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**COLLECTIVE LEARNING WITHIN  
AN ENVIRONMENTAL SCANNING  
COALITION OF SMALL REGIONAL FIRMS:  
TOWARDS A MODELIZATION**

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## **ABSTRACT**

This paper examines the conditions under which an inter- firm scanning coalition of small enterprises, within a given region, is feasible. The results of this exploratory field research are presented within the conceptual framework of collective learning in the context of inter-firm information sharing. They are based upon observations of an environmental scanning coalition made up of small manufacturing firms active in the mechanical industry and reporting 50 employees or less. We propose a collective learning model to guide administrators who share a desire to optimize their environmental scanning capacities through a joint effort with other like-minded owner managers.

## **KEY WORDS:**

Environmental scanning – Collective environmental scanning – Strategic intelligence – Collective learning – Coalition

## INTRODUCTION

Small and medium-sized enterprises (SMEs) play an important role in the economic dynamics of their regions; this is especially true of small firms when they share the same « transactional space », that is to say the same geographic region (i.e. the Rhône-Alpes region of France) and industrial space (i.e., mechanical). In this context, the notion of *environmental scanning* is meant to help managers in their decision making processes to reduce uncertainty, while at the same time allowing them to pick-up « weak signals » coming from the environment and increases the firm's ability to respond proactively (Ansoff, 1975 ; Lesca,1986). The concept of “weak signal”, as defined by Ansoff (1975) and elaborated by Lesca (1986), designates the anticipatory signs or indications of an even which, yet, has not been totally actualized.

It has been observed that small firms are particularly vulnerable in relation to “discontinuities” in the socio-economic environment because they lack time, skills and generally strategic information on the external environment for obtaining anticipatory information and implementing an environmental scanning (Riot, 1992 ; OCDE, 1993 ; Lesca, 1992 ; GREPME, 1994). Belongings to « transactional space » small businesses are natural partners, in appearance (Julien and Marchesnay, 1988) and should be able to reduce the constraints associated with environmental scanning practices.

Zmud (1979) has shown that the success of the design and use of a management information system depends upon the administrator's cognitive characteristics (e.g., cognitive style, and personality) as well as upon contextual data, and that these variables influence both the manager's attitude and behavior.

The objective of this research is to determine under which conditions small firms operating within the framework of professional and personal networks among a shared geographic and industrial space, can cooperate in matters pertaining to environmental scanning in order to increase their individual capabilities in this area.

The theoretic foundations of the concept of cooperative environmental scanning among SMEs and the conceptual framework of the study are presented below. This is followed by the research methodology and the results of the field research, involving a number of group interviews with owners and managers of SMEs and conducted in this case, an average of one-half day per months over a period of one year. Finally, for exploratory purposes, we propose procedural guidelines for future research and for SME owners, based upon the findings presented below; both an exploratory success model and an implementation methodology need to be developed.

### 1. THEORETICAL FOUNDATIONS OF AN ENVIRONMENTAL SCANNING COALITION OF SMEs

In order to implement a scanning coalition, we relied on previous research in the areas of cooperation theory and collective learning theory.

#### 1.1 COOPERATION THEORY: INTEGRATION OF DIFFERENCES AND SIMILARITIES

Richardson (1972) who demonstrated that industrial networks account for the major share of markets developed the concept of cooperative networks. Small firms and generally not involved with formal networks that publish and/or diffuse technical and/or scientific information and they have difficulties accessing external information sources (OCDE, 1993 . Riot, 1992).

Owner/managers of SMEs are more apt to develop highly personalized and informal information networks with other SMEs (Julien, 1997) and should be able to perceive, research and interpret weak signals and to better manage long term activities. More over, the

management style is often informal in small enterprises (Julien, 1997) and should be able to perceive, research and interpret weak signals and to better manage long term activities. Moreover, the management style is often informal in small enterprises (Julien and Marchesnay, 1988) and the rationality of the decision-makers is just as limited by their abilities to treat or use available information and the process used to formulate objectives in SMEs is often not explicit (Ansoff, 1975).

By cooperation between small firms, we mean any coalition of SMEs for which the objective is to exchange and/or share information, and which presupposes the development of a common information mechanism that surpasses the environmental scanning capacities of the individual firms.

