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Battistella C. (University of Udine)  
De Toni A. F. (University of Udine)

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# Exploring the organizational design for resilience and foresight<sup>1</sup>

Cinzia Battistella<sup>2</sup>, Alberto F. De Toni

*Department of electric, management and mechanic engineering, University of Udine, Udine, Italy*

## ABSTRACT

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

*The research focuses on a multiple case-study in the telecommunication industry. Through a comparison of eight international companies that perform CF with different performance levels, the paper highlights the organisational variables that characterize an organisation for CF and these variables have been related to CF performance measures. This conducted to a set of hypothesis that relate organization and performance.*

## KEYWORDS

Organisational design; corporate foresight; innovation; strategic process; multiple case study

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<sup>2</sup> Corresponding author: [cinzia.battistella@uniud.it](mailto:cinzia.battistella@uniud.it)

## **1. The organisation for future-oriented strategy and innovation**

*Corporate Foresight* (CF) is the process used by companies to identify weak signals and information from the periphery, anticipate emerging markets and trends and manage strategy and innovation to prepare for an uncertain future (Wack; 1985; Becker, 2002; Day and Schoemaker, 2004). Very recently, scholars begin to interpret foresight also from the dynamic capabilities point of view, and define it as a capability for organisational future orientation (Rohrbeck, 2010). CF helps companies to try to understand the complex forces that drive change, to accordingly support the decision-making process and strategy and to nurture R&D for innovation (Fink *et al.*, 2000; Burmeister *et al.*, 2004; Kaivo-oja, 2006; Van der Duin, 2006; von der Gracht *et al.*, 2010; Vecchiato and Roveda, 2010). The relevance of foresight is confirmed also from the point of view of the literature coming from the innovation management and strategic management focused on the problem of building capabilities to manage in discontinuous conditions. Here, some scholars (Hines, 2003; Ratcliffe, 2006) sustain that the secret for the success for a company is based on future orientation, paired with strong foresight capability, and based on flexible and adaptable systems. Nevertheless there is still a lack of real integration of the CF process into the particular strategy and into the company's organisational structure and a need for a better linkage of information gathering and taking action based on future studies (Reger, 2001; Hines, 2003; Chermack, 2004; Postma and Liebl, 2005; Van der Steen *et al.*, 2010).

In fact, while the majority of authors focus their attention on methodology and techniques, there are few contributions (Daheim and Uerz, 2008; Rohrbeck and Gemunden, 2010) that consider the organisation of CF among the important elements that should drive the design of a CF system. However, they do not study systematically and in detail how the organisation is designed and if there are contextual elements or elements connected to the specific activity

that influence all the system's constitutive elements and the CF performances. This is in sharp contrast with literature that acknowledges the importance of designing a peculiar organisation to increase foresight capabilities (e.g. Liebl, 1996; McMaster, 1999; Rohrbeck, 2010).

This paper aims to make a step further in our understanding of CF system attempting to fill the aforementioned gap in the extant literature. Specifically, it would like to assume the perspectives of the process and of the capabilities, and focus its attention on the organisation for Corporate Foresight: its purpose is to investigate how the companies design their organisation (e.g. budget, number of people, competences/background, linkages with strategic decision making at corporate and business levels) to anticipate future trends and detect weak signals, and if and how the CF organisation influences the CF performances.

The paper is structured as follows. In Section 2 literature about Corporate Foresight is reviewed, with the purpose to highlight the gaps and develop a research framework comprising the constitutive elements of a CF system that is able to support the subsequent empirical analysis. In Section 3 the research methodology is discussed. Section 4 reports the findings of the empirical investigation and discusses the major achievements of the paper. Finally, Section 5 summarises the paper's achievements, discusses their value for researchers and managers and outlines some possible directions for future research.

## **2. Designing the organisation for Corporate Foresight: a literature review**

Foresight is defined by the Cambridge Dictionary as "the ability to judge correctly what is going to happen in the future and plan your actions based on this knowledge". One of the most famous definitions of Corporate Foresight is "the art of the long view" (Schwartz, 1991). CF regards the long-term analysis of business environments, markets and new technologies, and their implications for corporate strategies and innovation (Ruff, 2006).

According to Rohrbeck (2010), scholars have worked on three different levels. The first level refers to *foresight methods* such as scenario technique, delphi analysis, etc., that allow us to explore the future and identify alternative futures. The second level is the *foresight process*: this implies a function that generates insights into the future and channels these to other corporate functions such as innovation management, strategic management, corporate development, marketing, or controlling. A third level is the one of *foresight capabilities* (e.g. Rohrbeck, 2010).

Table 1 shows a synthesis of the main works on Corporate Foresight, their relevance for this work and tries to highlight the main research gaps.

