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The value contribution of strategic foresight: Insights from an empirical study of large European companies

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ABSTRACT

This paper focuses on exploring the potential and empirically observable value creation of strategic foresight activities in firms. We first review the literature on strategic foresight, innovation management and strategic management in order to identify the potential value contributions. We use survey data from 77 large multinational firms to assess how much value is generated from formalized strategic foresight practices in these firms. We show that it is possible to capture value through (1) an enhanced capacity to perceive change, (2) an enhanced capacity to interpret and respond to change, (3) influencing other actors, (4) and through an enhanced capacity for organizational learning.

1. Introduction

Although interest in strategic foresight appears to be increasing [1–3], firms' implementation of strategic foresight systems remains limited [4–6]. This could be due to doubts about getting a return on investment, or, more precisely, uncertainty about the value creation of strategic foresight activities.

Since the late 1980s, the term "foresight" has been used to describe activities which inform decision-makers by improving the inputs about the long-term future of an organization [7]. Makridakis [8: XIII] says that: "The role of foresight is to provide business executives and government policy makers with ways of seeing the future with different eyes and fully understanding the possible implications of alternative technological/societal paths". Or, as Tsoukas and Shepherd [9] put it: Foresight is the ability to see developments before they become trends, to recognize patterns before they emerge, and to grasp the features of social currents that are likely to have an impact; it is not the ability to make predictions. Since people are unlikely to stop making predictions, one aim of foresight must be to reduce the momentum of predicting the future [10].

In the French tradition of *la prospective*, foresight is linked to critical thinking in decision-making and action. In the American tradition, foresight is used to describe an image of the given future and is thus much narrower than *prospective*. In our paper, we follow the suggestion from Coates, Durnace and Godet to use the term strategic foresight as a synonym for "la prospective" [11].

Academic studies have generated knowledge on the need for strategic foresight [5], corporate foresight systems [12,13] and their processes [14–18] and design characteristics [19,20], and how they are being adapted to different contingency factors [21].

The aim of this paper is to contribute to the discussion on the value contribution of strategic foresight [e.g. 22,23]. This discussion is still rather vague. For example, Slaughter [15] talked about "creating and maintaining a high-quality, coherent and functional forward view and use the insights arising in organizational useful ways". Tsoukas and Shepherd [9] emphasize perceiving and interpreting changes as the desired result of strategic foresight. Roney [24] suggested that strategic foresight should support strategic planning. Rohrbeck and

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Gemünden also [25] identify important value contributions to the innovation capacity of a firm. Thus, strategic foresight is likely to add value to a corporate organization in multiple ways.

Our aim is to enhance the understanding of how this value creation can occur, both potentially and actually. We identify potential value contribution through an analysis of the strategic foresight, strategic management and innovation management literature, and determine actual value contribution from our survey of 77 large multinational companies. Comparing the two enables us to ascertain what firms should expect from strategic foresight activities on the one hand, and to suggest how they can increase the likelihood of achieving value contributions on the other hand.

2. Literature review: the potential value contribution of strategic foresight

Our literature analysis is guided by Daft and Weick's [26] "Organizations as Interpretation Systems" model (see Fig. 1). According to these authors, organizations perceive their environment (step 1: "scanning — data collection"), translate what they find into organizational implications (step 2: "interpretation — data giving meaning"), and develop responses based on their insights into their environment (step 3: "learning — action taken").

In regard to the literature review on strategic foresight, the terms *foresight* and *strategic foresight* need to be briefly discussed. The term foresight has been used since the late 1980s to describe an inherent human activity [27]. The terms strategic, organizational or corporate foresight (it has been argued that these terms can be used somewhat synonymous [28]), have been used to describe futures research activities in corporations [27] or organizations. Martin [29] and others [30] emphasize that foresight deals with the long-term future and Vecchiato et al. [22] use strategic foresight deliberately to emphasize the tight relationship between foresight and strategy formulation. While we already underlined our rationale for using the term strategic foresight to assimilate with the French tradition of *la prospective* [11], our aim in the literature review was to broaden our perspective by including literature on strategic foresight and literature on the organizational functions that we expect to use strategic foresight insights, i.e. innovation and strategic management.

Furthermore, the aim of the following literature analysis is to determine which value contributions can be identified along the three steps of the "Organizations as Interpretation Systems" model. We expect that the strategic foresight literature will show us value creation in terms of perception and interpretation, while the strategic and innovation management literature will help us identify how strategic foresight can trigger organizational responses (action).

2.1. The strategic foresight perspective

Although studies on general ignorance about radical change date from long before Igor Ansoff [31], he [32,33] was the first to observe how the inherent ignorance of firms about changes in the environment often resulted in missed opportunities and a failure to respond to threats. Such changes – he claimed – can be identified and anticipated by scanning so-called weak signals. A company that spots and correctly interprets the disruptive potential for its business will be in a good position to respond to this change, and retain, and even advance, its competitiveness.

The first task of strategic foresight is thus to develop mechanisms to help companies to detect these weak signals, interpret them, and trigger a response. According to Day and Schoemaker [34: 1–2]: "The key is to quickly spot those signals that are relevant and explore them further, filter out the noise, and pursue opportunities ahead of the competition or recognize the early signs of trouble before they escalate into major problems."

Firms need to make a dedicated effort to scan for change on the periphery, because they suffer from an inherent blindness caused by an intense internal focus [35] and from the reinforcement of sensors that made the organization successful in the past [36]. One recommendation for ensuring a broad scanning scope is to use interdisciplinary teams that are highly networked [13,37]. Therefore our first potential value proposition is:

(*P1*) *Gaining insights into changes in the environment.*

Change is particularly relevant if it is discontinuous, which is to say that it breaks away from the current path of development [38]. Such change can represent both an opportunity and a threat. When planning for the future, such discontinuities can be planned as "wild cards", i.e. a singular, sudden, surprising and shattering future change [39].

Discontinuous change can come from different areas, including the political, economic, social, and technological environment of an organization [40], also known as PEST changes. Studies have shown that firms often scan extensively in one area, while paying insufficient attention to the others [41,42]. In order to rectify this, top management should seek advice on how best to scan [43] and also encourage scanning of other areas [44]. In addition, using multi-disciplinary teams should reduce the risk of overlooking or misinterpreting change [e.g. 37,45]. Given that the aim of strategic foresight should be to scan for the unknown in the environment, we propose the following potential value contribution:

(*P2*) *Contributing to a reduction of uncertainty* (*e.g. through identification of disruptions*).