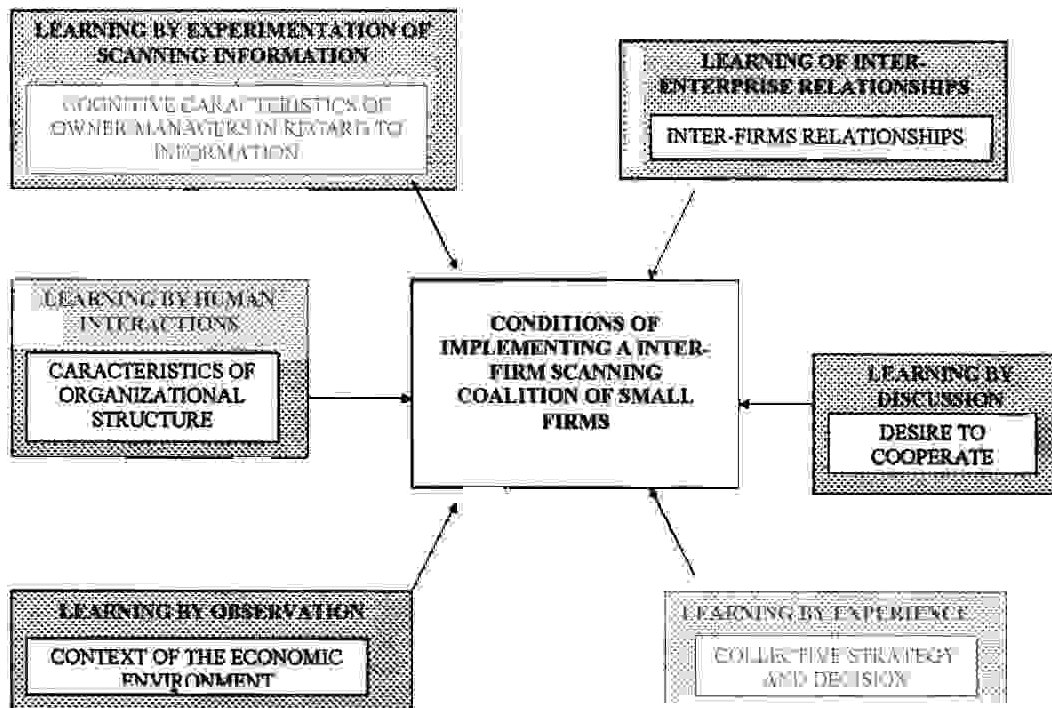
## 1.2 A THEORY OF COLLECTIVE LEARNING

Julien (1997) observes that inter-firm relationships within a « transactional space » supply implicit or tacit information that is particularly rich, generally associated with weak signals, as the information tends to be cumulative and allows opportunities to be seized once events has been perceived by owner/managers. « Rich information » should emerge from « interactive communications » that is to say the process of influence of one actor upon another during an exchange of information and during the emergence of feed-back (Lesca and Lesca, 1995; Petit, 1991 ; Julien, 1997). These « social tools » must have a certain level of organization and continuity to be effective to permit firms within the coalition to adopt a more proactive stance and to access and use of anticipatory information (GREPME, 1994; Julien, 1997).

Through a common information mechanism, exchange and sharing of anticipatory information, a *collective learning* process is created. We should have defined « collective learning » in the context of cooperative scanning among SMEs as a process of with human interactions, which produces a progressive and cumulative knowledge of scanning techniques and behavior among the participating SME owner/managers.

## 2. CONCEPTUAL MODEL OF AN INTER-INTERPRISE AND COLLECTIVE ENVIRONMENTAL SCANNING MECHANISM AMONG NUMEROUS SMEs WITHIN A GIVEN REGION.

Given our objective to expand current knowledge of the necessary conditions of implanting and inter-firm scanning coalition of small SMEs among a shared industrial and geographic space, the review of the literature has allowed us to define different facets of cooperation of SMEs within the area of environmental scanning. Each facet is explained by collective learning within the context of inter-firm environmental scanning practices (figure 1).



**Figure 1: Conceptual Model of the Conditions for implementing environmental Scanning**

## **2.1 COGNITIVE CHARACTERISTICS OF THE OWNER/MANAGERS AND INTER-FIRM COMMUNICATIONS**

Senior management plays a central role within the small enterprise (cognitive characteristics) and previous research indicates that the success of environmental scanning is related to senior management's attitudes and behavior. In context of SMEs, attitudes are largely contingent and dependent upon the firm's current information system manager (Lesca, 1989; Lesca and Reymond, 1993).

In Leavitt's (1978)-wheel model, the central (hub) position of a communication network will have an impact on the overall behavior of the firms (spokes) participating in the network. It should not only assure the diffusion of information classified as a weak signal, but also a collective interpretation as well as the sharing of information and a convergence of ideas regarding the issues at hand.