**Table 1.** Main works on Corporate Foresight and relevance for this work

AUTHORS	FOCUS OF THE RESEARCH	POINT OF VIEW			FOCUS			PERSPECTIVE		LINK WITH PERFORMANCES
		METHODS	PROCESS	CAPABILITIES	STRATEGY	ORGANISATION	MANAGEMENT	LINK WITH STRATEGY	LINK WITH INNOVATION	
Alsan (2008)	CF in emerging markets. Framework-Knowledge-People-System-Organisation.		X		X	X		X		
Anderson (1997)	review on Technology Foresight government programme and its impact on strategy	X			X			X		
Andersen and Borup (2009)	Foresight and strategy processes of national research councils and research programmes.		X		X			X		
Battistella and De Toni (2011)	Methodology for technology foresight	X					X			
Bezold (2010)	Lessons from Institute for Alternative Futures (IAF)		X			X			X	
Burmeister, Need and Beyers (2004)	The concept of CF		X		X				X	
Cachia et al. (2007)	Online Social Networks for foresight			X		X		X		
Calof and Smith (2010)	Key factors for foresight success		X					X	X	X
Calof and Smith (2010)	How competitive technical intelligence can work to integrate and enable competitive agility in foresight positioning									
Daheim and Uerz (2008)	CF in Europe	X	X		X		X	X		
Daheim and Uerz (2008)	Organisational forms for foresight projects		X			X				
Fink et al. (2005)	Combining traditional external scenarios with internal scenarios into a future scorecard	X					X		X	
Georghiou and Cassingena Harper (2011)	Application of foresight to research and innovation policy and strategy. Roles of corrective, disruptive and creative roles.	X				X			X	
Graefe et al. (2010)	Prediction markets		X		X					
Gruber and Venter (2006)	CF in German companies		X		X				X	
Hayward (2004)	Viable Systems Model as a framework within which to consider how foresight can be facilitated in organisations		X		X				X	
Horton (1999)	Guide to the foresight process		X		X			X		
Kaivo-oja (2006)	Role of foresight systems elements in relation to innovation systems			X	X				X	
Keenan and Popper (2008)	Differences in regional context - in terms of political, socio-economic, and cultural conditions affect foresight "style"		X			X	X	X		
Neef and Daheim (2005)	Current developments of CF in Europe	X	X		X				X	
Pirttimaki (2006)	CF needs of industrial firms	X					X	X	X	
Ratcliffe (2006)	Challenges for CF	X			X			X		
Rohrbeck and Gemünden (2010)	CF and innovation			X	X				X	
Rohrbeck (2010)	CF and its networks		X	X		X		X	X	
Roveda and Vecchiato (2008)	Foresight and innovation in the context of industrial clusters		X		X				X	
Ruff (2006)	Practice of CF within a multinational automotive company		X		X		X		X	
Schulz-Montag and Müller-Stoffels (2006)	Scenarios in innovation and strategy processes	X	X				X		X	
Van der Duin (2006)	Qualitative futures research for innovation	X					X		X	
Vecchiato and Roveda (2010)	Practice of CF in companies		X			X		X		
Von der Gracht et al. (2010)	CF and innovation management			X	X	X			X	
Warnke and Heimeriks (2006)	Technology foresight as an innovation policy instrument			X	X				X	
Will (2008)	CF in a SME	X			X		X	X		
Z_Punkt (2002)	Practices of futures research in corporations	X			X				X	

### ***Research gaps and research questions***

Different strands of literature (innovation management and strategic management) contributed to the problem on how to manage to prepare for an uncertain (and discontinuous) future. The literature shows several recommendations, but knowledge remains incomplete regarding a systemic and integrated framework for future-oriented management (especially from an organisational point of view) and the impact of CF on performances.

In fact, synthesising, the main gaps that can be highlighted are the lacks of:

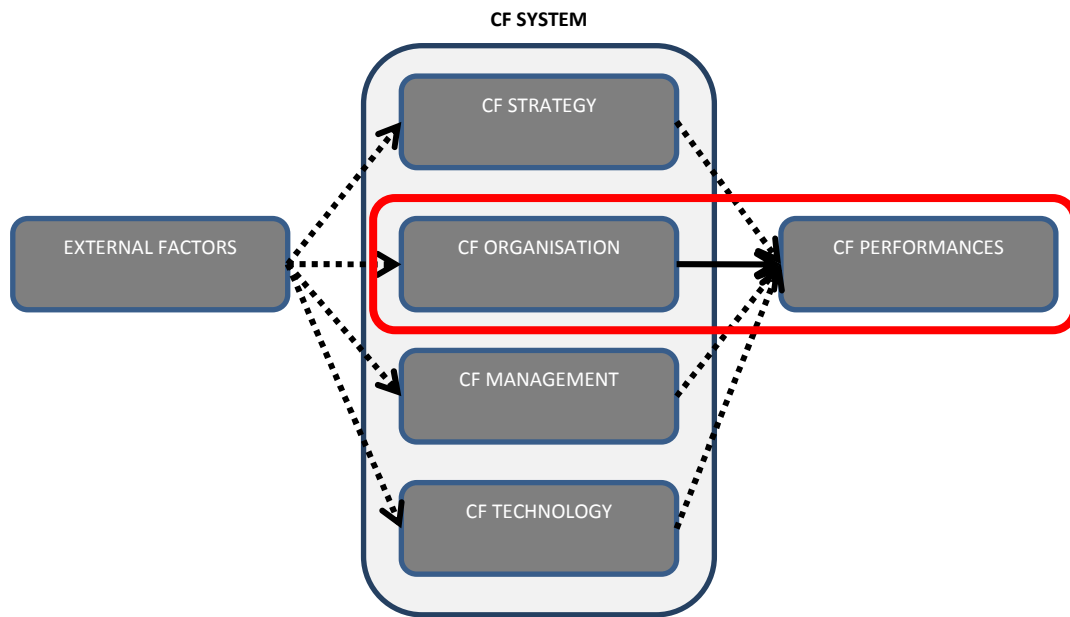
- a theoretical and empirical analysis of the different possibilities how the companies articulate the organisational structure for CF: the lack of a clear representation of Foresight Unit's objectives and of its links with other company functions; the lack of detailed suggestions on how to design and implement the organisational variables in terms of structure and mechanisms to support a future-oriented strategy;
- a hypothesis on the links of CF organisation with performances.

