015-0443

THE ORGANIZATION FOR CORPORATE FORESIGHT: A MULTIPLE CASE STUDY IN THE TELECOMMUNICATION INDUSTRY

Cinzia Battistella - University of Udine, Department of Electrical, Managerial and Mechanical Engineering, via delle Scienze 208, 33100 Udine - cinzia.battistella@uniud.it - +39432558273
Alberto F. De Toni - University of Udine, Department of Electrical, Managerial and Mechanical Engineering, via delle Scienze 208, 33100 Udine - detoni@uniud.it - +39432558330

POMS 21st Annual Conference
Vancouver, Canada
May 7 to May 10, 2010

THE ORGANIZATION FOR CORPORATE FORESIGHT:

A MULTIPLE CASE STUDY IN THE TELECOMMUNICATION INDUSTRY

Cinzia Battistella, Alberto F. De Toni

Abstract

The present paper focuses on the organization for Corporate Foresight (CF): how the companies design their organization to anticipate future trends and detect weak signals.

The research focuses on a multiple case-study in the telecommunication sector. Through a comparison of five international companies that perform CF and two that do not, the paper highlights the organizational variables that characterize an organization for CF.

In order to foster CF, different organizational forms have been found: a dedicated foresight unit, a strong interrelation among strategy, R&D and marketing, specific task projects. These forms have in common specific organizational variables that have been related to CF performance measures. Finally, the research identifies the control variables that we hypothesise influencing the CF organization: dimension, being multinational, level in the value chain.

Keywords

Organizational design, corporate foresight, innovation, strategic process, multiple case study

INTRODUCTION

Due to the growing complexity and dynamicity of the market competition and the discontinuous conditions of the political-economical, socio-cultural and technological environment, recently new approaches to innovation (as for example: open innovation, technology brokering, collective innovation, etc.) are emerging as an anchor for companies. Company structure and dynamics are therefore changing in relation to this new landscape. Evidently, this evolution encompasses mainly the Research & Development and the Strategy organizational structures.

But how can these new organizational structures be shaped in an opportune way?

The research of Bessant (2006) underlined how we need two innovation organizations: one more related to continuous innovation and one more related to discontinuous one. Tushman and O'Really (1996) refer to the capacity of a company to be strategically flexible for continuity/discontinuity as organizational ambidexterity. The innovation in fact runs not only through the comprehension of and the research on the "market of today", but also through the identification of the possible scenarios of the "markets of tomorrow". It is therefore important to manage and to organize the company to favour the anticipation and the comprehension of trends, in order to identify new solutions and radical innovations, to investigate future possibilities of business and to be aware of the own future path of growth. In this line, a stream of scholars (e.g. Becker, 2002; Reger, 2004; Rohrbeck and Gemünden, 2008) highlighted the importance of future studies and foresight activities in the company, and define Corporate Foresight (CF) as a set of methods, processes, actors and organizational forms that permit to research and anticipate the future.

Taking off from these considerations, this paper aims to contribute in enriching the research field of foresight organization, pinpointing some suggestions on how to implement a CF organizational structure and organize and manage supporting processes and tools for future-oriented R&D and Strategy and hypothesising if and how these key dimensions impact on performance. More specifically, the present work is propelled by the following research questions:

- *How can a company organize with the aim to look deeper to future?*

- *Which are the key organizational structures and mechanisms activated by the companies to support the Corporate Foresight activities?*
- *How do these organizational structures and mechanisms impact on performance?*

THEORETICAL BACKGROUND

Contextualization of the research

Some studies showed that half of present industrial problems require long-term research and a strong attention to the context changes and that there is a relationship between long-term profitability and investments in R&D (Fagerberg, 1987) and the ability to identify and cultivate core capabilities and competences of the corporation (Prahalad and Hamel, 1990). The recent contributes of Hamel (2007) and Kotler and Caslione (2009) focus on this stream too. In other words, the present competitive environment, in which competition increases and the pace of change accelerates, stresses even more the need for deploying R&D investments more efficiently and more effectively.

In this age of rapid technological and social change, firms that do not stay along with the latest advancements in science and technology and the sociological trends stand a greater chance of missing opportunities than firms that maintain vigilance over the ever-changing PEEST (Political, Economical, Ecological, Sociological and Technological) environment. Nevertheless, literature on innovation management points out a frequent lack in catching the business opportunities, underlining the importance of weak signals (Ansoff, 1976 and 1987) and of discontinuities for disruptive innovation (Christensen, 1997). The study of weak signals and emerging markets for new technologies, innovation and product development is called "Corporate Foresight" (CF) (e.g. Becker, 2002): it is in fact focused on the study of how the organizations can identify weak signals and information from the periphery, anticipate emerging markets and trends and manage innovation to prepare for an uncertain future.

