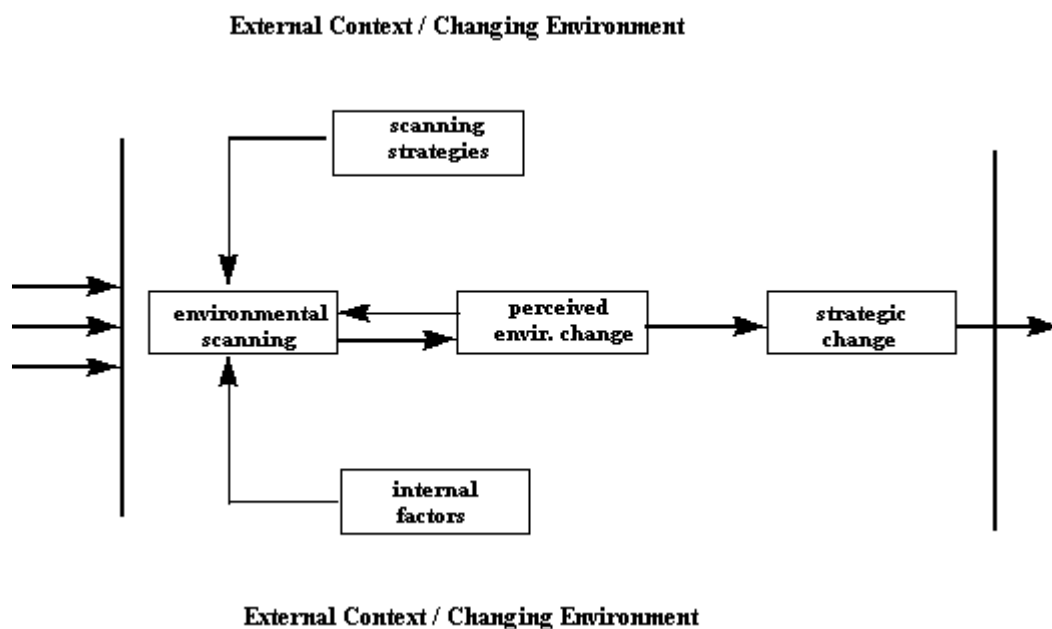

Figure 1- A Model Of The Environmental Scanning Process

Research findings

The external context

Perceived environmental change

External factors perceived as causing change in the environment were identified as pertaining to two main categories: the *regulatory framework* and the *business structure*. The changes of a regulatory nature were linked to joining the EC and to government intervention**,** while the changes of a business nature were linked to the trend for concentration in the chemical industry and the crisis of client industries.

The analysis of the data regarding managers' perceptipons of environmental change, showed that the impact of joining the EC was evaluated mainly in terms of the changes in the regulatory framework, bringing in new rules and

procedures to follow, such as regulations concerning the registration of drugs, the adoption of the patent regime in force in Europe and the demand for higher standards regarding product quality. It was also evaluated in terms of the progressive elimination of customs tariffs and its consequences upon the fragile competitiveness of the national companies, and the fear that customs barriers would be replaced by technical barriers. The growth of the market was a positive issue associated with joining the EC.

The government was accused of excessive intervention in the regulation of the market, especially in the health sector, by approving or rejecting the production of new medicines and by establishing prices of the medicines; the policy of high interest rates practiced by the banking system was another negative issue, which was blamed upon the government, as most of the banks were nationalized when the field-work was carried out and high interest rates were in fact part of the government policy to keep inflation down. The government was also accused of failing to defend the national interests within the EC and of the mismanagement of development programmes such as PEDIP (Strategic Programme for the Dynamization and Modernization of the Portuguese Industry).

Changes in the business structure were described as multifold, due to the acquisitions and mergers taking place, and also to the disappearance of smaller companies that sank under the pressure of competition, as a result of the trend for concentration that prevails in the chemical industries at large, especially in the pharmaceutical and cosmetics sub-sectors, and also in the segments of resin-derived products and synthetic fibre products. An important factor of instability was said to be the crisis of some of the client industries, such as the shoe industry and the textile industry. Factors of a cultural nature were invoked to explain the reticence of the Portuguese entrepreneurs to engage in strategic alliances.

The assessment of the environmental attributes showed that the environment had become extremely hostile and rather complex, even though turbulence was thought to stay relatively low. The comparative analysis of results regarding environmental change, obtained through the assessment of environmental attributes and through the analysis of perceptions of environmental change, evidenced compatible results.