Taking off from these considerations, this paper aims to contribute in enriching the research field of foresight organisation, pinpointing some suggestions on how to implement a CF organisational 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 is organisation designed by the companies to support Corporate Foresight activities?*
- *How do these organisational variables impact on Corporate Foresight performance?*

The research framework is shown in Figure 1: this work is focused on the organization for CF and on its link with performances, while the general framework considered also CF strategy, CF management and CF technology, and external factors.





**Figure 1** – Investigation of this paper (in red)

***Research framework for CF system***

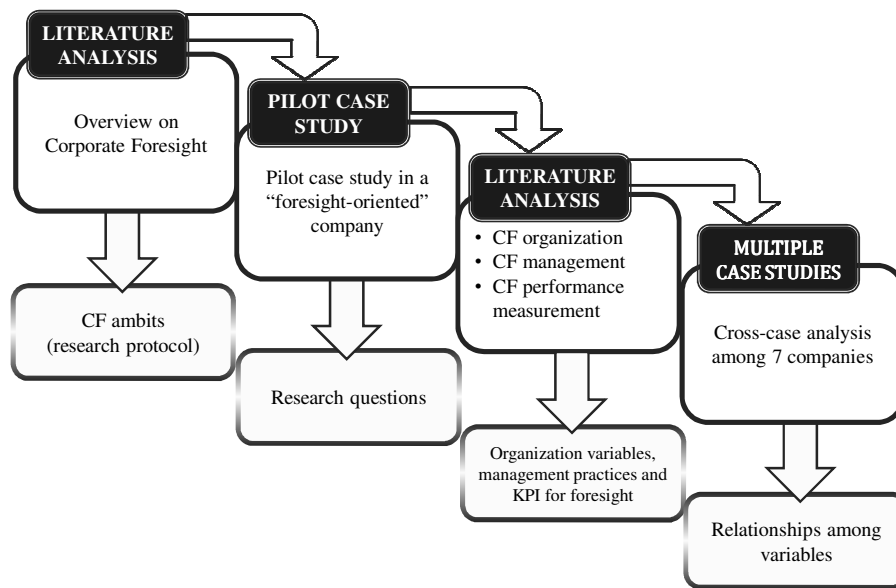
The literature on organisation (Mintzberg, 1979) suggests that the internal organisation could be conceived as a set of four main constitutive elements, namely: (i) structure (ii) coordination (iii) decision processes and (iv) control systems. These constitutive elements are closely interconnected, i.e. the design of each of these elements is influenced by the way in which the other ones are designed. Despite the focus of the research is the CF organisation, in order to build an overview of the CF activities other sections that as stated by literature can influence the organisation have been considered (e.g. strategy, management and technology). It is possible to synthesise this brief literature review in the framework depicted in Figure 1, which identifies the building blocks, or constitutive elements, of a system for CF and enlightens the main relationships between them. To detail these sections, we rely on the organisational variables and managerial approaches of Mintzberg (1979).

**Table 2** – Research protocol

AREA	VARIABLE	CHARACTERISTIC
ORGANISATION	STRUCTURE	Organisational unit/function definition
		Organisational unit/function dimension
	COORDINATION	Specialization
		Training
	DECISION PROCESSES	Vertical centralization
		Horizontal decentralization
	CONTROL SYSTEMS	Procedures formalization and process
		Internal cohesion mechanisms

### **3. Research methodology**

The research followed the steps for qualitative research on management suggested by Flynn *et al.* (1990): a) Theoretical foundation identification; b) Selection of the research design; c) Selection of the data collection method; d and e) Implementation and elaboration of aggregated data. Summarizing, the main research steps and outputs can be seen in Figure 2: (1) a systematic literature review, (2) a pilot case-study, (3) a focused literature analysis and (4) multiple case studies.



**Figure 2 - Research steps and outputs**

a) Theoretical foundation identification

Two different literature reviews have been conducted: a more general one and a focused one (on CF organisation and on CF performance measurement). The second one contributed also to analyze and make sense of the data previously gathered.

b) Selection of the research design

The CF is a complex issue, and researchers are now investigating and conceptualising it. For new investigations (Eisenhardt, 1989), to identify crucial variables (Yin, 2003), to observe a phenomenon in its complexity (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 exploration is needed. We followed the suggestions of Voss *et al.* (2002) for the choice of the case study for the research design: a pilot case study for the exploration and multiple case studies for the theory building.