Hogarth (1980) established feedback as a necessary condition to learning predictive behavior, in that it improves the perception of anticipatory external events. Therefore, owner/managers should discovery how to use this information through their experience of similar stimuli (Weick, 1991). The members of an organization observe the consequences of their actions, draw conclusions, acknowledge new orientations and achieve an integration of their cognitive differences (March and Simon, 1969).

Weak signals are difficult to capture (Lesca, 1986) and we are attempting to rectify that by developing a method for the implementation of collective environmental scanning practices that would maximize the resources of individual firms.

## **2.2 COOPERATIVE SCANNING, POLITICAL SPACE AND THE ENVIRONMENT.**

The theory of the firm as a political coalition explains the decisional behavior of administrators as a playing field of continual negotiations where objectives and commitments evolve in function to modifications within the firm.

While SME owner/managers may prefer their independence, under certain circumstances, they cooperate when there exists a shared desire and a common need (Birley and Cromie, 1984), trust and mutual understanding (Anderson and Narus, 1990 ; Jarillo, 1988). Research has shown that the choice of partners constitutes a crucial factor of successful partnerships. A period of negotiations is necessary to develop a cooperative network, strong communications, a high level of confidence and long-term relationship between members (Desreumaux, 1994; Jarillo, 1988).

The concept of procedural rationality allows us understanding how collective learning by experience between SME's owners/managers should lead to creative solution. A stimulus (an information which « clicks ») provokes a reaction which was previously elaborated and learned through experiences with similar stimuli. If it is relatively new, it will provoke a resolving activity that seeks to define the situation. If it has already been experienced, then the manager would select the appropriate response (Cyert and March, 1963; March and Simon, 1969).

## **2.3 IMPLEMENTATION OF A NETWORKING ORGANIZATIONAL STRUCTURE**

Researchers on information systems and strategic management in SMEs acknowledge the efficacy of informal structures, such as regional networks, for the owners/managers in the exchange and sharing of information to adapt to external conditions (GREPME, 1994).

Learning by “human interaction” who posses the required knowledge, learning by observation and by prospecting are more rapid than learning by experience (Huber, 1991). The structure of the coalition should provide the means for the integration of the different cognitive orientations of the members (e.g. committees) through which consensus can be achieved (Lawrence and Lorsch, 1973). Therefore the development of confidence among owner/managers is created within a “significant” context based upon “rich information”, the sharing of explicit, long-term objectives and comprehensive behavior (March and Simon, 1969). However, integration is dependant upon the implication and involvement of the owner/managers of SEMs. Assistance should emphasis information transfer, assimilation and management and improve the networking capabilities.

The research model presented in Figure 1 represents the basis for the empirical observations of three small SEMs.

## **3. METHODOLOGY**

Accessing SMEs in the field is difficult for researchers, as owner/managers have little free time, in particularly when the research entails uniting a number of owners/managers for many successive meetings. As the research objective is to investigate the conditions under which an environmental scanning coalition of SMEs is feasible, an exploratory method using a clinical approach was utilized.

### **3.1 FIELDWORD: THE COLLECTION OF NECESSARY ELEEMENTS**

Our selection of an observation field was the need to observe SMEs having less than 50 salaried employees. Coalition members were chosen by one owner based on affinity, knowing that participation would be dependent upon the SMEs not being in direct competition with one another.

For the purposes of this experiment, the objective of the coalition was to involve the owner/managers in a collective cognitive process within the context of cooperative environmental scanning practices. The depth of analysis characterizes the study, as the lack of a conceptual model represents one of the major reasons for undertaking a field experiment of this nature and to manage an exploratory research.

This study uses an interactive approach (Girin, 1990). The researcher must negotiate the time allotted to meeting as well as a meeting site (in the case, at one of the firms). He is responsible for animating group meetings as well as a meeting site (in this case, at one of the firms). He is responsible for animating group meetings and for follow-up of committee activities by researching anticipatory external events, without creating a biased reaction among the coalition members. The vocabulary used should, whenever possible, mirror the language utilized by the participating owner/managers to ensure a common understanding.

Her/his role is to act as an external judge of management situation and to identify important and useful elements for building successfully information sharing partnerships. Data was collected using an open group discussion method and one of the difficulties is to be accepted by the group. In fact, the concept of environmental scanning was completely new for the owner/managers involved in the experiment. The experiment resulted in the identification of number of elements that allow us to elaborate the fundamentals of a methodology for implementing a collective environmental scanning mechanism involving a number of SMEs.