On the other hand, the advent of the Single Market was seen as inevitable and was faced predominantly with a moderate degree of optimism, as it was widely believed that the worst had passed, meaning that the adaptation process to the Common Market had been hard enough and that something positive could still be expected from the Single Market, like keeping market shares or conquering a niche market or realizing a successful alliance. Plans of internationalization did not go further than Spain in most of the cases. The peripheral position of Portugal in Europe was seen as a hindrance for penetration in other regions as well as a protection against competitors from central Europe, especially for industries producing low-value-added products with high costs of transportation.

Strategic change

More than any other factor, the changeability of the environment proved to be determinant in the rejection of tight planning schemes, while the size of the company influences the adoption of planning (larger companies tend to engage in planning) but other factors interfere with that tendency, such as the form of the organization and the management style or the dominant culture. There emerged no evidence that industrial segments or sub-sectors might influence the adoption of planning as a management tool. On the other hand, planning offices are rare and their main role is to collect the hard data needed to support top managers' decision making.

Strategic change in the companies analyzed revolved mainly around increasing product quality, which involved in some cases the improvement of the conditions of production and was associated, in specific cases of highly pollutant industries, with measures of environment protection. Other important changes of strategic nature were internationalization and diversification, pursued by dynamic companies enjoying a steady growth trend. Growth through acquisitions was pursued by companies targeting internationalization, and strategic alliances were embraced mainly by companies oriented to the internal market, needing to secure a position threatened by strong competitors. Specialization was adopted by companies with little scope for growth.

Increasing product quality was a generalized target. However, some companies made clear that they had always pursued quality, while others admitted that they had to improve the quality of their products and the conditions of production in order to satisfy EC regulations. This concern was particularly acute among the companies of the plastics sub-sector and the large manufacturers in declining industries, such as the chlorine producer and the synthetic fibre manufacturer. In this last case, fear was expressed that technical barriers would replace customs barriers. The companies that engaged in improving product quality as part of an adaptive process to cope with EC

regulations denote, generally speaking, poor operating conditions to face the Single Market, and present a typical reactive behaviour.

The companies that opted to specialize were in the paints and in the pharmaceutical sub-sectors, where multi-national companies have dominated for decades, hence the need to seek product and market niches not covered by the giant corporations. An option made in these conditions may be regarded as an adaptive behaviour, but is not necessarily a reactive behaviour. Growth, diversification and internationalization involve complex, risky and slow processes and are, therefore, more clearly associated with proactive behaviours.

Ansoff (1987) remarks that acquisitions and mergers are major instruments of strategic change and that internationalization and domestic diversification are alternative routes for expanding a company's portfolio. Only three of the companies studied engaged in these actions: a pharmaceutical company which, when the study was carried out, ranked among the top ten companies operating in this country and in this sub-sector; a paints company ranking among the 300 major companies operating in Portugal in 1989, independently of sector; and a plastics company that has recorded a fast and steady growth throughout the last decade.

The organizational context

Conditions affecting scanning

Internal factors influencing the scanning activity were identified as being of an individual nature - information conciousness and individual exposure to information - and of an organizational nature - outwardness and information climate.

Information conciousness was assessed through the attitude of top managers towards environmental scanning and through the communication pattern established among managers within each organization. All the interviewees agreed about the vital role of information in business. Top managers of large and medium-size companies operating in different sub-sectors described their role, as far as environmental scanning is concerned, as a mix of personal monitoring and dissemination of information among direct collaborators. A significant difference was detected between managers of larger companies and managers of smaller companies. In larger companies, managers tend to minimize their role as monitors and emphasize their role as disseminators; dissemination of information becomes an important issue in larger organizations, where more complex structures and functional diversification are dominant features. On the other hand, managers of smaller companies assume environmental scanning as a personal responsibility and attribute great importance to that activity, while the dissemination factor is irrelevant, because in most of the cases there is nobody else to pass the information to.

Communication is generally intense between the top manager and the functional directors, and among functional directors. Communication among managers is made up of a mix of oral information and written information; the nature of this mix and the reasons that determine the choice of either of the forms of communication was not entirely clarified. However, some evidence associates the choice of oral communication with the generic scope of the information or its potential for starting action. Chief executives tend to use oral communication more than functional directors, while these apparently use both forms, without favouring clearly one or the other *a priori*. Sometimes both forms are used to convey the same information, the oral form being used for the first approach, followed by a memo or a report.