We chose a *pilot exploratory case-study* in an ICT company: the case stimulated our curiosity in terms of internal structure, external structure and mechanisms and permitted to formulate and detail the research questions.

Then we followed the *multiple-case study* research design for the theory building as suggested by Eisenhardt (1989) and Voss *et al.* (2002): the theory building aims to identify and describe the key variables, the links among them and why these relationships exist.

### c) Selection of the data collection method

The collection of data required 50 (for the pilot case study) and 10 circa (for every multiple case study) non-consecutive days of on-site visits, in a time-frame of analysis from 2006 to 2010. Multiple data collection methods were adopted to acquire a deep understanding of the dynamics involved. The aim was twofold: to increase information basis and to diversify data in order to reduce biases (Patton, 2002; Yin, 2003). Documentation was semi-structured interviews, company documents and secondary data (press review and official company's documents as website and archival documents). Moreover, in three companies the researchers had the possibility to participate directly to the foresight activities and/or to observe them.

To assure the coherence and the consistency, a standard interview protocol was developed to be checked and to guide the interview:

1. description of the business model and of the innovation strategy;
2. description of the R&D organisation, in particular internal configuration, network, actors, integration mechanisms;
3. description of the foresight activities and their organisation;
4. description of the managerial and organisational supporting activities for CF;
5. performances of CF.

#### d and e) Implementation and elaboration of aggregated data

For the pilot case study, we selected a case of success among the companies that implement foresight. The motivations of the choice are: fit, distinctiveness and revelatory nature (Eisenhardt, 1989; Yin, 2003 and Siggelkow, 2007). The unit of analysis has been the entire organisation.

The multiple case studies selection focused on a single industry sector is due to the willingness to deepen the analysis and to perform a better comparison. In fact, for a deeper understanding of the organisation and management for CF, it is important also to understand the specific trends and peculiar traits of the specific company. Considering only one industry permits to have the same trends, weak signals, wild cards etc. and to have a deeper knowledge to compare the CF process and capabilities. In the few multiple case studies that literature presents, there is any with multiple case study in the same industry. There are in our opinion some important factors that can be influence factors for a CF management and organisation point of view and that can be understood analysing the same industry sector, such as the level along the supply-chain. The telecommunication sector has been chosen due to its relevance to foresight. In fact, long times for the market entry of the technologies and the high uncertainty of the market require a strong component of vision<sup>3</sup>. Moreover, the strong impact of the technologies on the economic system but the marginal role of the telecom companies is conducting them to change their business model and organisation. This requires innovation (and foresight) abilities. The scheme of the main motivations and the links with the typology of foresight are in Table 3.

The cases have been divided in 7 companies that do foresight activities (plus the ICT company of the pilot-case) with different levels of performances. These companies are the most important in Italy. The main choice criterium has been the presence in the TLC industry.

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<sup>3</sup> These considerations have been obtained in a panel Delphi among experts on ICT and TLC focused on the as-is and to-be situation of the industry.

The main contrast factor are the performance levels in foresight capability; other contrast factors are: the time CF is deployed in that company (strategy), the presence of the foresight unit (organisation), the presence of qualitative or quantitative techniques (management), the level along the supply-chain (general).

**Table3** - Motivations for the selection of the TLC industry

MOTIVATION		FORESIGHT
Political	Presence of the State: control and high standardization mechanisms	POLITICAL FORESIGHT
	Importance of coordination institutions	
Technological	Importance of technological innovation	TECHNOLOGICAL FORESIGHT
	High investments in R&D	
Economical	Strong uncertainty of the market	CONSUMER FORESIGHT
	Long time between the availability of the technological innovation and the entry and sell to the market	
	Presence of multinationals and big industrial groups	COMPETITIVE FORESIGHT

#### 4. Findings and discussion

Tables 4, 5, 6 and 7 synthesise the empirical evidence that was gathered, mapped onto the dimensions that represent the constitutive elements of an organisational system for CF, according to the research framework developed in Section 2.