## **3.2 PRINCIPLE OBSERVATIONS: RESULTS OF THE EXPERIMENT**

During the committee meetings notes were taken and these records have served as the main material used in the identification of the critical elements presented in this section on the principle observations of the experiment (annex 1).

### **3.2.1 Cognitive Characteristics of the Owner/Managers**

The results of the meeting show that the participating owner/managers feel no explicit need for strategic information: they have no real desire to devote their time to acquiring and interpreting information on the external environment. Yet, they lack strategic information. The cognitive blocks to using anticipatory external information are important. In general terms, “new information” is just not assimilating right away. They do not use information or communication technologies to access public or commercial databases.

### **3.2.2. Group Characteristics**

While the participants have their own specific characteristics and areas of interest, the group, in its own right, represents a common history and culture, which acts a cohesive agent in bringing the members together in a shared identity. The perception of common characteristics towards their businesses tends to increase the members’ participation in-group discussions. The conversations are longer, they are more likely to share “strategic information” and they talk more freely about management practices and their customers. On the other hand, the perception of different objectives is a source of cognitive dissonance and tends to block participation in the group. In order to arrive at a convergence of the group’s ideas the researcher frames questions in such a way as to stimulate the discussion, to avoid a premature consensus, and/or to refocus the group when the discussion takes on a more personal tone.

### **3.2.3. Small Firms**

The contextual factors of the firms involved also have an impact on the individual members, the group and the coalition itself. Cohesive factors, such as the fact that some members may know each other or common perceptions of the difficulties within their particular domain of

activity, tend to facilitate conversation among the participants. However, cultural and/or behavioral differences tend to block communication flows and the exchange of information.

#### 3.2.4. Characteristics of the Organizational Structure

The organizational structure of the coalition is influenced by the intrinsic characteristics of SMEs. The owner/managers feel no need to keep written accounts and, when suggested, they consider that formal analysis of the environment is not a part of their job or that the small size of their business does not warrant such an analysis.

#### 3.2.5. Inter-firm Relationships

It is not enough to provide the participants with the information they need to stimulate information exchanges between them. It is just as important to convince them of the value of working together when scanning for strategic information. The creation of mutual confidence requires on the part of the researcher to be very persuasive, as links between the members are very fragile. The participating owner/managers are willing to commit to a coalition and to partake in common activities in order to resolve strategic problems on the condition that objectives are clear and that the orientation of the different members is perceived as being similar to their own.

#### 3.2.6. Collective Strategy and Decision Making

The participating owners/managers are not able to express their strategic preferences as they have a hard time defining their objectives and, once defined, objectives tend to evolve according to the information made available to them. The clarification of group objectives is only possible after an information search and/or a reflective process and the use of creativity and group dynamics methodologies.

By considering these conditions, it is possible to improve the environmental scanning practices of the participating firms while creating a new common view : a partnership.

### **4. RESEARCH FINDINGS: OBSERVATIONS OF THE FIELD EXPERIMENT : LONGITUDINAL ANALYSIS.**

The observations were conducted in the field in parallel to a theoretical analysis of relevant research. The problem of collective environmental scanning practices emerges as a paradox: Owners/managers SMEs are not familiar with scanning activities and, yet, they are interested once they have been made aware of what it comprises and of the potential benefits.

This paradox is presented under the form of a hypothesis in order to interpolate the analysis of the observations within the framework of current theoretical knowledge.

Hypothesis: A cooperative environmental scanning effort will produce a collective learning process, which includes a discovery phase as well as the development, maturation and, finally, the appropriation of the environmental scanning mechanism.

This hypothesis represents, at the same time, a result of the findings and acts as a point of departure for further analysis.

Research Objective: Developing a conceptual model of a successful environmental scanning coalition in order to determine how to prepare SMEs to identify pertinent environmental scanning information, and to be able to communicate this understanding.

Longitudinal analysis of the recorded conversations of the field study observations, allows for an analysis of new areas of research into the implementation of a collective scanning



mechanism and the identification of fundamental elements of a conceptual model of effective environmental scanning practices for SMEs.

#### **4.1 OWNER/MANAGERS ARE NOT FAMILIAR WITH THE CONCEPT OF ENVIRONMENTAL SCANNING**

This finding is confirmed by a number of extracts from conversations among coalition members. Different aspects are include:

***Information from the external environment is not reaching those it is destined for.*** This was established from the very first meeting of the coalition members. Here are some of the responses to a question put to the participants by the researcher.