The information climate was assessed through the information infrastructure implemented, *i.e.*, the processes, technologies and people used in information acquisition and handling. Most of the pharmaceutical companies had rich, centralized collections of scientific and technical information, managed by information professionals with different backgrounds, offered access to international on-line systems and provided selective dissemination of information and loan services. However, the other companies provided a consistent picture, characterized by loose, small collections made up mainly of specialized journals, market reports and product literature, lack of skilled staff to manage information, and the main service provided was the circulation of journals. This picture was shared by all the remaining companies, independently of sub-sector or size.

The pervasiveness of information was pointed out as one of the reasons why it is so difficult to account for the costs involved in environmental scanning, as it is always associated with the performance of specific roles. The data collected point to an average of 50% of staff involved in information handling in the medium to large

pharmaceutical companies. Smaller companies have few resources to invest and different needs as well; an average of 9% of staff was found to be involved in information handling in smaller companies.

The outwardness of the organizations was assessed through their links with R&D organizations, the collaboration with regulatory agencies and participation in development programmes. Apart from two multinational pharmaceutical companies that developed fundamental research, the remaining companies either developed applied research, independently or in association with research organizations, or did not develop research at all. This was the case of large companies operating in declining industries and small companies in the plastics sub-sector, which used external laboratories for quality control only.

Large and medium size companies enjoying relative economic health engage in collaborative actions with a view to influencing legislative and other regulatory initiatives, usually through their sectoral associations, sometimes regional or international bodies. This collaboration, however, is generally passive, *i.e*., companies tend to act only under request. Companies of the same size going through a crisis tend to turn inwards for reorganization. Smaller companies, on the other hand, usually lack the resources needed to be able to provide collaboration to external bodies.

Most of the successful applications submitted to development programmes, with relevance for PEDIP, were directed to productive investments and training, this last item being funded either through PEDIP or through the European Social Fund.

Managers' exposure to information was assessed through the development of their information networks. Training opportunities provided by the organization to other ranks of staff was used as an additional way of assessing the exposure to information throughout the organization. The performance of the liaison role by chief executives and other managers consists largely in the setting up of their external information system. Access to important sources of information is reached through the appointment to key places within the sectoral and industrial associations and sometimes to international associations, where managers' exposure to information is taken to a full extent.

Exposure to information emerged in this study as the individual face of the broader phenomenon of organizational outwardness, and proved to be difficult to detach and analyze on its own. This was determined, to a great extent, by the decision to target the organization as the unit of analysis.

Organizational culture emerged as an important factor in the analysis of information issues within organizations. The data available indicate that the type of information culture that prevails in pharmaceutical companies is a formal information culture**.** Two other companies in two different sub-sectors were identified as having an oral culture and an information concious culture, respectively.

Strategies for managing scanning

The segmentation of the external information environment used in our study was largely based on that used by Goshal (1985), including competition (information concerning competitors, including their actions, decisions, strategies, plans, weak and strong points), market (all the information concerning markets, except competitor issues, clients' needs and preferences, distribution channels, reaction to promotion, market potential, etc.), technology (all the information concerning present and potential product and process technologies), resources (information on financial, labour and raw material markets that affect goods, resources and services needed by the firm in order to carry out its operations), regulatory (all the information concerning regulations that can affect business operations, including information about regulatory agencies and personnel) and global issues (all the information regarding social, cultural, demographic, economic and political trends).

Managers consider competitor information very important, very difficult to obtain and use it very frequently; market information is also considered very important, it is used very frequently, and is found to be relatively difficult to obtain. Information on technology is considered relatively important, is used relatively frequently, and it is considered difficult to obtain. Information on resources is considered relatively important, is used relatively frequently, and it is not so difficult to obtain. Opinions regarding regulatory information were divided between not important and relatively important, easy or relatively difficult to find, and between rarely used and used with relative frequency. Global information is considered not important, easy to find, and it is used seldom.

Factors that affect the choice of internal or external sources are the *size* of the company and the complexity of the

organizational structure. Chief executives of larger companies tend to make use of the company's information infrastructure in order to obtain the external information that they do not obtain by themselves, since, in a complex organization structure, the division of tasks is clear and the chief executive's time is precious. In smaller companies, entrepreneurs often perform other roles, such as the role of marketing and commercial director, or financial and administrative director. If management is shared by two co-managers, each one assumes one of those two major areas, usually according to their personal tastes or previous experience, or university background. As a result, managers themselves have to scan their environment and establish priviledged contacts with their main external sources.