#### *CF structure*

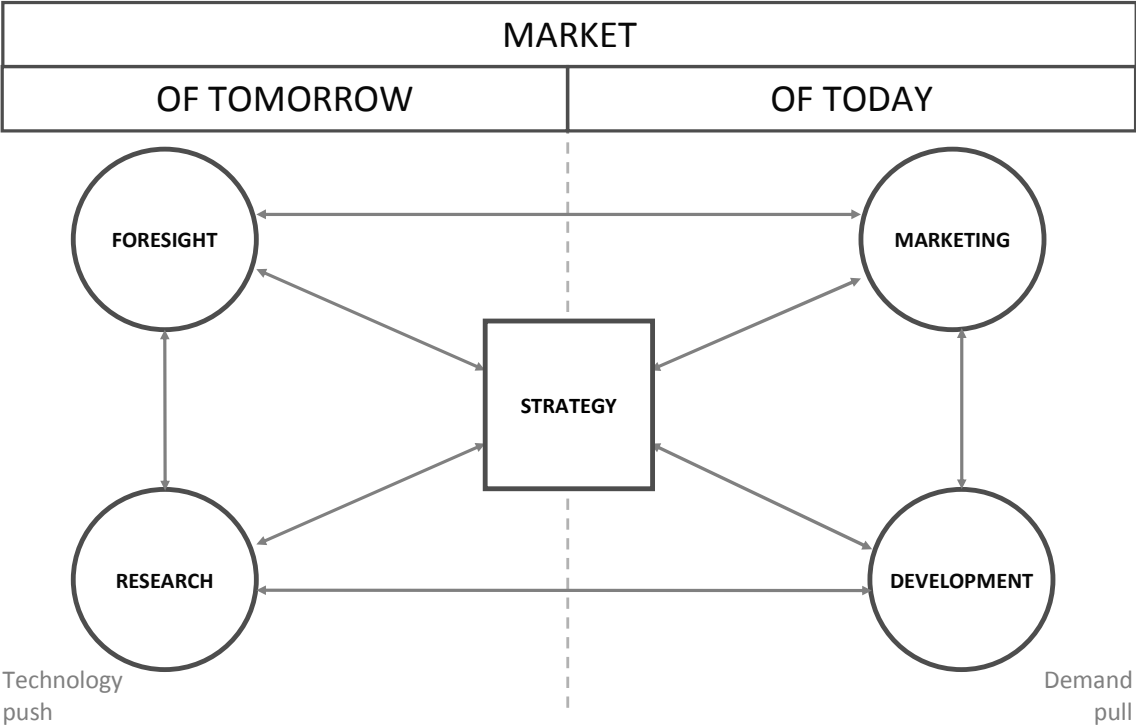
The multiple case studies contributed in finding the most important CF organisational practices. First of all, in order to foster foresight activities, different organisational forms have been founded. These can be:

- the activation of a dedicated foresight unit;
- the embedding of the foresight activities in an other function (often: R&D if the focus of foresight is innovation, Strategy if the focus is decision-making or risk management, or Marketing if the focus is in investigating tomorrow customers);
- the formal interrelation among functions (mainly Strategy and R&D, or Strategy, R&D and Marketing), favoured by the institution of formal meetings and reports among them;
- the informal interrelation among functions;
- the activation of specific task projects for foresight;
- the rely on the capabilities of single persons (mainly top management or CEO itself);
- the outsourcing of the activities to specific research centres or consulting firms.

These forms are characterized by different levels of organisational structure variables: nature (permanent or temporary), integration and coordination level, centralization, cooperation, leadership.

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 case and confirmed with the other ones. As a matter of fact, in two of the cases the Foresight Unit is really peculiar and shows strong links with the Research function to the point where, in our opinion, we can talk of a “wedding” between them and a separation between Research and Development. In the stream of scholars underlining the R&D separation (e.g. Leifer and Triscari, 1987; Chiesa, 1996), the authors proposed a new couple: Foresight and Research.

The separation of Research and Development is a debated topic among scholars. As the cases A and B show, the separation of Research and Development can be useful in a situation with an external context of rapid obsolescence of knowledge due to the accelerated changes of the PEEST environment in the specific industry, with an internal strategy of strong attention to future possibilities and with a need of balance between sustaining and disruptive or radical innovation. In this line, the foresight can be linked to the concepts of ambidextrous organization, in a temporal (Tuschman and O’Reilly, 1996), structural (O’Reilly and Tuschman, 2004) or contextual (Gibson and Birkinshaw, 2004) level.



**Figure3** – Interactions among Foresight unit and other functions

The Foresight Unit finds itself linked to Research to feed it, but its key links are also with Strategy for decision-making about directions aligned with trends and with Marketing to investigate tomorrow’s customers’ needs. These strong links enhance the sensemaking (Weick, 1979) aptitude adopting a networked organisational model characterized by core hubs



in which information flows are conveyed together with new trends and proposals from peripheral units. Figure 3 shows schematically the main interactions among the CF unit and other functions: while the strategy can be found between the “market of today” and “market of tomorrow” perspectives, R&D can be linked to strategy; however, as we have discussed above, R is much more within the “tomorrow” perspective, and vice versa for D, so we can theoretically divide them (and, as we saw in the case studies, some companies practice R&D separation); the marketing function be found to a greater extent in the right part of the scheme, as it is more connected to the investigation of the needs of present and future “customers of today”.

Finally, the research drives important first suggestions as regards the organisational structure of the CF system. The case studies showed that the level of structure of CF organisation and especially the presence of a CF dedicated unit improve the CF performances, also from the point of view of the quality of the results. This is demonstrated by the high levels of effectiveness in companies as case A and B. Therefore, first hypotheses can be stated:

*H1: A structured definition of the Corporate Foresight organisational unit/function increases the level of CF efficiency.*

*H2: A structured definition of the Corporate Foresight organisational unit/function increases the level of CF effectiveness.*

### ***CF coordination***

As regards the specialisation of the CF organisation, it is opportune to institutionalize the foresight activity in the company. It has been found that the functions involved in CF are mainly Strategy, Marketing, Research and activities function in very different ways, as for example with periodic meetings, or with top-down guidelines, etc.