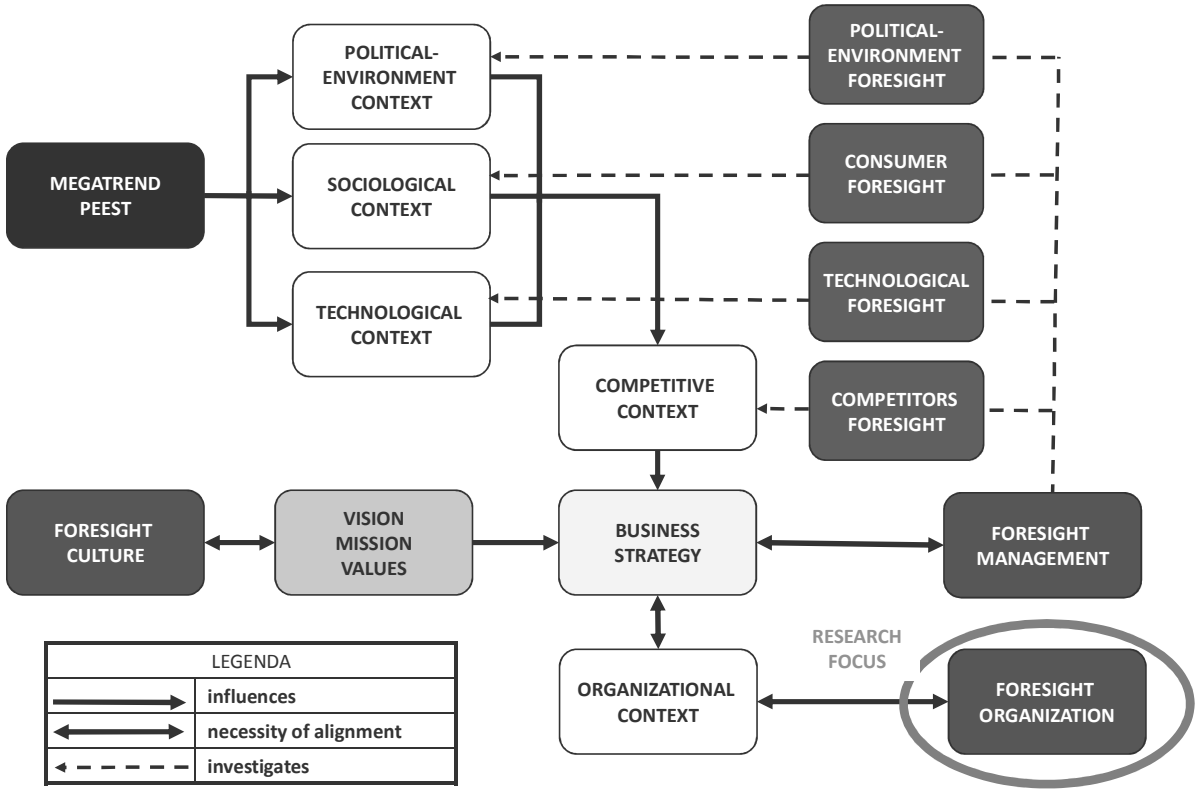

Figure 1 – Contextualization of the research

The research is contextualized in Figure 1. The research horizon in fact includes the PEEST megatrends that influence the respective contexts (Rohrbeck, 2007), which impact on the competitive context (Hamel and Prahlad, 1990; Porter, 2004), competition that influences the company strategy (Chakravarthy and White, 2001). Inside the company then, vision mission and values are the axis that directs the business strategy (Pettigrew, 1988), to which the organizational context should be aligned (Chakravarthy and White, 2001). More in depth, as regards the foresight, the soft aspects linked to foresight, called "foresight culture", have to be aligned to vision mission and values (Miles *et al.*, 2003); while the foresight organization (in other words all the organizational strategies activated for the anticipation and the recognition of the weak signals) should be in the wider organizational context (Ashton and Stacey, 1995); and finally the foresight methodology has to be coherent with the strategic process (Popper, 2007), methodology that is divided in political environment foresight, consumer foresight, technological foresight and competitors foresight, which investigate the respective contexts (Rohrbeck, 2007).

Literature systematic analysis

More in depth, a systematic literature review let emerge an overview on CF research, dividing the main research areas into CF orientations (research direction on CF related to the external of the company: PEEST environment) and CF ambits (research direction on CF related to the internal of the company), as in Table 1. As in Rohrbeck and Gemünden (2008), the CF orientations are:

- political environment foresight: describes political-economical trends;
- consumer foresight: describes socio-cultural trends of needs and life-style of consumers;
- technology foresight: trends on emerging technologies and technological discontinuities;
- competitor foresight: trends of competitors and trends of products/services available in lead or developable markets.

The CF ambits are described by culture (in terms of aims and soft-factors), organization (in terms of internal structure, external network, mechanisms and actors), management (in terms of process and techniques) and supporting technology.