Question: What are your sources of information?

“We receive some information from our customers.” Meeting 1

“We have a lot of contact with our customers, there is no way to negotiate with them, they are never satisfied! They always want more.” Meeting 3

***Coalition members’ perceptions of their ability to anticipate external impacts affect their expectations of environmental scanning.*** The participating owner/managers believe that professional constraints (e.g., education, skill sets), limit their ability to use anticipatory surveillance technique to acquire information on the external environment. When asked about their increased ability to predict the impact of future events on their products, their answers were centered on economic and administrative constraints, more specifically, in terms of reactivity, time or competition.

Question: Couldn’t you more easily anticipate the evolution of a product?

“Anticipating future changes is for us as a maximum of three months. Meeting 1

“We just don’t have the time to do this kind of work, you have to have some time.” Meeting 2

“The real problem is estimating prices (of the part to be fabricated). I have a tendency to set my prices too high, compared to the competition. It’s my fault. After that, I can’t go back on my price, that would make me look bad, but I’m losing customers. The real problem is knowing current prices.”

For some participants, a phenomenon of rejecting external information was observed.

“Recycling materials, you hear a lot about it, but its not going to happen overnight! We still have a lot of time before it happens.” Meeting 2

#### ***Attitudes and beliefs affect scanning behavioral patterns***

There is an inability to search for and/or access information from external sources.

“I have a hard time just finding time to read the newspaper! Committee reports, I certainly don’t have time to read those.”

“That really surprises me, I don’t know which ones (regulatory boards).”

External information sources are underutilized and/or undervalued.

Yes, I’ve heard about the plastic’s Center, but I don’t know if we would ever use it ! It’s possible. But, we don’t have time to get involved with all of that.”

“If we had to rely on them to get information !” Meeting 4

The lack of attention and the indifference to strategic planning expressed by the participants tend to reinforce constraints associated with environmental scanning in SMEs.

***The participating owner/managers are not attentive to the external environment and the constraints associated with environmental scanning are perceived as being stronger than they truly are.***

**Question :** What could you do to better understand your customers ?

*“Customers never tell us anything, how do you expect us to know? We don’t always know the use of the parts we make. Sometimes we know, but most of the time we have no idea”.*

*“We never have access to Corporate Specification, we are too small, we work on specific parts. Sometimes we find out for which sector we are working, but we never know what the part were making is used for.” Meeting 2*

Resistance to change is important and is exhibited by the rejection of external events. The researcher plays the role of facilitator and can help the participants to become conscious of strategic ruptures with feedback.

#### **4.2 ENVIRONMENTAL SCANNING INTERESTS OWNER/MANAGERS OF SMES**

Different aspects of this second finding include:

##### ***Collective environmental scanning, a discovery process?***

Once they were informed of environmental scanning practices, the participating owner/managers modified their perceptions and behavior toward environmental scanning and were able to access information from their memories. They found solutions for obtaining strategic information and identifying opportunities and threats. When asked the same questions as before, their answers were quite different.

**Question :** What could you do to better understand your customers ?

*“ It could be useful to have a check-list by product which would allow us to recognize the specific product or part were making, to offer a better service to our customers. We could ask 4 or 5 pertinent questions, always the same, in reference to the product being fabricated, the nature of the product, etc. But we would have to ask for the information from the customer.”*

Meeting 3

There was a similar change towards the lack of knowledge of the functionality of the parts they made for their customers.

*“There is one part I manufacture, it’s over 20 years that it exists in the motor.” Meeting 4*

Owner/managers’ perceptions and behavior toward the collection of strategic information change and they are more likely to use external sources to acquire strategic information.

##### ***Collective Environmental Scanning a developmental process?***

By modifying their information collection practices, owner/managers acquire the ability to access new information on the external environment. This in turn is reinforced by a change in their perception of scanning activities and they become increasingly conscious of the need to collect information. This is exemplified by extracts of their conversations presented below.

We ignore a lot of information. I know one person at DRIRE, I'm going to give him a call."  
"There is a difference between what the regulations state and what we can realistically accomplish. Engineers still haven't figured out how to design motors so that can sort plastic and metal parts. Everything is still meshed together... and then, there's the wiring."

***Collective Environmental Scanning an appropriation process?***

The participating owner/managers soon showed signs of being able to extend their abilities to capture external information by tapping into a new source: potential SME partners. Learning seemed to occur by changing the context, and by similar responses. The owner/managers were able assimilate external events that were useful in their decision making process and were more apt to take into consideration events that were likely to occur. They put new procedures into place. Their reactions were marked by the evolution of their attitudes towards the importance of environmental scanning activities. For example, when on the subject of customers, one participant shared a recent experience.