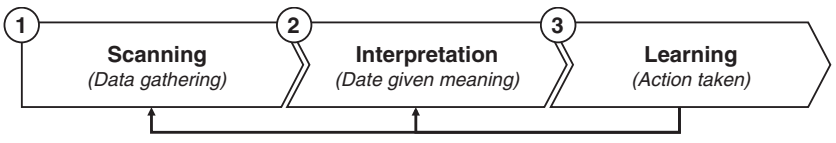

Fig. 1. Daft and Weick's "Model of Organizations as Interpretation Systems".

2.2. The strategic management perspective

It has previously been argued that the study of strategic foresight could benefit from drawing on the much larger pool of knowledge from other management research streams [46]. We believe that, for the purpose of identifying the value contribution of strategic foresight, the strategic management and innovation management literature is particularly insightful.

The resource-based view of strategic management contributes to understanding how firms achieve and maintain a competitive advantage [47–49] by seeing the firm as a bundle of resources (human, processes, practices, etc.) that are unique to the firm, and which, compared with the bundles of other firms, might translate into a competitive advantage [47,50].

More recently, it has been proposed that, in dynamic markets, firms should be able to renew their portfolio of strategic resources [51]. This ability is called a firm's dynamic capabilities. Some authors think that dynamic capabilities can be built on existing processes such as alliancing, product development, and strategic decision-making [52], while others argue that dynamic capabilities need resource cognition, i.e. how managers conceptualize resources and how well they know the critical resources of their own firm [53]. The overall process has been described in four phases: (1) search and selection of new resources, (2) decision-making as to their adoption, (3) configuration and deployment, and (4) implementation, i.e. when the new resources are put to use to achieve a competitive advantage. Fig. 2 is based on the dynamic-capability process described by Helfat et al. [54:7–17].

Using this model as a frame of reference, we expect strategic foresight to potentially support all four process steps, leading to an overall increase in the firm's evolutionary fitness. The first phase corresponds to the perception of change (P1) and the reduction of uncertainty (P2) mentioned above.

Once a firm perceives an environmental change, it has to assess its impact on the organization [22] and formulate a response strategy. Additional information gathering activities are also likely to be involved as a basis for decision-making [55]. This interpretation and strategy formation process can be regarded as a constructive process (as in the French "prospective" tradition), where multiple actors jointly interpret the perceived signals and create meaning [56].

One method used to interpret change and model interdependencies between multiple factors is the scenario technique [57–60]. Scenarios describe different ways in which the environment could evolve and how the firm can respond to the change. If seen as challenging and visionary strategic alternatives [61], scenarios can contribute to management's ability to take future-oriented decisions and initiate the configuration and deployment of the firm's strategic resources [53], thus supporting the second and third phases of the dynamic-capabilities process.

Scenarios also serve as shared mental images that build emotional capacity (through personal interaction in the scenario process). Creating emotional capacity is regarded as being vital for driving the internal change process, particularly in the case of radical change [62]. Thus, emotional capacity serves as a driving force for the implementation of strategy concerning the fourth phase of the dynamic-capabilities process.

In this respect, the potential value creation of strategic foresight would be to integrate key stakeholders in the process of strategy formation. Middle management in particular is a stakeholder group often opposed to radical change processes [63,64]. But other stakeholders, such as employees in the functional and business units, and even external stakeholders, can and should also be integrated in the strategic foresight, and into the strategy formation, process [65,66].

Van der Heijden [59] has emphasized that scenarios should be understood as a tool for fostering and initiating strategic conversations in organizations: "It is my experience that scenarios are the best available language for the strategic conversation, as it allows both differentiation in views, but also brings people together towards a shared understanding of the situation, making decision-making possible when the time has arrived to take action". The value contribution of strategic foresight, in the sense of a strategic conversation, is that it encourages not only the sharing, but also challenges the firm's mental models, and in this way the firm can eliminate blind spots in its sense-making of the environment and of the future.

Strategic foresight as a vehicle for strategic conversation involves both value contribution and the notion of learning. A strategic foresight process not only contributes to the learning organization [67], but is a learning process itself [68]. We therefore expect strategic foresight to be able to contribute value through:

(*SM1*) *Fostering conversation about overall strategy*.

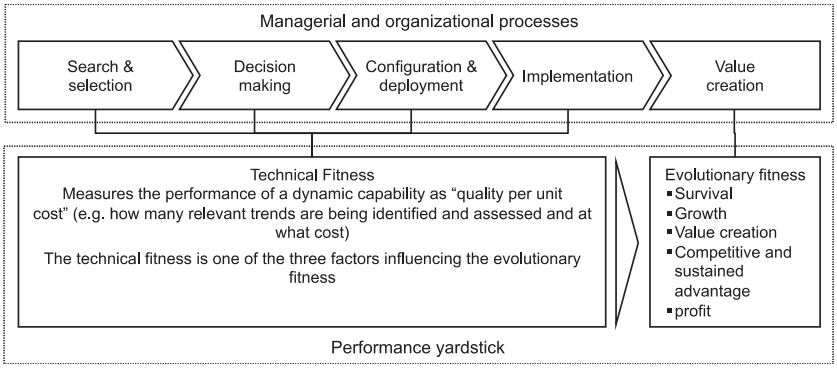

Fig. 2. Process model of dynamic capabilities, adapted from Helfat et al. [54].

It is not enough for a firm to perceive change and develop a strategy to deal with it; the firm also has to be able to adapt to change. In management science there are two opinions about firms' ability to adapt to change. The evolutionists argue that firms have insufficient sensors to perceive change [36], they have established internal organizations that are too complex [69], and consequently they are too inert to respond effectively and timely enough to survive radical change [70]. The adaptionists disagree with this, pointing out that many firms (however small) have already survived discontinuous change, proving that adaptation is possible [71,72].

We follow the adaptionists' assumption in expecting that aggressive entrepreneurial management can turn even threatening discontinuous change into an opportunity [73]. Of course, this is not to ignore the fact that large firms find it especially difficult to respond to discontinuous change [74]. However, we assume that this failure is not proof of a general inability to adapt, but rather an indication that specific methods, tools and processes are needed.