Table 1 – Corporate Foresight research areas

CORPORATE FORESIGHT	**ORIENTATIONS**	POLITICAL-ENVIRONMENT FORESIGHT	
		COMPETITOR FORESIGHT	
		TECHNOLOGICAL FORESIGHT	
		CONSUMER FORESIGHT	
	AMBITS	CULTURE	AIMS
			SOFT-FACTORS
		ORGANIZATION	INTERNAL STRUCTURE
			EXTERNAL NETWORK
			MECHANISMS
			ACTORS
		MANAGEMENT	PROCESS
			TECHNIQUES
		TECHNOLOGY	SUPPORTING TOOLS AND SOFTWARES

Foresight helps companies to been given a vision to try to understand the complex forces that drive the change, to accordingly support the decision-making process and manage strategy and

R&D. As a matter of fact, many companies consider foresight as such a core competence that have built a CF function dedicated only to study advanced models for future projection using logics of anticipation, to individuate weak signals from external sources and understand emerging trends in all the PEEST environment. This function has usually been named in large companies (e.g. Nokia, Siemens, Deutsche Telekom, Shell, Telecom Italia, etc.) as "Foresight unit", "Future Centre", "Future Lab". Some general works that try to build a foresight implementation framework are the ones of Rohrbeck (2007) and Rohrbeck and Gemünden (2008). Moreover, some recent works have investigated new forms of R&D organization and laboratories, for example, Dell'Era and Verganti (2009), underlining the importance of technological but also sociological trends, talk about the Design Driven Laboratories, which study not only the technological but also the semantic dimension of the products.

Literature gaps

Anyhow, and despite some recent contributions (e.g.: Müller, 2006; Daheim and Uerz, 2008; Rohrbeck, 2009), literature on foresight is still in its infancy and it therefore has many interesting points to raise and research on. For our purposes, the main gaps that can be highlighted are the lacks of:

- a theoretical and empirical analysis of how the companies articulate the organizational structure for CF;
- a framework for the implementation of CF on an organizational level;
- an hypothesis on the best practices for CF organization;
- a link between CF organization and CF management.

Key performance indicators

An other relevant aspect of the research is the measurement of the performance of the CF activity. Literature states that CF has a positive impact on the innovative success (Brown and Eisenhardt, 1997). A qualitative evaluation can be based on number of new projects and programmes related to innovation, number of inputs given to decision-making, level of satisfaction of business units and

customers, level of support to strategy and R&D. Surely, these approaches remain still far from answering in a sufficient manner to the performance measurement problem, for example how to monetary evaluate CF advantages and outputs. Anyhow, we think that different approaches to the problem can be considered:

- looking at the CF as a process, and evaluating the performances in terms of efficiency (a rough measure can be the ratio sales growth/cost of the outsourcing or a ratio of sum of micro-outputs (number of scenarios, number of ideas, …)/sum of micro-inputs (number of reports of the status quo, etc…) and efficacy (using the comparison megatrends/products (see Battistella and De Toni, 2009) or asking to the internal customer his satisfaction (in terms of multiple performances: quality, usefulness, output completeness, etc…);
- considering an aggregate indicator thanks to literature analysis in similar fields (e.g. innovation, R&D performance measurement or Knowledge Management). For example, the construct of innovativeness has been defined by using multidimensional measures (Subramanian and Nilakanta, 1996): mean number of innovations adopted over time, mean time of adoption of innovations, and the consistency of the time of adoption of innovations;
- asking the "internal customers" (in general, the Strategy or the R&D) a qualitative evaluation of the CF performances and results, basing on sub-indicators.

Given the difficulty of the theme, and knowing that all the approaches are a rough measure of the CF performance, the authors chose to follow all the three approaches, and finally they identified the last one as the most feasible and precise of the three.

RESEARCH DESIGN

The research has been based on four main steps, as in Figure 2. A *systematic literature review* focused on Corporate Foresight, strategic process and R&D organizational structure and management lead to the identification of the main areas of research on CF and of the main literature gaps.