"I read in the paper that they were building a new...m2 factory. So I called him up and asked what they were going to be manufacturing there. I couldn't believe it, he told me!"

The owner/managers decided to keep and use written records and reports so that the information they gathered would be accessible and would not get lost.

"I keep a small file on each of these customers so that I can remember their likes and habits."

Another participant decided to systematically collect newspaper clippings and articles.

"L'Usine Nouvelle isn't a bad magazine, they have some interesting articles, even on recycling (an article on automatic sorting)."

The analysis of the reported observations of collective learning of cooperative environmental scanning practices among the participants enabled us to develop a better understanding of this process.

***Cooperative environmental scanning includes a discovery process*** during which all the participants learn to detect anticipatory signals of environmental changes that will have an impact on current business practices. This leads to both a greater awareness and experimentation in the direction of weak signals. These findings confirm previous research (Weick, 1991). The owner/managers also learn to develop inter-firm scanning relationships as developed in the concept of adaptive rationality (March and Simon, 1969).

***Cooperative environmental scanning is a development process.*** Through shared scanning activities, the participating owners/managers, collectively, increase their ability to perceive changes in the environment (March and Simon, 1969). They define explicit objective for the coalition, and they collect and use strategic information.

***Cooperative environmental scanning is a collective learning process*** by means of appropriation of the acquired experience in detecting and analyzing weak signals so that depending upon the nature of the stimulus, either an appropriate response or a resolving activity is provoked (March and Simon, 1969).

In order to develop procedural guidelines we formulated a number of hypotheses regarding a successful environmental scanning coalition of SMEs, which are based upon both the conceptual model presented above and an analysis of the empirical findings.

## **5. AN IMPLEMENTATION METHODOLOGY**

The methodology is developed in accordance with the findings of the previously cited research and on the study findings, which represent more than one year of observations in the field. The proposed method should not be taken to represent a normative model. It should be viewed as a means to increasing our understanding of the collective cognitive process experienced by the small SMEs under our observation and as to help owner/managers of SMEs to improve their collective understanding of environmental changes. This method is presented as a series of six questions (annex 2).

Question 1: How to choose the partners of an inter-firm environmental scanning coalition? Owner/managers from a limited geographic zone can generally identify potential partners from their business interactions and/or their reputations. This choice is generally based upon professional and/or personal relationships with other owner/managers, professional and/or the sector of activity and geographic area. To develop a successful environmental scanning coalition among SMEs, it is necessary to explicit the objectives and expectations of individual partners and to impulse a proactive attitude among the owner/managers.

*Collective Learning:* A training session, adapted to the specificity of SMEs, is needed to increase awareness among the participating owner/managers of the importance of the selection of partners. This can be achieved by familiarizing them with other criteria of successful partnerships, such as the need of similar strategic orientations, and a shared desire and ability to cooperate (which can be measured within the framework of the training session itself).

*H1:* A probable factor of a successful environmental scanning coalition among SMEs is the assistance owner/managers receive in choosing their partners, on the basis of a check-list of items.

*Conclusion 1:* Provide information seminars for owner/manages in order to generate awareness of the benefits of information scanning coalitions and to identify potential partners in relation to shared objectives, general orientations, professions, sector of activity, and/or geographic area.

Question 2: How to determine collective scanning objectives?

In order to identify areas of uncertainty and to develop a collective response, there is a need to define a common field of attention of the environment as the target of the coalition's environmental scanning activities. Identifying the environmental field of attention is an important step in the decision process of which types of scanning activities will be performed by the coalition (scanning activities are generally influenced by the sector of activity, the perceived importance of different types of information).

*Collective Learning:* All the key external players are not immediately identified, and other ideas may emerge as objectives are likely to evolve with time and the discovery of new external events. The means and methods by which the coalition will be created and administrated should also emerge from these discussions.

*H2*: A probable factor of successful environmental scanning coalition among SMEs is reaching a consensus of pertinent environmental element through a process of group identification of scanning activities to be targeted by the coalition.

*Conclusion 2*: To start the process, the researcher assists the participants in reaching a consensus as to shared areas of interest and to a description of the field of attention.

Question 3 : How to share the information?