Similarly, it has been noted that strategic planning lacks sensitivity to changes in the firm's environment. This suggests that elements of strategic issue management should be included into their strategic planning systems [75]. It has also been noted that strategic foresight should challenge mental models and support management in working with hypotheses, rather than rushing to create consensus on the basis of shared (and potentially false) mental models [76].

In this study, we define the potential value of strategic foresight more broadly than merely a contribution to responding to environmental change. We also include cases where a firm is faced with an uncertain environment, e.g. entering a new geographical market, where it has not previously done business and thus lacks knowledge and experience. Such a situation is similar to a discontinuous change insofar as the firm is faced with uncertainty regarding many of the factors affecting its future business operations [13]. We therefore propose that the potential value contribution of strategic foresight consists in:

(*SM2*) *Supporting the adjustment of the company when faced with uncertainty*.

Moving from perceiving to responding to external change means that firms need to develop plans and orchestrate actions. The complexity of implementing responses has already been hinted above, when we discussed the idea that the inertia of a large firm is a consequence of the complexity of its organization, interdependence of actions, and the need to align actions with incentives, motivation, controls and coordination [77]. One result of the failure to manage this complexity might be that middle managers keep following the guidelines of old incentive systems and thus prevent strategic change, as was the case during the transition of Eastman Kodak from chemical to digital photography [64].

There are a number of methods within the strategic foresight repertoire that can support the discovery of interdependencies between actions, model them, and create systems that reflect future states or plan a transition path. As discussed earlier in this article, future states can be modeled and reflected by scenarios, which in turn reflect the systemic nature of the real world, where influencing factors can be integrated by a system of interdependencies, rather than by the linear dependencies used in causal chains [78].

Roadmapping has become the method of choice for planning the transition towards a future state. From its original application as a tool to coordinate research and development and marketing units [79], roadmapping has been adapted [80] also to include coordination of corporate and technology strategy [81,82], entering new business fields [83], and planning strategic renewal of business fields [84].

These two tools serve only as an example that strategic foresight methods and practices can contribute to the planning task and coordination of different units and their actions. We thus conclude that another potential value contribution of strategic foresight could be:

(*SM3*) *Improving the coordination of business objectives*.

Another potential value contribution of strategic foresight concerns broadening the scope of perceived alternatives and taking different perspectives in order to make better strategic choices. In this respect, it has been shown that decision-making is often characterized by bounded rationality [85], and that special efforts are needed to prevent negative effects such as 'groupthink', i.e. the tendency to seek concurrence rather than exploring all possible solutions [86].

There are many factors, particularly in the strategy formation process, that can isolate decision makers from a broader set of information, and thus from selecting the optimal solution from a wide range of alternatives. Among other things, strategy formation is influenced by dominant mental models, heuristics, representations, and personal values [87,88].

However, there is some evidence to suggest that, for example, scenario analysis can widen the scope of influencing factors perceived by top management and thus enhance strategic decision-making [78]. According to some, scenario analysis also has a certain capacity to increase organizational learning [89]. Furthermore, scenarios can serve as a useful tool to combine the external perspective (external scenarios) with the internal perspective of resource and strategic options (internal scenarios) [90], and thus support the search for an optimal solution in uncertain environments. We therefore expect that strategic foresight exercises can contribute value by:

(*SM4*) *Creating the ability to adopt alternative perspectives*.

2.3. The innovation management perspective

It has been argued that a strategic foresight process can be characterized as incorporating creativity and innovation [91] and that there is a connection between innovation and strategic foresight [e.g. 25,27,91,92]. Therefore the search for weak signals can also be regarded as the search for new innovations [28].

Innovation management deals with supporting a firm to exploit inventions either externally through novel products and services or internally through enhanced processes or organizational forms [93,94]. Innovation management often involves integrating knowledge about market demand with knowledge about emerging technologies and technical feasibility. There needs to be a balance between the market and the

technology perspectives [95], and the creation process of innovation will often involve multiple iterations between the market (customers) and the lab (prototypes based on novel technologies) [96].

The downside of such iterations is the time required and the cost (for creating prototypes, market testing, etc.). In consequence, firms seek to reduce the need for iterations by planning activities in the pre-development stage of new product development [97,98]. Case studies have shown that strategic foresight can support new product development in three ways: (1) exploring new innovation fields, (2) identifying promising innovations, and (3) challenging research and development teams throughout the new product development process [25]. This leads to the following proposition about the potential value contribution of strategic foresight:

(*IM1*) *Strategic foresight reduces the level of uncertainty in R&D projects.*

While scanning for emerging technologies is an established practice in many firms [2], scanning for future customer needs is less common. Increasingly, however, firms seek to explore new innovation fields by focusing on the discovery of non-articulated needs [13]. Since searching for non-articulated needs can be seen as exploring either emerging or future needs, we regard this as a task of strategic foresight. Thus, we expect that strategic foresight could also contribute by:

(*IM2*) *Enhancing the understanding of customer needs.*

In addition, firms report that they use strategic foresight to identify new customer groups, either for current or future products and services [13,25]. We therefore propose the hypothesis that strategic foresight will contribute to:

(*IM3*) *Identifying potential customers.*

It has also been reported that strategic foresight methods are being employed to explore potential new markets [99], or gain a better understanding of how current markets work [100,101]. This can be particularly crucial in situations where market and industries converge [102], where tools such as scouting networks [103], proactive scanning of technology and market opportunities [13], and scenario analysis [78,104] have been reported to contribute value by:

(*IM4*) *Enhancing the understanding of the market.*

With regard to the opponent role of strategic foresight [25], i.e. challenging state-of-the-art innovation projects, we also speculate that this can be played at the portfolio level. Here, it would be particularly important to monitor exposure to disruptive changes and how well the current innovation project portfolio is aligned with possible futures [105]. For example, strategic foresight could check how new legislation or a change in the dominant technology of a particular industry is likely to affect the market success of current innovation projects (both positively and negatively). We therefore expect strategic foresight to contribute by:

(*IM5*) *Identifying opportunities and threats regarding the firm's product and technology portfolio.*

2.4. General value contributions

On a more generic level, it can be argued that the role of a strategic foresight process in an organization cannot predict the future, but can prepare for it [9]. This is also reflected in the notion that it is the actual process of developing foresight, which might have an impact in an organization [106]. Chia [107] also argues that foresight is achieved in an organization through re-educating the attention of management. Foresight activities should be a structured communication process focusing on mental models, blind spots, and knowledge gaps [108]. These processes should, in turn, trigger discussions about the future and about current events that might have an impact on the future. This process enables an organization to make sense of its environment and look for weak signals of change, or rather, trends. In cognitive terms, a foresight process should enhance an organization's memory of the future [71]. Ingvar's [109] concept of a "memory of the future" has recently been underlined by Schacter and Gilbert [110,111], who conclude that the human brain is able to store various different pictures of the future. The more memories of the future that are stored, the more receptive can an individual be to signals from the outside world.