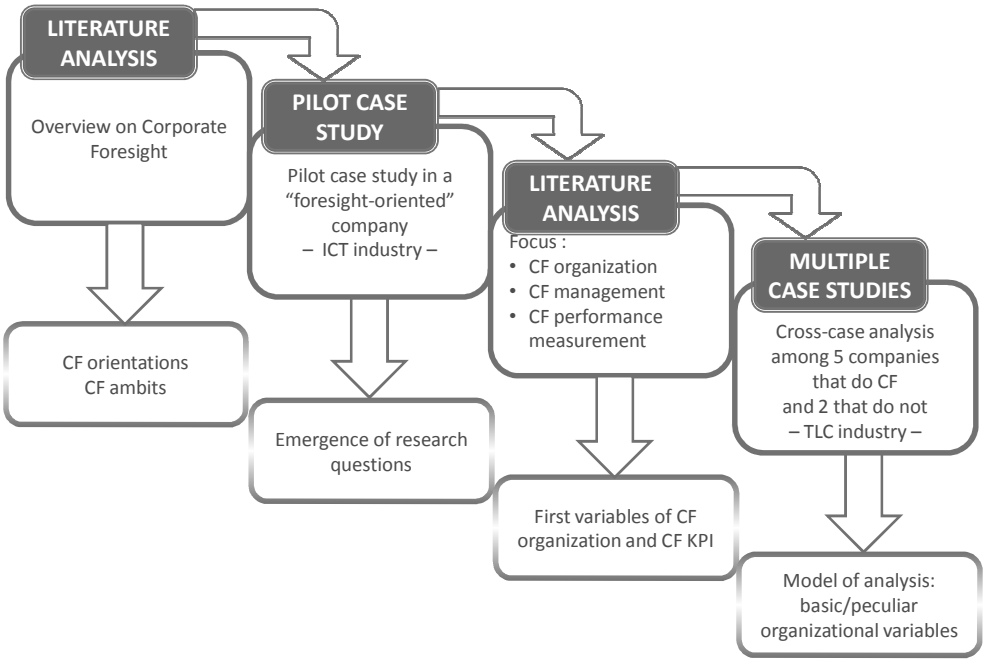

Figure 2 - Research methodology

The CF is a complex issue, still little investigated and little conceptualized (Liebl, 1996). For new investigations (Eisenhardt, 1989), to identify crucial variables (Yin, 2003), to observe a phenomenon in its complexity (Yin, 2003; McCutcheon and Meredith, 1993), to do an holistic and contextualized research and to collect a wide array of data (Hartley, 1994) and to study a phenomenon with a dynamic nature and process and where not-considered events play an important role in building explanations (Pettigrew, 1992), an explorations is needed. We chose a *pilot exploratory case-study* in an ICT company, that stimulated my curiosity on some aspects of CF and to develop and to detail the research questions, in terms of internal structure, external structure and mechanisms.[1] Moreover, it permitted to cover research areas and to identify the relevant aspects on CF practices, in particular we understood the importance to identify measures of performance for CF. Therefore, it led to a *second (focused) literature analysis*, focused on CF organization and on CF performance measurement.

[1] INTERNAL STRUCTURE: how is the organizational structure deployed to support CF? Which ones can be the models for the internal organization of the eventual foresight unit? Which are the (other) internal functions involved in the CF activities?
EXTERNAL STRUCTURE: how can the external networks be built to support the CF?
MECHANISMS: how are the organizational mechanisms for CF articulated?

Then, the research methodology followed for the theory building the *multiple-case study* research design as suggested by Yin (2003) and McCutcheon and Meredith (1993), in order to identify and descript the key variables, to identify the links among variables and to identify why these relationships exist. The case studies selection focused on the telecommunication sector due to its relevance to foresight (because of long times of market entry, high uncertainty of the market and strong impact of the technologies on the economic system). The cases have been divided in 5 companies that do foresight activities and 2 that do not[2]. In this way, the cross-case analysis permitted to highlight the CF organizational variables that distinguish a company that does foresight.

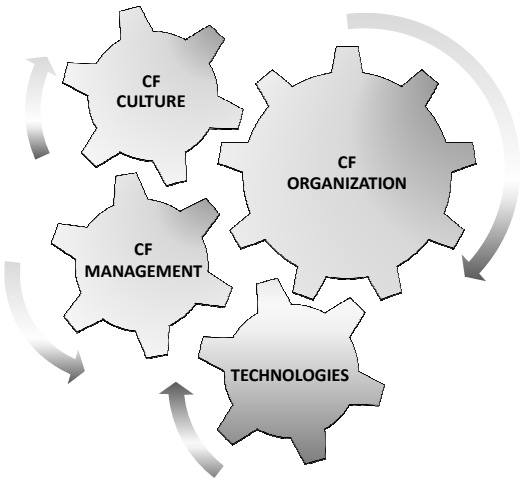

Figure 3 – Research protocol sections

As regards the research protocol, despite the focus of the research is the CF organization, in order to build an overview of the CF activities other sections that in our opinion can influence the organization (CF culture, CF management, supporting technologies, as in

Figure ***3***) have been considered, even if with the perspective of organization.

[2] The selected TLC companies are the most important in Italy.

RESULTS

Organization of Corporate Foresight

The multiple case studies contributed in finding the most important CF organizational variables. In fact, in order to foster foresight activities, different organizational forms have been founded, as for example the activation of a dedicated foresight unit, or a strong interrelation among strategy and R&D, or also with marketing, or an activation of specific task projects. These forms are characterized by organizational structure variables: nature (permanent or temporary), integration and coordination level, centralization, cooperation, leadership.