The selection of information to be collected is effected based on individual tasks assigned to individuals and/or employees by the coalition members. Each firm can elaborate an individual effort for tracking weak signals. The type of information collected should be anticipatory and evaluated according to predetermined selection criteria. The decision of which information to share presupposes the identification of information sources and the means to access these sources. In order to evaluate information sources, the researcher should generate awareness of the different source available. These generally include:

- . Scanning tasks could be realized by owner/managers using informal sources of information through their contact with customers, suppliers, etc.. Tracking tasks may be assigned to employees who are more familiar with formal information sources.

- . The owner/managers may decide to hire, collectively, the services of a specialist (e.g., commercial market analyst) by sharing expenses within the creation of a legal partnership agreement or by contract.

*Collective Learning*: The participating owner/managers should progressively improve their capacity to access external information through experimenting with the “research process” and to benefit from other member’s experiences.

*H3*: A probable factor of a successful environmental scanning coalition among SMEs is an ability to perceive anticipatory information, developed through training and/or experience in selecting information to be tracked, notably, in the area of detecting weak signals.

*Conclusion 3*: Information collection should be organized within each firm. List different information source and methods for accessing each source and evaluate the quality of this source and of the information collected.

Question 4: How to develop “interactive communications” between participating owner/managers?

The exchange of collected information is carried out during committee meetings and should be presided over by an animator designated by the members. The collected information is communicated to the other members either in its original form (e.g., newspaper clipping, relaying of a conversation), or as a formal analysis of different sources that were identified and evaluated.

*Collective Learning and Discovery*: When faced with a new event or when the significance of an event is not clear, a new information search is often required in order to identify and evaluate potential impacts of environmental changes before a consensus can be reached. With time, the group begins to clarify its preferences and areas of interest in relation to the strategic information available. There is here a collective discovery of early warning signals or newly perceived events in the environment.

*H4:* Through the monitored exchange and sharing of information, the participating owner/managers should benefit from their collective knowledge of an area of interest by apprehending a new situation or external event.

*Conclusion 4:* Collectively, list and evaluate environmental changes identified through the tracking of anticipatory information, in order to establish a knowledge base of future events or situations.

Question 5: How to collectively interpret early warning signals?

The collective interpretation of anticipatory signals of environment allows for the clarification of any ambiguity surrounding the signals. The interpretation of collected information is highly subjective and once mutual confidence has been established among the members, group creativity techniques (e.g., brainstorming) can be used to bring new ideas and points of view into the open for discussion. Group creativity techniques can help the participating owner/managers formulate strategies to meet new challenges through the immediate feedback of the other members (e.g., mimicking, teasing or silence).

*Collective Learning and the Maturation of the Environmental Scanning Mechanism:* The owner/managers should, collectively, feel the need to expand the scope of their environmental scanning activities to include new players or events. At this stage of the reflective process, the members should be able to collectively identify significant external events based upon information collected and evaluate their impacts by drawing conclusions as to lessons learned. *H5:* A probable factor of a successful environmental scanning coalition among SMEs is an increased ability to identify pertinent targets for environmental scanning activities through collective creation of new meaning of the information collected.

*Conclusion 5:* Characterize future orientations on the basis of knowledge collectively acquired by the owner/managers. Evaluate the pertinence of the information and determine its meaning.

Question 6: How to Collectively Use and Share Information?

The cooperation of SMEs in environmental scanning activities requires the establishment of collective inter-firm relationships as the objectives and orientations of the participating owner/managers evolve in relation to acquired experience, shared information and the perception of shared areas of interest. Indirect competitors can cooperate in the firms share a perceived area of concern. The shared interest and orientation of the owner/managers emerges during committee meeting discussions and activities. The members are able to use the strategic information gathered and to improve the management of their collective scanning activities. They put in place scanning procedures in their individual firms (e.g., check lists, customer files, storage of raw information) and are involved in a cooperative effort, which reduces the costs of collecting and processing information.

*Collective Learning by Appropriation:* By the end of these six questions and events, we can establish an evolution in the participating owner/managers both in their attitudes towards environmental scanning and their scanning behavior. The organization of the collective environmental scanning mechanism should have been expanded and/or improved to include clearly defined objectives, the identification of pertinent information and diverse sources (possibly including access to formal networks), and the development of mechanisms by which collected information is processed and given meaning. Through a process of collective learning of environmental scanning practices, a new level of knowledge is attained.

*H6*: A probable factor of a successful environmental scanning coalition among SMEs is that joint efforts and shared tasking results in an improved scanning mechanism, generally brought about by the introduction of formalized procedures.