Reading [112] observes that humans can only imagine the future in ways that relate to their own experience and understanding of the past. This implies that humans are unable to conceive ideas that do not fit their preconceived models of the world. Van der Heijden et al. [60: 177] emphasizes the importance of a memory of the future as regards the scenario process: "In essence, the scenario process enables managers to visit and experience the future ahead of time, thereby creating what is called "memories" of the future. These visits to anticipated futures are then remembered, creating a matrix in the mind of managers and serving as subconscious guides to make sense of incoming environmental signals and to act on them". By adding to the memory of the future of an organization, strategic foresight can contribute to the notion of the learning organization. We thus expect strategic foresight to:

(*O1*) *Facilitate organizational learning.*

Following the argument that foresight can create memories of the future, or mental images, we can expect strategic foresight to support the process of convincing other organizations or stakeholders to act to create this future. Strategic foresight could be expected to play an enabling role [20] in systemic innovations in particular, where multiple actors need to work together to create a market or an industry [113]. We therefore expect strategic foresight to contribute value by:

(*O2*) *Influencing others to act.*

2.5. Summary: the potential value contribution of strategic foresight

By analyzing not only the literature on strategic foresight, but also on strategic management and innovation management, we have broadened the potential contribution of the former. Table 1 summarizes the potential value contributions

Table 1
Potential value contributions of strategic foresight activities.

Group	Code	8 potential value contribution of strategic foresight
Perception	P1	• Gaining insights into changes in the environment
	P2	• Contributing to a reduction of uncertainty (e.g. through identification of disruptions)
Interpretation and usage	SM1	• Fostering conversations about the overall strategy of the company
(*for strategic management*)	SM2	• Supporting the adjustment of the company in situations of uncertainty
	SM3	• Improving the coordination of business objectives
	SM4	• Creating the ability to adopt alternative perspectives
Interpretation and usage	IM1	• Reducing the level of uncertainty in R&D projects
(*for innovation management*)	IM2	• Enhancing the understanding of customer needs
	IM3	• Identifying potential customers
	IM4	• Enhancing the understanding of the market
	IM5	• Identification of opportunities and threats regarding our product and technology portfolio
Overall	O1	• Facilitate organizational learning
	O2	• Shaping the future (e.g. through influencing other parties, such as politics and other companies)

of strategic foresight, which will serve as our hypotheses for the empirical investigation.

The table reflects a very broad perspective on strategic foresight, one that includes not only the perception and interpretation of change, but also the methods, processes, and organizational routines that permit an organization to respond to change.

3. Methodology

3.1. Research strategy

After having identified the potential value contributions of strategic foresight activities, we wanted to shed light on the actual value contributions that firms generate through their activities. In order to pre-test whether and where such value contributions can be detected, we conducted 12 interviews, six in large multinational companies (MNCs) and six in small and medium-sized enterprises (SMEs). This quickly showed us that it would be difficult to identify suitable respondents. Most MNCs and all SMEs had no, or only very limited, knowledge about value creation from strategic foresight activities.

There were two reasons for this: First, there were no formalized strategic foresight activities in most of these companies, so they were unable to comment on their impact. Second, even if formalized strategic foresight activities did take place, many firms had not systematically tried to assess the resulting value creation. We therefore faced a challenge to find suitable firms that were able to report on the phenomenon we were interested in. As none of the SMEs from our pre-study were able to comment on the value creation from their strategic foresight activities, we decided to target exclusively large companies as respondents.

3.2. Data collection and sample

We developed a sequential filtering process to help us find suitable firms. We started by searching the Internet for firms that were large enough (annual revenue of more than €100 million) and that had documented experience of strategic foresight, i.e. in formal reports (annual report, company newsletter, etc.) or information provided by a representative of the firm (at conference presentations, interviews, or via a social network, etc.). This process gave us a sample of 467 firms, which were contacted by phone and invited to participate in the survey. Of the invited firms, 135 returned a questionnaire, corresponding to a response rate of 29%. Of these 135 questionnaires, 58 had to be excluded, either because the firm did not have sufficient experience of strategic foresight or because the questionnaire was incomplete. The remaining 77 firms came from a variety of different industry sectors, as shown in Fig. 3.

Most of the firms in our sample are very large, 91% having annual revenues of more than €1 billion. We believe that this is partly a result of our filtering, where we excluded firms without formalized strategic foresight activities. Large firms are more likely to have sufficient resources at their disposal to include such activities, and also be more likely to want a return on their investment in strategic foresight. A breakdown of the firms by revenue is shown in Fig. 4.

After collecting the questionnaires, we also conducted 10 validation interviews to check whether our questions had been properly understood. These interviews showed that, overall, the respondents understood the intent of the questions. In some cases, these interviews also revealed interesting insights into sub-factors that influenced the score. These cases will be commented on in the Results section.

3.3. Top, medium and low performers

Our empirical research focuses on the value that strategic foresight activities generate, without controlling for the level of activities. This is because, based on our pre-study, we came from the pessimistic starting point that many firms reported very little value creation, and we were therefore more interested in detecting any hopeful signs of where and how much value is created. Our pre-study also gave us the impression that good performers were using strategic foresight activities in a more directed way, i.e. with more intent to create value. This phenomenon was for us an interesting finding, which could eventually give encouragement for further research with the aim to establish a correlation between performance and foresight activities. This in mind we wanted to explore if that phenomenon could also be identified in our data. We want to clarify that we cannot establish any relationship between the value contribution of strategic foresight and firm performance and we did not aim for that.