Table 2 – Comparison criteria

		OPERATORS				MANUFACTURERS		
		A	B	C	D	E	F	G
ORGANIZATION	Level of structure of CF organization	4	3			5	5	4
	Presence of a CF dedicated unit	x					x	
	Level of formalization of contacts with external network	3	4			4	5	5
	Level of structure of coordination mechanisms	3	3			5	4	4
MANAGEMENT	Presence of formalized techniques						x	x
	Typology of CF	Competitive Consumer	Competitive Consumer			Political Competitive Technological	Political Competitive Technological Consumer	Political Competitive Technological
TECHNOLOGY	Presence of supporting technologies						x	x
CULTURE	CF focus	s	s			i	s / i	i
CONTROL VARIABLES								
Dimension		3	4	3	2	5	5	5
Multinational		NO	YES	YES	NO	YES	YES	YES

The comparative analysis of the case studies can be seen in Table 2, where there are highlighted the different characteristics between the companies that do CF activities and the companies that do not. The variables are classified basing on the research protocol. Sections. In particular, as regards the organization itself, they are: level of structure of CF organization (value from 1 to 5), presence of a CF dedicated unit, level of formalization of contacts with external network (value from 1 to 5), level of structure of coordination mechanisms (value from 1 to 5). As regards the management, we refer to the presence of formalized techniques and the typology of CF (Political, competitive, technological and consumer). As regards the technology, the presence of supporting softwares. And as regards the culture, the focus of CF (strategy or innovation). Moreover, there are factors that we hypothesise influencing the CF organization: dimension, being multinational, level in the sector value chain (operator or manufacturer).

The results of the comparison are suggestions on how to organize a company foresight activities in relation to some factors in order to obtain results in terms of efficiency and efficacy of CF. The results are reported in the following table.

Table 3 – CF performances

	OPERATORS				MANUFACTURERS		
	A	**B**	**C**	**D**	**E**	**F**	**G**
AGGREGATED KPI							
EFFICIENCY	3	4			4	5	5
EFFICACY	5	3			4	5	4

Internal structure for CF

The pilot case study (see Battistella and De Toni, 2009) and the multiple case studies permitted to find some first suggestions on CF organizational architecture. The level of structure of CF organization and especially the presence of a CF dedicated unit improve the CF performances.

Therefore, we can suggest that the attention to innovation and to the market of tomorrow needs the company adopting a special R&D organization and strategy configuration and supporting

processes as foresight. A first framework that suggests the R and D separation and describes the key links among CF unit and the other functions, in particularly R and D, distinguishing them from the market of today and market of tomorrow perspectives has been developed in the pilot and confirmed with the other cases. In the stream of scholars underlining the R&D separation (e.g. Chiesa, 1996), the authors proposed a new couple: Foresight and Research.

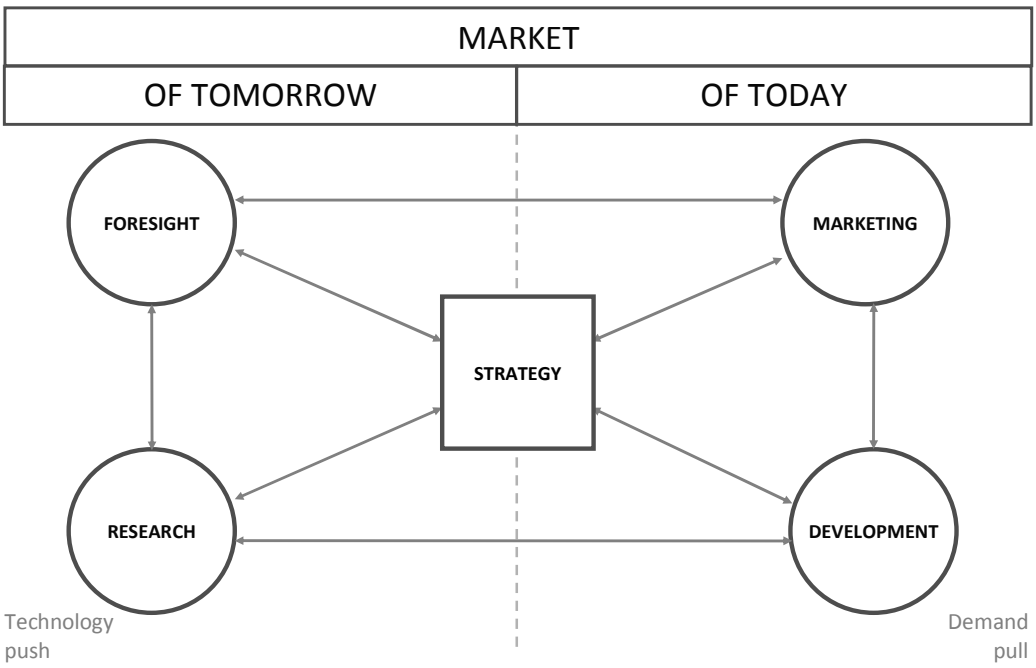

Figure 4 – Interactions among Foresight unit with other functions [Battistella and De Toni, 2009]

Figure *4* shows schematically the main interactions among CF unit and other functions: while the strategy can be found in the middle between the market of today and the market of tomorrow perspectives, R&D can be linked to strategy; but then, as we have discussed above, R is much more on the tomorrow perspective and D vice versa, so we can theoretically divide them (and as we saw in the case study, some companies practice the R&D separation); the marketing function can be more be found in the right part of the scheme, because it is more connected to the investigation of the present and future "customers of today" 's needs. Finally, the Foresight Unit finds itself linked to research, to feed it, to strategy, for the decision-making about the directions aligned to trends, and to marketing, to investigate also the customers of tomorrow's needs. These strong links enhance the

sensemaking (Weick, 1979) aptitude adopting a networked organizational model characterized by core hubs in which information flows are conveyed together with new trends and proposals from peripheral units.