*Conclusion 6*: Identify the implementation methods and procedures common to SMEs. Identify the methods used to improve the strategic management of the coalition and its information resources (e.g., incorporation of new partners, creation of a shared environmental scanning center).

## **CONCLUSION**

The study will be repeated among small SMEs in order to verify the finding of this exploratory field study. This will enable us to propose a formal model of the access, processing and utilization of information collected through inter-firm scanning activities, as well as to set out guidelines for the implementation of an environmental scanning coalition of SMEs.

The concept of inter-firm scanning among SMEs, could prove to be useful in initiating cooperative practices among owner/managers in the collection, analysis and use of strategic information. The findings of this field study show that collective scanning activities represent a process of social interaction among a number of SMEs, which share a desire to improve their ability to anticipate significant changes in their environment.

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**Annex 1. Table 1: Observations Resulting from the Coalition Committee Meetings**

<b>Conceptual Model</b>	<b>Inhibitors Negative Attitudes/Behavior</b>	<b>Facilitators Positive Attitudes/Behavior</b>
<b>Organizational Structure</b>	<ul style="list-style-type: none"> <li>- No written notes or report</li> <li>- No or limited access to computers</li> </ul>	<ul style="list-style-type: none"> <li>- Role of researcher: create consensus</li> <li>- Desires and ability to formalize the access to external information sources (learning), and to put in place procedures.</li> </ul>
<b>Contextual Factors Related to the Firms</b>	<ul style="list-style-type: none"> <li>- Fear or competition</li> <li>- Suspicious, fear of opportunist behavior of other owner/managers</li> </ul>	<ul style="list-style-type: none"> <li>- Different professions/area of activity within same sector (mechanic)</li> <li>- Similar sized firms</li> <li>- Stronger awareness of the competition</li> <li>- Stronger awareness of customer needs</li> </ul>
<b>Inter-Firms Relations</b>	<ul style="list-style-type: none"> <li>- No explicit and/or shared desires or need to cooperative</li> <li>- Suspicious climate : fear of opportunist behavior (e.g., customer names)</li> <li>- Resistance towards change</li> <li>- Information retention phenomena (e.g., financial, commercial)</li> </ul>	<ul style="list-style-type: none"> <li>- Desire to know about management practices used by other partners</li> <li>- Desire to work together, on a temporary basis, in order to get to know each other better (expositions).</li> <li>- Ability to become involved in common activity (learning)</li> </ul>
<b>Collective Strategy and Decision Making Processes</b>	<ul style="list-style-type: none"> <li>- Different management styles</li> <li>- Limited abilities to detect and/or understand environmental signals</li> <li>- Implicit objectives</li> <li>- No desire of ability to assume environmental scanning tasks</li> </ul>	<ul style="list-style-type: none"> <li>- Ability to identify better scanning targets</li> <li>- Awareness of similar circumstances (little room to maneuver)</li> <li>- Role of researcher : increase awareness of changes in the external environment.</li> </ul>
<b>Cognitive Characteristics of Owner/Managers Towards Information Collection/Use (Cognitive style/personality)</b>	<ul style="list-style-type: none"> <li>- Neither the desire nor the ability to go beyond usual information sources</li> <li>- Limited ability to use information</li> <li>- Underestimation of the importance of information</li> <li>- Information received is neither understood, nor assimilated</li> </ul>	Roles of researcher : collect information, animate committee meetings.
<b>Characteristics of the Group</b>	<ul style="list-style-type: none"> <li>- Independent tendencies (lack of cooperative spirit)</li> <li>- Discussions directed at individual needs/interest (personal claims)</li> </ul>	Complicity, joking around Similar ability to make quick decisions Perception of shared values and history.

**Annex 2. Figure 2: Method for Implementing an Environmental Scanning Coalition among SMEs**

0. WHAT PARTENER(s) TO CHOOSE TO IMPLEMENT INTER-ENTERPRISE ENVIRONMENTAL SCANNING?

List partners

1. WHAT TARGERING OF COLLECTIVE SCANNING?

List the elements of a common vision

2. WHAT SHARED SELECTION OF INFORMATION?

List access modes to information sources and evaluate information

3. WHAT INTERACTIVE COMMUNICATION?

Elaborate knowledge collectively

4. WHAT COLLECTIVE INTERPRETATION OF EARLY WARNING SIGNALS?

Evaluate relevancy of information and create meaning

5. WHAT USE OF STRATEGIC INFORMATION ?

List the possible modes of action  
(Specific to each firm and common to all).