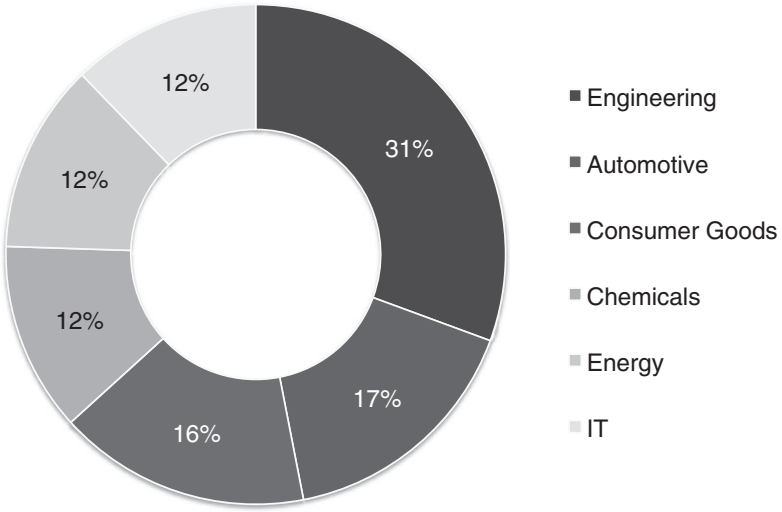

Fig. 3. Sample breakdown by industry in %.

However, by splitting our sample into top-, medium- and low-performing firms we aim at differentiating between these three groups and identifying significant differences in their obtained value contributions.

Finding a good proxy for performance is always difficult, and in our case we also had to find a measure with a reasonable level of robustness for our multi-industry sample. According to Kaplan and Norton [114], sales growth is a good indicator of performance, since it indicates the level of a company's success; it captures expansion of product as well as service offerings, the reaching of new customers and markets, and changes in the product and services mix towards higher-value-added offerings. Sales growth is also one of the indicators not adversely affected by distortions, e.g. through financial instruments employed to optimize operating profit.

We therefore chose to use sales growth, collecting the necessary data from annual reports and, in some cases, directly from the firm concerned. We used the Compound Annual Growth Rate (CAGR) between the years 2005 and 2007 to calculate sales growth, classifying the sample into top and low performers by selecting the 12 firms (approximately 15%) with the highest and lowest CAGR. The remaining 53 firms were categorized as middle performers.

4. Results

4.1. Perception

For many firms, gaining insights into changes in the organizational environment (P1) is the basis of any strategic foresight system. It is therefore not surprising that only a very small minority of the medium performers (4%) report that they do not get this particular value from their strategic foresight system (see Fig. 5). The data also show that roughly the same percentages (about 35%) of firms fully agree that they get relevant insights. The surprisingly low overall figure can also be seen as an indication that our respondents think that strategic foresight could do a better job in achieving this goal.

The second question is designed to capture the effect of having insights into changes in organizational environment (P2). Unlike the first question, it measures not the number of insights, but reflects on the number of potential changes that the strategic foresight was not able to capture. Interestingly, the percentage of top performers who are fully satisfied in this respect is much higher (42%) than of the medium (21%) or low (25%) performers. However, top performers also seem

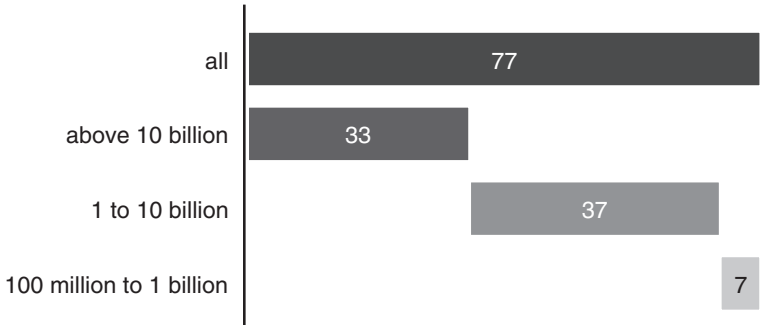

Fig. 4. Sample breakdown by annual revenue in Euros.

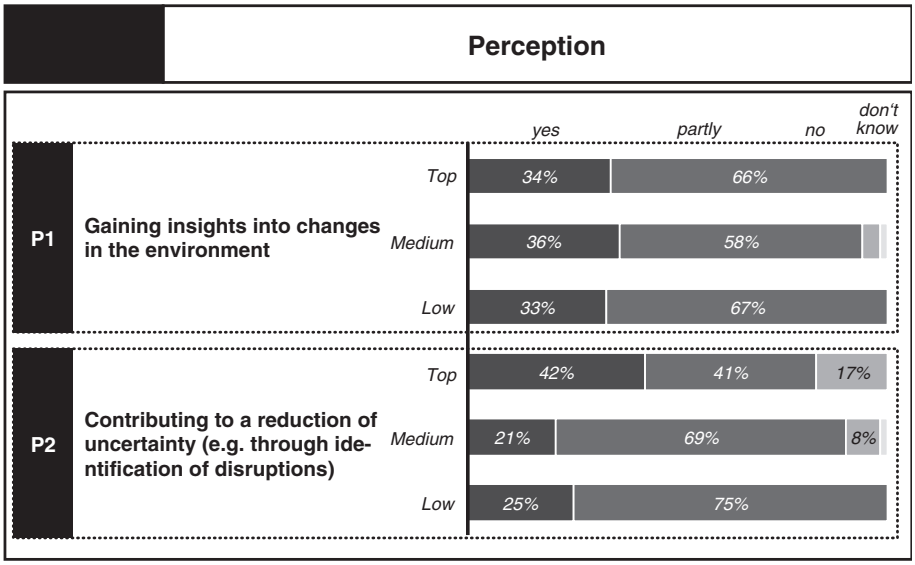

Fig. 5. Value creation in terms of enhanced perception.

to be more critical about the performance of their strategic foresight systems, since 17% disagree with the statement that uncertainty has been reduced.

4.2. Interpretation and usage (for strategic management)

Our next set of questions was designed to capture the extent to which the firms can transform the perceived changes, or weak signals of change, into implications for their organization (interpretation) and produce adequate responses (usage).