CF management

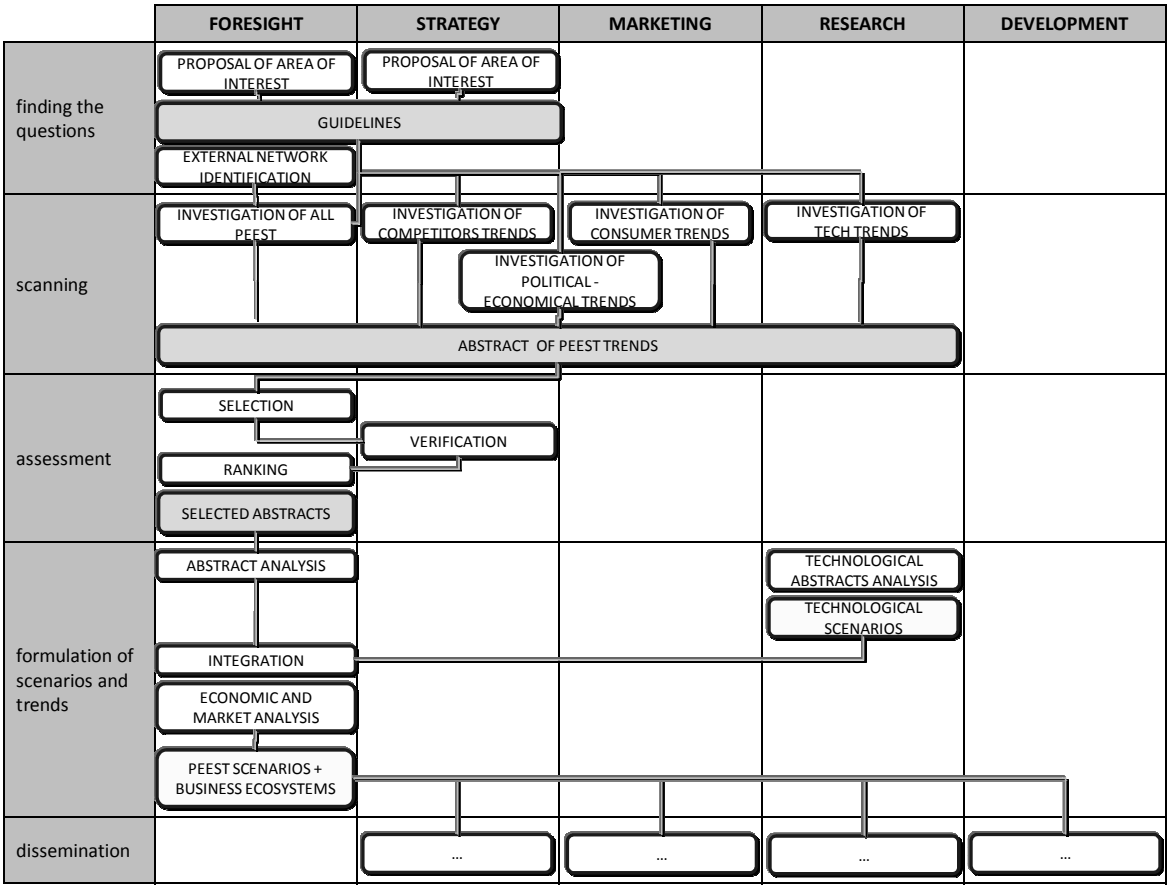

Figure 5 – An example of CF process: company F

Synthesising the proposal coming from literature (Daft and Weick, 1984; Ashton and Stacey, 1995; Becker, 2002, Fink *et al.*, 2005; Bate and Johnston, 2005; Hines, 2006; Ratcliffe, 2006; Rohrbeck, 2009), a generic CF process can be described by the following five steps: finding the questions, scanning, assessment, formulation of scenarios and trends and dissemination. Figure 5 shows an example of CF process in the company F.

CF external network

A structured external network for CF is fundamental for the success of the foresight activities. Companies F and G in fact have success on foresight and they have a strong commitment in

external collaborations and in opening up and harnessing network of experts for competitive advantage.

The network can be divided into different sub-networks: events, industry initiatives, relationships with other actors of the supply chain, collaboration for standards, relationships with other companies for foresight projects, open innovation initiatives (blogs, etc.), customers involvement and collaboration labs, partnerships with universities and research centres. It is opportune to nurture every external sub-network in order to have more and different sources of information. The information and the external expertise are in fact fundamental in the foresight activities, which cannot be outsourced because they are strategically important.