Specific training for CF activities helps CF effectiveness, as the diversity of the CF actors.

In this line, it can be stated:

*H3: Specialisation in Corporate Foresight increases the level of CF effectiveness.*

### ***CF decision processes***

The cross-case analysis showed that 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 every month) meetings. As regards the hierarchy, we hypothesise that the performance improves if the activity is directly connected to CEO and his staff.

### ***CF control system***

*H4: A higher procedures formalization increases the level of CF effectiveness*

*H5: A higher internal cohesion mechanisms increases the level of CF effectiveness*

**Table 4 - CF structure**

		A	B	C	D	E	F	G	H
Organisational unit/ function definition	Number of units involved	4 internal departments	2 internal departments	Activities inserted in other functions, mainly strategy - 1 at the group level	1 autonomous fixed unit	5 internal departments	1 internal department	Activities inserted in other functions - 1 at the Group level, 3 departments involved in every company	1 internal department
	Level of involvement	Activities and specific units inserted in the technological functions with the specific aim of innovation and future research	Activities inserted in other functions, with bot a strategy and technology focus	Activities inserted at the board level, given also as a personal task to the highest-level managers	Dedicated unit	2 dedicated units	No dedicated unit	1 unit at the group level inserted into the strategy but with specific CF tasks	No dedicated unit
	Level of the activities	In the Research	Inside the board of directors, central area	Directly under the control of the CEO	A special team at the corporate level, connected with Strategy, Research and Marketing	1 unit at the Strategy level in staff with CEO and an autonomus one Both strictly linked with Marketing, Technological Research and Economical Research	In the Strategy	As a special team of Strategy inside Research - and in every company inside the Strategy, IT and Marketing	In the Strategy
	Corporate / company level	Corporate and company	Corporate	Corporate	Corporate	Corporate	Corporate	Corporate and company	Corporate
Organisational unit/ function dimension	Organisation of activities	Structure in the corporate innovation and research areas	Division influenced by the competence areas of the team-members and the specific projects of the moment	Structure in three different thematic areas	Division conditioned by the competence areas of the team-member	Foresight activities subdivided in 5 "vertical" projects and 1 horizontal about methodologies	Division conditioned by strategic projects of following competitors	Structure in five different thematic areas (guidelines)	Division influenced for business model
	Localisation of CF activities	At the CTO level	In the headquarters	In the headquarters	In the headquarters Reciprocal adaptation, small unit of CF	Both in the headquarters both externally (Brasil)	In the headquarters	Both in the headquarters both in the external (Italy)	In the headquarters
	Number of employees involved	Ca 200 employees (50 dedicated)	Ca 150	14	5 employees (1 dedicated)	Ca 45 people (30 dedicated)	3 people	Ca 25	3 people
	Dedicated time	Full-time	Full-time	Part-time	Part-time	Full-time	Part-time	Part-time	Part-time

**Table5 - CF coordination**

		A	B	C	D	E	F	G	H
<b>Specialization</b>	Nature	Istitutionalis ed nature of CF activities: very important role of foresight for innovation	Project-based nature of CF activities	Istitutionaliz ed nature of the CF activities, but they refer mainly to the capabilities of management	Permanent and istitutionaliz ed nature of the CF unit and its relationships with other functions	Permanent and istitutionalized nature of the CF unit and its relationships with other functions	Project-based nature of CF activities	Istitutionalis ed nature of CF strategy-oriented activities - Project-based nature of CF innovation-oriented activities	Project-based nature of CF activities
	General function of the units involved	Mainly technological / research units	Strategy and Research	Strategy and Research	Strategy, Marketing, Research	Marketing, Research (Ti-lab innovation), Economical studies	Strategy	Strategy, Marketing, Research	Strategy
	Dedicated unit	//	//	//	Dedicated unit with strategy aims	"Strategy and scenarios" and "Future centre" are dedicated units: one with more strategic objectives, one with more future-research objectives	//	//	//
	Functioning of the activities	Technologic al roadmaps	Periodic meetings among functions, database with trends	3 different plans for different time-scales (1 year, 3-5 years and 10 years)	Scientific committee meetings	Continuous work on future ecosystems	From necessity by strategic manager	Periodic and specific meetings among functions in order to meet foresight needs - 5 guidelines every year	From necessity by strategic manager
<b>Training</b>	Specific training for CF activities	Employees are asked to identify future trends of technologies	Employees are trained for CF activities and mainly to partecipate in a common database	Management is asked to focus on imagine the future	Employees are trained for CF activities: they learn about specific methodologies and past projects	Employees are trained for CF activities: they learn about specific methodologies and past projects; There is a specific programme for employing people	//	Employees are trained for their specific activities, in which they are encouraged to think in a "future-way"	Employee s are asked to identify future trends of technologies
	Typology of actors	IT manager	Top-management, IT manager	Top-management	Top-management	Strategist, IT manager, marketing manager	Strategist	Strategist, IT manager, marketing manager	Strategist, marketing manager
	Profile of the actors	Experts in technology and in the specific sector	Experts in the specific sector, also external consultants	Experts in economy	Experts in different industry sectors	Experts in technological and economical matters, also external consultants	Experts in economica l matters	Experts in economical matters	Experts in economic al matters
	Profile of the actors	Not so high diversity: all people interested and with background in technology	People with economics and technological competences	People with economics competences	Cognitive diversity (electronics, informatics, sociology, economics, biology, etc.)	Very high diversity: both from a cultural point of view (people from japan, china, brasil, ...) both from a competences one (economic, technological, competences) - high difference from the rest of the company	//	People with economics, sociological and technological competences	//