In the category 'fostering strategic discussions' (SM1), the top performers again have the largest share (42%) of successful systems (see Fig. 6), with much lower figures for medium and low performers (23% and 8% respectively). Thus, top performers in particular are optimistic that strategic foresight contributes to strategic cognition, which would be an important value creation.

As regards the question of whether strategic conversations also lead to an increased ability to adjust and respond (SM2), the extent to which all firms fully agree to this is equally small in all categories (approximately 20%).

The aim of the next question was to determine whether strategic foresight activities improve internal coordination (SM3). Here, only 25% of top performers and none of the low performers agreed to this. This could also be due to a low level of participation in such activities. Many of the firms in our pre-study carried out strategic foresight activities without any collaboration with other units, and after completion merely submitted a report. Such companies are unlikely to add value in terms of coordination between goals and units.

As can be seen from the last question (SM4), all firms have equally limited success (about 22% on average) in adopting alternative perspectives, although most are somewhat satisfied (about 95% on average). In our follow-up interviews, this was attributed to the fact that, while strategic foresight activities often resulted in alternative perspectives, they were only adopted by decision makers in a few cases.

4.3. Interpretation and usage (for innovation management)

As discussed in our literature review, although the roots of strategic foresight can mostly be traced back to the strategic management literature, in recent years the link to innovation management has been highlighted more frequently. However, our survey data seem to suggest that, for innovation management, the link to value, at least in terms of reducing the level of uncertainty, is somewhat tenuous (IM1) (see Fig. 7). The low and medium performers in particular are almost unanimous in saying that there is either partly or no value creation at all. Only among top performers is there a significant number of firms (34%) that say that there has been a clear reduction of uncertainty in their R&D projects.

The results are more positive for the second question (IM2). About 34% of top performers and 32% of medium performers report an enhanced customer understanding, while only 17% of low performers agree to this. There is more limited agreement about the value of identifying new potential customers (IM3), where only 17% of top performers and 20% of medium performers agree.

As regards the broader aim of enhancing an understanding of the market (IM4), 34% of both top and medium performers fully agree to this, as opposed to only 17% of the low performers.

The last question in the innovation management block was concerned with one of the most strategic roles of innovation management (IM5), where we expected a more direct link to strategic foresight. Here, the data also show a more positive picture, with 42% of top performers and 23% and 25% of medium and low performers respectively saying that their strategic foresight activities contribute to this value, thereby confirming the link.

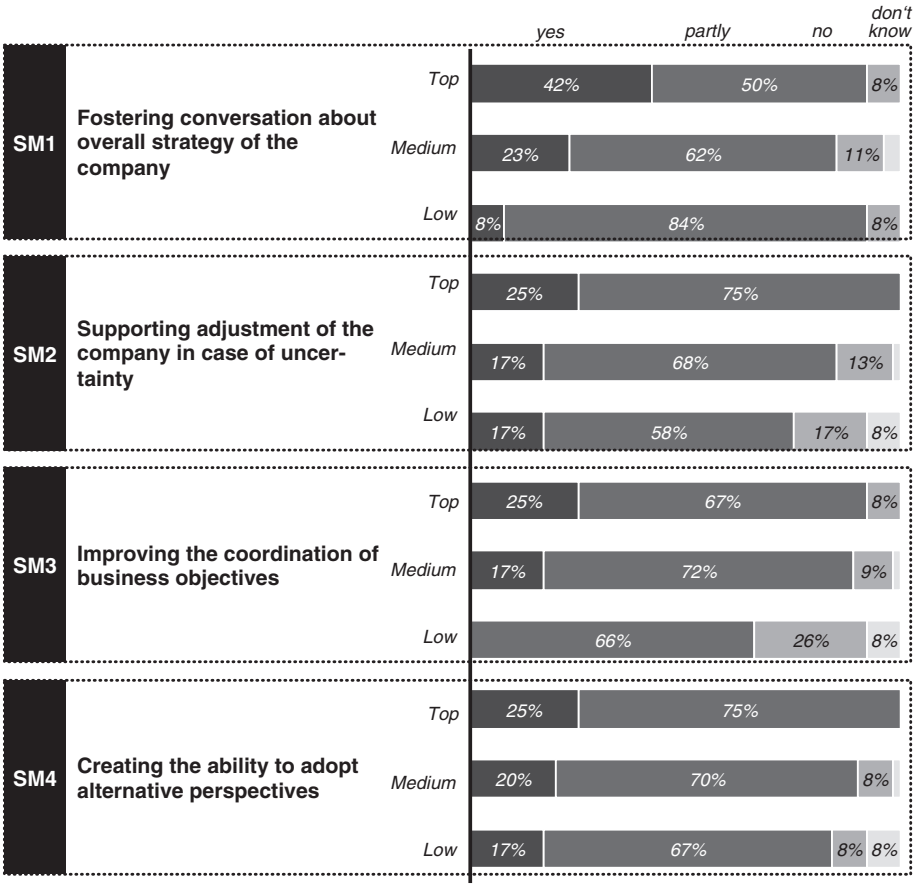

Fig. 6. Value creation for strategic management.

4.4. Overall value contributions

The final section of our empirical investigation examined value contributions in a very broad sense (see Fig. 8). The data on organizational learning (O1) show a mixed picture at a low level. While 25% of top and low performers agreed that their activities support organizational learning, the figure for medium performers is only 13%.

The second question (O2) is designed to identify the extent to which strategic foresight activities help shape the future. In our pre-survey interviews, several firms indicated that they use scenarios to influence especially other companies or stakeholders, e.g. politicians. However, confirming our insights from the interviews, although some companies seem to be very successful in using strategic foresight for this purpose, they are a minority, being only 25% of top performers and 20% of medium performers.

4.5. Overall results

When calculating the average for the fully agreeing respondents across all items of one dimension, it can be seen that top performers are more likely to get value from their strategic foresight activities in all of them (see Fig. 9; top performers are shown in light grey). The difference between top performers and medium and low performers is particularly high in the dimension 'overall value contribution', where 34% fully agree, compared with 17% for medium performers and 13% for low performers.

The data also shows that, in all categories, the majority of firms do not get all the potential value contribution. Even in the group of top performers, only about 38% (in the perception category) report achieving full value creation. This low likelihood of getting value in return for an investment in strategic foresight activities might well prevent the spread of strategic foresight practices.