CF mechanisms

The main organizational mechanisms considered are: nature (permanent or temporary), hierarchy, integration and coordination, and centralization/decentralization.

- As regards the nature of the CF organization, it is opportune to institutionalize the foresight activity in the company.
- As regards the hierarchy, we hypothesise that the performance improves if the activity is directly connected to CEO and his staff.
- As regards the coordination, it is opportune to have formal tools in order to integrate the CF results in the strategy, as formal meetings, databases, reports, etc. The horizontal relationship can be reinforced through linking and gatekeeper positions (a staff dedicated to coordinate and integrate the results coming from the different areas involved in the CF activity, i.e. strategy, R&D, marketing).
- As regards the centralization, the solutions can be to centralize the activity in a dedicated unit and to decentralize the more technical activities in the research function or to decentralize the CF activities in the functions of strategy, research and marketing and to have a person or a staff dedicated to the coordination or to have frequent (circa one evry month) meetings.

DISCUSSION

The research drives other important first suggestions as regards the organizational structure of the engine of innovation and the splitting-up of Research and Development. From an organization viewpoint, the case study suggests to characterise and support it by building a dedicated unit strongly connected to Research (Foresight Unit), by favouring internal relationships (e.g. scientific committee) and external networks (e.g. collaborations with universities and research-centres and R&D partnerships). From a methodological viewpoint, it underlines the importance of applying the foresight techniques with the aim of comprehending in advance the strategies to continuously innovate and develop new products. This capacity of being and becoming sensitive to the trends and weak signals leads to greater attention, availability, willingness and readiness to listen and to react strategically and innovatively to internal and external changes in the PEEST.

Moreover, the comparison permits to state some hypothesis on the influence of some organizational variables on CF performances:

- The presence of a CF dedicated unit influences the efficacy of the CF.
- The level of structure of coordination mechanisms influences the efficiency of the CF.
- The presence of formalized techniques influences the efficacy of the CF.

Finally, it has been found that there are different organizational forms that suit to the different foresight types (political-environment foresight, competitive foresight, technology foresight and consumer foresight). In fact, the position in the value chain influences the typology of foresight: the manufacturers are more focused on the technological foresight, while the operators in the competitive and consumer one; while it does not influence the CF focus on strategy or innovation and R&D.

Contribution of the work

CF can have a deep strategic value in driving tomorrow innovations. In particular, it can be seen as a function of support of the Research one: foresight can be focused on a long temporal horizon, and

can feed the research by anticipating trends and giving new ideas of business. In fact, CF allows a visionary company to activate systematic processes of exploration, of sensemaking and monitoring of the key trends that can potentially have an impact on business. Moreover, in many cases it is opportune to separate Research and Development in order to concentrate not only on the market of today and to foster foresight activities. There are in fact some contexts where the divergence of R and D, as regards different focuses (market and technology respectively) and temporal orientations (market of today and market of tomorrow), is even stronger, e.g. high-tech or pharmaceutical industries.

From an academic point of view, the work represents a value for a number of reasons:

- Foresight, R&D and Strategy - it permits to define CF as a process to support the strategic decision making or the innovation and R&D, understanding that The focus of the CF determines a different best practice in CF organization;
- actionability of the CF organizational structure - it lets understand how to put into practice and to operate the CF organization in order to achieve a future-oriented organization, with a description of its implementation and of the most advanced practices to support it, and with a first tentative to link CF organizational variables with CF performances.

From a practitioners' point of view, it is a basis for managers who would like to understand how to implement CF in their enterprises and how to structure the "innovation engine" in order to give attention to the market of tomorrow and to obtain better performances.

Future directions

Further directions of the work include a survey research based on questionnaires, to investigate the causal relationship between the organizational variables identified and the CF performance. The questionnaires will be sent to 500 companies. After receiving them, they will be divided into companies that do CF and that do not, and a comparison analysis will be done. The hypothesis to be tested is that the CF organizational variables identified influence on CF performances, and that if

besides the fundamental variables a company activates also the additional variables, the CF performances increases even more.

CONCLUSIONS

The present work underlined the potentialities of the logics of anticipation of weak signals and trends from external sources. In our opinion, decoupling the R&D, adding features of foresight to the organization, even building an organizational system to support these strategic decisions, could have a deep strategic value in driving tomorrow innovations and in guiding companies investigating and preparing for a complex and uncertain future.