Another factor that influences the preference given by managers to internal or external sources is the predominance of certain types of information culture, or the inexistence of an information culture. The lack of an information culture, and the subsequent small investment in the information infrastructure, may lead to the establishment of direct contacts with external information sources, even when the company is large and has established complex and formal internal procedures for communication, planning and decision making; the existence of an oral culture may have similar results. But when a formal information culture dominates, managers - especially top managers - tend to use internal sources, and when an information-conscious culture exists, there is a tendency to implement and use advanced information systems to obtain information.

The functional role played also influences the choice of internal or external sources. Marketing or commercial directors, R&D directors and some managing directors (those directing small companies or those directing large companies where an oral culture dominates or where no information culture exists) give usually preference to external sources. On the other hand, financial and administrative directors or other senior staff such as planning directors, whose roles are mostly inward oriented, or managers directing medium-size or large companies where a formal information culture exists, tend to give more importance to internal sources.

Internal sources are viewed by some managers as filters and by others as contaminators of the information provided by external sources. The concept of internal sources as filters has a positive connotation, since internal sources are attributed an important role, that of selecting relevant information, thus saving the chief executive 's time. On the other hand, the concept of internal sources as contaminators of the information provided by external sources has a negative connotation and was assumed, significantly, by managers from companies where no information culture exists, or where an oral culture dominates.

Some of the respondents stressed the complementarity between impersonal and personal sources, impersonal sources being looked at as conveyors of generic information, meaning information that is in the public domain, or about factors which, in principle, evolve gradually, and also as means to feed an attitude of general awareness. While personal sources would convey specific information, meaning more or less secret information that can not be found on printed sources and is transmitted only by word-of-mouth, or specific and detailed information that can help in clarifying ideas or implementing specific strategies.

Most of the managers interviewed manifested clear preference for personal sources. The arguments provided to justify this preference range from the greater reliability of the personal sources, to their role as the shortest way to the information needed or the last resource to get information that they could not find anywhere else. Finally, some comments seem to point to the role of impersonal sources as a route to personal sources, which emerge as the desirable target.

Some managers established a relationship between the attitude of looking deliberately for information with the use of formal sources and the unexpected acquisition of information with the use of informal sources. Other managers established an important association between the notion of need - information need - and the starting of deliberate action to get the information needed.

Theoretical statements concerning the environmental scanning process

Perceived environmental change refers to the alteration in the pattern of events and relationships occurring in the company's outside environment, as perceived by managers, which may lead the company to adjust to the new conditions. *Strategic change* refers to the alteration of the company's course of action in order to create new conditions or adapt to new conditions. The perceived environmental change-strategic change connection translates the decisive role of top managers' perceptions of environmental change upon their decisions to change their companies' course of action.

Information consciousness means the value attributed to information, and it is a construct that emerged within the individual sphere but in the cross-section of the individual behaviour and the organizational way-of-doing things. *Information climate* emerged within the organizational sphere as a set of conditions that determine access to and use of information. The information conciousness-information climate connection translates the strong influence detected between the top manager's attitude towards information-related activities and the type of information climate established in each company.

Outwardness means the openness of a company to the outside and permeability to external influences and is rooted in the concept of organizations as open systems. *Exposure to information* refers to the frequency of opportunities of contact with well-informed people and information-rich contexts. It is rooted in the concept of boundary spanning personnel, as people establishing the connection between their organizations and the environment, as well as in the concept of gatekeeping and information stars, and emerged as the individual face of the organizational phenomenon of outwardness. The outwardness-exposure to information connection translates the determinant weight of the organizational capacity to relate to the environment, upon the degree of exposure to information of individuals.

References

Aguilar, F.J. (1967) *Scanning the Business Environment*. New York: McMillan.

Ansoff, H.I. (1987) *Corporate Strategy*. Revised edition. London: Penguin.

Glaser, B. & Strauss, A. (1967) *The Discovery of Grounded Theory: Strategies of Qualitative Research.* London:Weidenfeld & Nicolson.

Goshal, S. (1985) *Environmental Scanning: an Individual and Organizational Level Analysis.* PhD Thesis. Cambridge, MA: Massachussets Institute of Technology.

Patton, M.Q. (1990) *Qualitative Evaluation and Research Methods*. 2nd. Edition. London: Sage.

Strauss, A. & Corbin, J, (1990). *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. London: Sage.

Strauss, A. (1987) *Qualitative Analysis For Social Scientists*. Cambridge: Cambridge University Press.

Yin, R. (1989) *Case Study Research: Design and Methods*. Revised edition. London: Sage. (Applied Social Research Methods Series, 5).

How to cite this paper:

Check for citations, using Google Scholar