5. Discussion

The aim of our study was to determine the kind of value that firms get from formalized strategic foresight activities. As described in the Methodology section, this was not easy, since the majority of firms in our pre-study had no formalized activities. We therefore had to develop a respondent search strategy to identify firms which do have formalized activities, and which have been carrying them out for at least three years. This meant, however, that we could not focus on comparable firms from, for example, a single industry, of a certain size, similar age, and with a similar business model, etc. As the use of strategic foresight capabilities increasingly becomes more widespread, it might be easier in the future to collect more

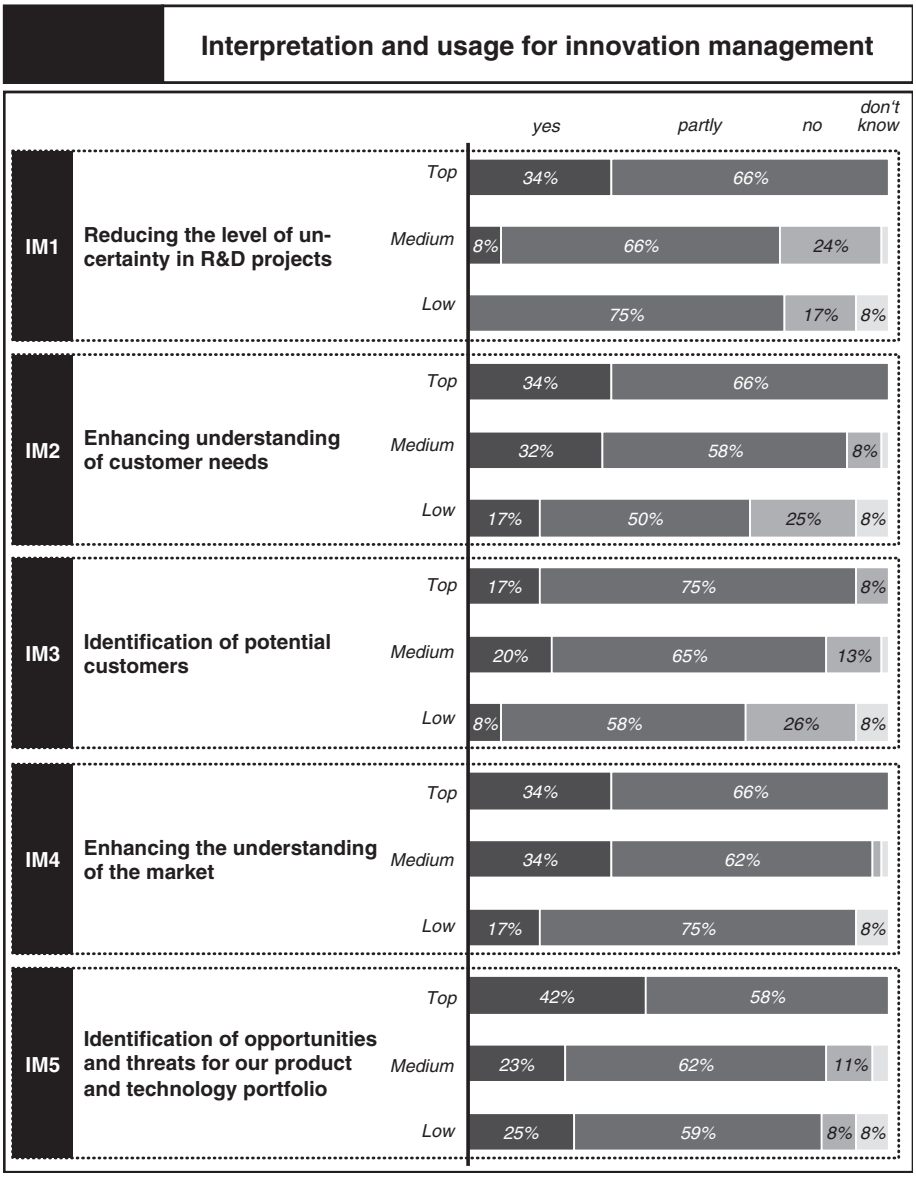

Fig. 7. Value creation for innovation management.

homogeneous samples, which would then reduce the variance resulting from firm characteristics.

Another downside of the limited implementation of strategic foresight is that it is not yet possible to evaluate such activities so that they can be compared between firms and be linked to the value contribution. Our focus is therefore solely on the value contribution of formalized strategic foresight activities.

The classification of firms into top, medium, and low performers will always result in unwanted biases, especially in a cross-industry sample, where there is a risk of sorting market leaders from one industry into the medium or low-performer group merely because the other industries have had higher growth. Therefore this classification, and the analysis based on this comparison, should be approached with care. Notwithstanding, we believe that using sales growth is the best choice to limit biases, and also that the insights from the analysis can at least identify interesting phenomena that can be explored further in future studies.

Our analysis of the data focused in particular on interpreting the 'fully agree' figures, which is a result of our observations in the pre-study. Even though we have selected the internal customers of strategic foresight activities as our primary respondents, we still had to deal with the bias of giving a too positive account of the impact of the activities. A typical answer in the interview was: "Well, I believe I can confirm this value creation. I cannot recall that I did much with the results of the foresight, but I know that some results were there". Such a respondent would then score a 'partially agree' on our scale. However, we were only interested in identifying dependable value contributions, which could be

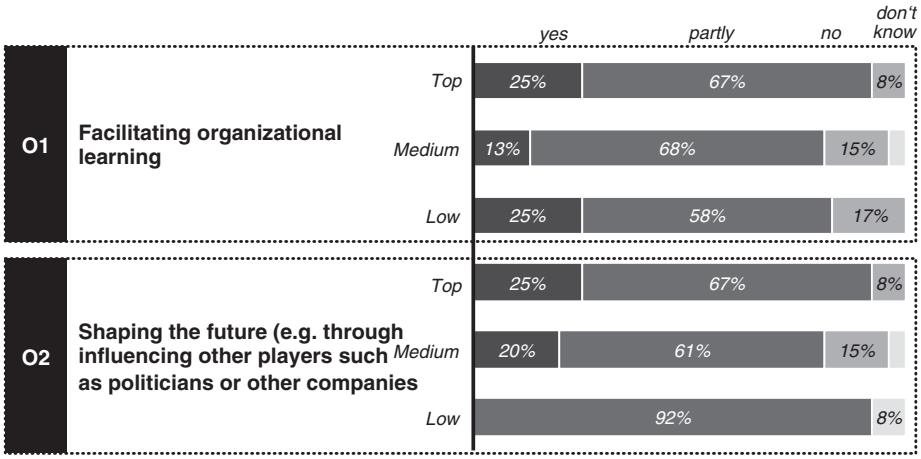

Fig. 8. Overall value creation for the firm.

measured in order to justify investments in strategic foresight activities.