REFERENCES

1. Ansoff, H.I. (1976) Managing Strategic Surprise by Response to Weak Signals. *California Management Review*, 18:21-33.
2. Ansoff, H.I. (1987) The emerging paradigm of strategic behaviour. *Strategic Management Journal*.
3. Ashton, W.B. and Stacey, G.S. (1995) Technical intelligence in business: understanding technology threats and opportunities. *International Journal of Technology Management*, 10(1):79-104.
4. Becker, P. (2002) *Corporate Foresight in Europe: A First Overview*. Institution for Science and Technology Studies, Bielefeld.
5. Brown, S.L. and Eisenhardt, K.M. (1997) The Art of Continuous Change: Linking Complexity Theory and Time-Paced Evolution in Relentlessly Shifting Organizations. *Administrative Science Quarterly*, 42(1):1-34.
6. Chakravarthy, B.S. and White, R.E. (2001) *Strategy process: making, shaping and validating strategic decisions*. Handbook of Strategy and Management, Sage.
7. Chiesa, V. (1996) Separating Research from Development: Evidence from the Pharmaceutical Industry. *European Management Journal*, 14:638-647.
8. Christensen, C. (1997) *The innovator's dilemma: when new technologies cause great firms to fail*. Harvard Business School Press.
9. Daheim, C. and Uerz, G. (2008) Corporate *foresight* in Europe: Ready for the next step? *Technology Analysis and Strategic management*, 20(3):321–336.

10. Dell'Era, C. and Verganti, R. (2009) Design-driven laboratories: organization and strategy of laboratories specialized in the development of radical design-driven innovations. *R&D Management*, 39:1-20.
11. Eisenhardt, K.M. (1989) Building theories from case study research. *Academy of management review*, 14:532-50.
12. Fagerberg, J. (1987) A technology gap approach to why growth rates differ. *Research Policy*, 16:3-5.
13. Galbraith, J.R. (2002) *Designing organizations*. Wiley Jossey-Bass.
14. Hamel, G. (2007) *The Future of Management*. Harvard Business School press, Boston.
15. Hamel, G. and Prahlad, C.K. (1990) The core competence of the corporation. *Harvard business review*.
16. Hartley, J. F. (1994) Case Studies in Organizational Research, in: *Qualitative Methods in Organizational Research: A Practical Guide*. Ed. C. Cassell, London: Sage, 208-29.
17. Hines, A. (2006) Strategic foresight: the state of the art, *The Futurist*, 40 (5): 18-21.
18. Kotler, P. and Caslione, J. (2009) *Chaotics: The business of Managing and Marketing in the Age of Turbolence*. Sperling & Kupfer, New York.
19. McCutcheon, D.M. and Meredith, J.R. (1993) Conducting case study research in operations management, *Journal of Operations Management*, Elsevier.
20. Miles, I.D., Keenan, M.P. and Kaivi-oja, J. (2003) *Knowledge Society Foresight*, Dublin: European Foundation for the Improvement of Living and Working Conditions.
21. Muller (2006), Process of Strategic Foresight. Phd thesis.
22. Pettigrew, A.M. (1992) The Character and Significance of Strategy Process Research, *Strategic Management Journal*, 13:5-16 (Winter Special Issue).
23. Phillips, W., Noke, H., Bessant, J. and Lamming, R. (2006) Beyond the steady state: managing discontinuous product and process innovation. *International Journal of Innovation Management*, 10(2):175–196.
24. Popper, K. (2008) How are foresight methods selected? *Foresight*, 10(6):62-89.
25. Porter, M. (2004 (1980)) *Competitive strategy*. Free Press.
26. Prahalad, K. and Hamel, G. (1990) The core competencies of the corporation. *Harvard Business Revie*w, 68:79-91.
27. Ratcliffe, J. (2006) Challenges for Corporate Foresight: Strategic Prospective Through Scenario Thinking. Conference "Foresight Management in Corporations and Public Organizations".
28. Reger, G. (2004) Coordinating globally dispersed research centres of excellence - the case of Philips Electronics. *Journal of International Management*, 10:51–76.
29. Rohrbeck, R. (2007) Technology scouting - a case study on the Deutsche Telekom Laboratories. *ISPIM-Asia Conference*: New Delhi, India.

30. Rohrbeck, R. and Gemünden, H. G. (2008) Strategic Foresight in Multinational Enterprises: Building a Best-Practice Framework from Case Studies. *R&D Management Conference* 2008, Emerging methods in R&D management; Ottawa, Canada.

31. Rohrbeck, R. (2009) Harnessing a network of experts for competitive advantage, *R&D Management Journal.*

32. Subramanian, A. and Nilakanta, S. (1996) Organizational Innovativeness: Exploring the Relationship Between Organizational Determinants of Innovation, Types of Innovations, and Measures of Organizational Performance, *Omega*, 24(6):631-647.

33. Tushman, M.L. and O'Reilly, C.A. (1996) The ambidextrous organization: managing evolutionary and revolutionary change. *California Management Review*, 38:1-23.

34. Weick, K.E. (1979). *The social psychology of organizing* (2nd ed.). Reading, MA: Addison-Wesley.

35. Yin, R. K. (2003) *Case study research design and methods.* Applied Social Research Methods Series, Sage Newbury Park, Calif.