**Table6 - CF decision process**

		A	B	C	D	E	F	G	H
<b>Vertical centralization</b>	Main reference for CF	Foresight activities directly refer to CTO	Foresight activities refer to a unit of staff of the board of director in Cisco Group	Foresight activities refer to a unit of staff of the board of director in Ericsson Group	Foresight activities directly refer to CEO - Low vertical decentralization	Foresight activities directly refer to CEO	Foresight activities directly refer to CEO	Foresight activities refer to a unit of staff of the board of director in Vodafone Group	Foresight activities directly refer to CEO
	Internal visibility of the CF activities	Middle	High	Middle	High: all the company knows about the importance of the CF activities	Middle	Low	Middle	Low
<b>Horizontal decentralization</b>	Horizontal decentralization	Low	High	Low	Wide horizontal decentralization because there is a strong involvement of other functions	Wide horizontal decentralization because main activities are in the "Future Centre", but there is a strong involvement of other functions, as the Ti-Lab Innovation (research function) for technical activities or "Economical studies" for specific studies on economical trends and impacts	Low	Middle	Low

**Table7 – CF control system**

		A	B	C	D	E	F	G	H
<b>Procedures formalization</b>	Contents	Configuration of the portfolio, allocation of resources, decisions on products / services	Configuration of the portfolio	Configuration of the portfolio, M&A, investments	Configuration of the portfolio, M&A	Configuration of the portfolio, allocation of resources	Following portfolio	Configuration of the portfolio, business development, strategies for new markets, decisions on prod/ services	Business development, strategies for new markets
	Aims	New chances, potential risks	New chances, potential risks	New chances	New chances	New chances, potential risks	New chances	New chances	New chances
	Decision-making support	Meetings and workshops among global and local innovation teams	Building of “cascade-scenarios”	Building of “cascade-scenarios”, participative building and discussion of alternative scenarios, options and strategies (of the executive management team)	Participative process of scenarios building, workshops	Participative process of scenarios building, workshops	Meetings	Meetings among global and local teams and among different functions, participative guidelines	Participative process of scenarios building, workshops
	Tools for problem identification	Innovation-scouting, issue-scanning, identification of trends	Observation of trends in the market, identification of technological trends	Observation of trends in the market	Trend-scanning, monitoring of issues, reporting of early-indicators of changes	Trend-scanning, analysis of ecosystems	Observation of competitors	Observation of trends in the market	Observation of trends in the market
	Time	from 3 to 5	from 3 to 20 years	3 levels: 1, 3-5, 10 years	up to 15 years	up to 10 years	//	from 3 to 10 years	up to 15 years
	Modeling	Basic configuration of the method	High variation of the configuration of methods	High variation of the configuration of methods	High variation of the configuration of methods	High variation of the configuration of methods	//	Basic configuration of the method (flexible configuration in tailored projects)	//
Perspective of interpretation basing on innovation		Perspective of interpretation basing on innovation and strategic scenarios	Perspective of interpretation of macro-economic trends and strategic options (business plan)	Perspective of interpretation basing on innovation and strategic scenarios	Perspective of interpretation basing on evaluation of options and basic strategies	Perspective of interpretation basing on strategic scenarios	Perspective of interpretation basing on market	Perspective of interpretation basing on innovation	
<b>Internal cohesion mechanisms</b>	Cohesion mechanisms	Role of IT	Role of IT	Periodic meetings	Importance of the scientific committee	Future Centre role	//	Role of the Strategic unit at the Corporate level	Role of the Strategic unit at the Corporate level
	Control of the CF activities	Through the CTO as a unit integrated in the foresight	Through the strategy as a unit specialised in the foresight	Through the strategy as a unit semi-specialised in the foresight	Through the CF unit as a unit specialised in foresight	Double level of control: through the Future Centre as a unit specialised in foresight and through the strategy as a unit integrated in the foresight	Through the strategy	Through the strategy as a unit integrated in the foresight	Through the strategy

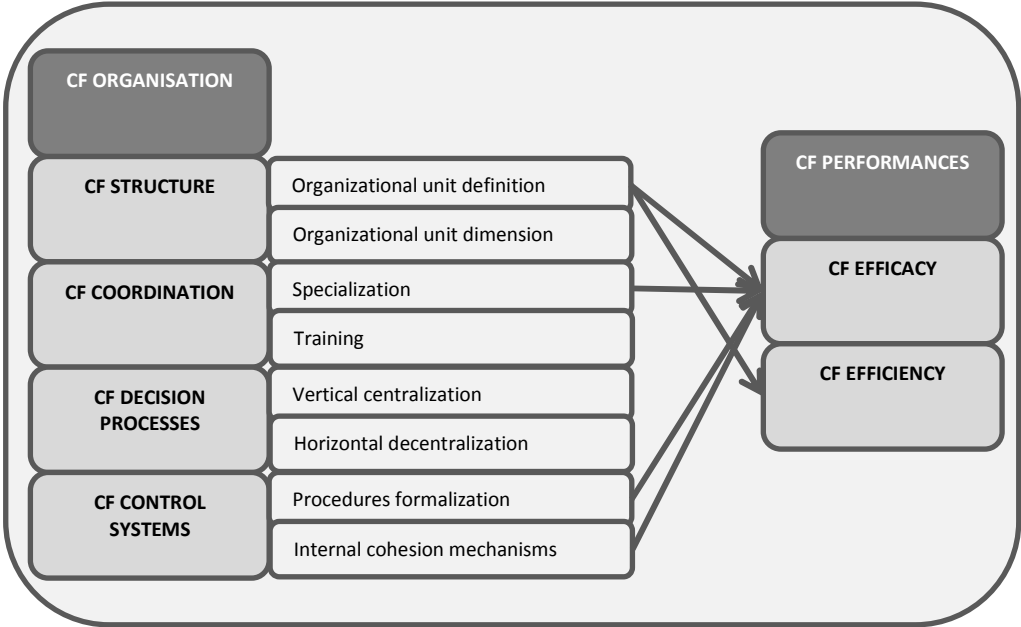
## 5. Conclusions

The paper tries to link the organisational aspects of foresight with measures of efficiency/effectiveness, and to identify indicators that permit to understand the most opportune organisational conformation for long-term strategy and future innovation. The multiple case study cross-analysis showed for example how the presence of a dedicated unit for CF influences both the effectiveness and efficiency of CF, while the efficiency of CF is influenced by procedures formalisation and mechanisms of internal cohesion. All the hypothesis on relationships are shown in Figure 4. Moreover, there are factors that we hypothesise influencing the CF organisation: dimension and level in the sector value chain.

In synthesis, from an organisational viewpoint, the case studies suggest to characterise and support CF system by building a dedicated unit strongly connected to Research (Foresight Unit) by separating Research and Development, by building a control system for procedures and internal relationships (e.g. scientific committee), by favouring external networks (e.g. collaborations with universities and research-centres and R&D partnerships), and by supporting this with soft factors (build corporate sensors for scanning for emerging change). Surprisingly, techniques and supporting technologies seem to not play a prominent role for CF efficiency and effectiveness. This can be explained by the fact that the “human factor” and the capacity to build relationships are fundamental for CF.

**Table 8 – Synthesis** [legend: vh = very high; h = high; m = middle; l = low; vl = very low]

		A	B	C	E	F	G	H	
CF PERFORMANCES	EFFECTIVENESS	vh	vh	h	h	vl	m	vl	
	EFFICIENCY	vh	h	h	vh	vl	m	l	
ORGANISATION	STRUCTURE	Organizational unit definition	vh	h	vh	vh	vl	m	l
		Organizational unit dimension	m	m	l	h	l	l	l
	COORDINATION	Specialization	vh	l	m	vh	vl	m	vl
		Training	l	m	h	h	vl	l	vl
	DECISION PROCESSES	Vertical centralization	h	h	l	vh	vl	l	l
		Horizontal decentralization	m	m	m	h	vl	h	vl
	CONTROL SYSTEMS	Procedures formalization	m	vh	m	m	vl	h	vl
		Internal cohesion mechanisms	h	h	vh	vl	vh	h	l



**Figure 4 – Propositions**



The present work underlines the potentialities of the logics of anticipation of weak signals and trends from internal and external sources. In this paper, we propose multiple case studies that explore and discuss the organisation and management of supporting capabilities, processes and tools for a future-oriented R&D and strategy.

The findings have implications in both academic and managerial fields. From an academic point of view, the work represents a value in terms of (a) the conversation on *R&D's integration/separation and organisational ambidexterity* because it can be an answer to the R and D separation dilemma from the point of view of a future-oriented strategy and it shows how a future-oriented organisation contribute to exploration of the new; (b) the conversation on the *future-oriented strategy*, this is a first tentative to build an integrated framework that helps understand how foresight activities can be useful for strategy and disruptive or radical innovation, how they relate to R&D and how they can be a support for Research; (c) the conversation on *dynamic capabilities and change management* because it is a first tentative to propose a set of capabilities to do CF. Moreover, it gives actionability to the foresight activities: it lets a firm understand how to put them into practice and to operate them, and it provides descriptions of its implementation and the most advanced practices to support it and thus to achieve an organisation geared towards future-oriented strategy and innovation. From a practitioner's point of view, it is a basis for managers who would like to understand how to structure the "innovation engine" to give attention to the market of tomorrow and how to implement CF into their enterprises.

Further work in this direction is surely needed. The research can be extended through a multiple-case analysis in other industries to increase the research panel and to permit comparison with other sectors. Then a survey research is needed to investigate the causal relationship between the organisational variables identified and the CF performance.

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