Overall, our study has suffered from the above-mentioned biases, thus limiting our ability to draw generalized conclusions from the data. Nonetheless, we hope that we have been able to add to the knowledge of what firms can expect when investing in strategic foresight activities. In the following conclusion, we summarize our major findings and identify implications for future research.

6. Conclusion

The aim of this paper was to identify and better understand the value contribution of strategic foresight activities. The potential value contributions identified through the literature analysis were classified according to Daft and Weick's [26] "organizations as interpretation systems" model, which helps link strategic foresight activities not only with enhanced perception, but also with the capacity to interpret changes and propose adequate responses. In addition, we identified two overall potential value creations: organizational learning and the capacity to influence other actors to, for example, help develop new markets.

Creating a framework for potential value contributions was an important guide for our empirical investigation, and it should also be able to link research on strategic foresight with research in other management disciplines, which is crucial to further developing the field [46].

The aim of our empirical investigation was to identify the value that firms capture today. We investigated 77 firms that

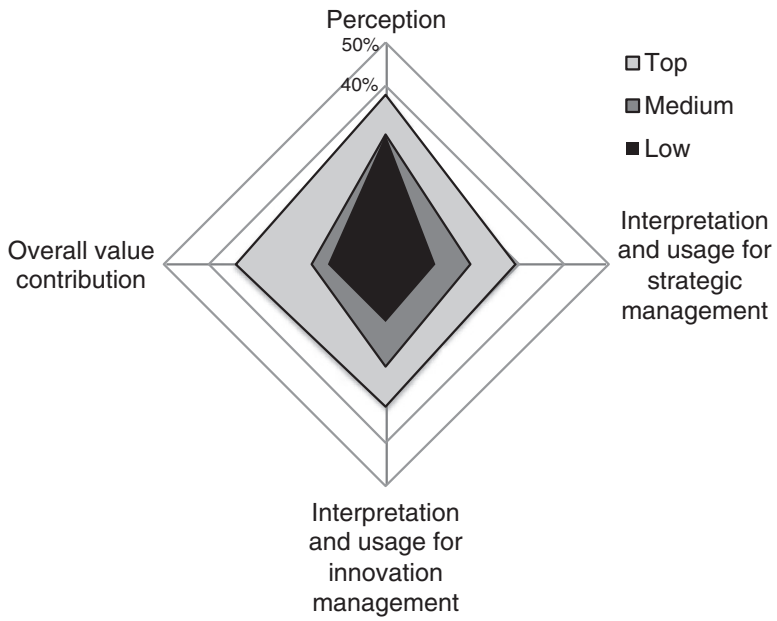

Fig. 9. Overall value contribution of top, medium, and low performers (this figure shows the 'fully agree' values only).

had been carrying out formalized strategic foresight activities for at least the past three years. By basing our study on the receivers of foresight information, we reduced the risk of getting exaggerated value creation assessments. By classifying the firms into three categories, based on the increase in sales volume, we were able to determine whether successful companies are getting more value from their strategic foresight activities.

The empirical investigation resulted in three major findings:

All potential value contributions are achievable. All individual value contributions have been confirmed by at least a few firms. This means that, if formalized strategic foresight activities are implemented, then a firm can expect: (1) an enhanced perception, (2) an enhanced ability to interpret change, and (3) an enhanced ability to propose responses, together with an enhanced capacity for organizational learning and influencing others.

Enhanced perception is the most prominent of all value contributions. The highest figures were for firms, which report an enhanced perception, either through (1) gaining insights into changes in the environment, or (2) reducing uncertainty. However, while 38% of top performers reported an enhanced perception, the success rate for the other areas is smaller: interpretation and usage for strategic management (29%), interpretation and usage for innovation management (32%), and overall value contributions (34%). This means that the first phase of Daft and Weick's framework [26] is the one that is serviced the best. The others have room for improvement.

Successful companies are also more likely to get value from their foresight activities. That can be seen most clearly in Fig. 8, where top performers report more often a value creation than low performers. On perception, top performers beat low performers by 9% (38% to 29%), on interpretation and usage for strategic management by 8% (29% to 11%), on interpretation and usage for innovation management by 19% (32% to 13%), and on overall value contribution by 21% (34% to 13%). This overview also emphasizes that top performers are better at capturing the overall portfolio of value creations, while low performers mostly capture value related to perception and strategic management.

Appendix A. Questionnaire section on value contribution

Value Contribution						
		not at all	rather not	partly	rather	absolutely
Our SF activities contribute to the reduction of uncertainty (e.g.through identification of disruptions).		☐	☐	☐	☐	☐
Our SF activities allow us to shape the future (e.g.through influencing other players such as politics or other companies).		☐	☐	☐	☐	☐
Our SF activities foster conversations about the over all strategy of our company.		☐	☐	☐	☐	☐
Our SF activities help to gain new insights on our environment.		☐	☐	☐	☐	☐
Our SF activities support organization all earning.		☐	☐	☐	☐	☐
Strategic foresight improves the coordination of business objectives.		☐	☐	☐	☐	☐
Strategic foresight improves the capability to adopt alternative perspectives.		☐	☐	☐	☐	☐
Strategic foresight leads to a better understanding of customer needs.		☐	☐	☐	☐	☐
Strategic foresight leads to abetter understanding of the market.		☐	☐	☐	☐	☐
Strategic foresigh timproves the identification of potential customers.		☐	☐	☐	☐	☐
Strategic foresight supports abetter adjustment of the company incase of uncertainties.		☐	☐	☐	☐	☐
Strategic foresight reduces the amount of uncertainty in our projects.		☐	☐	☐	☐	☐
Strategic foresight supports the identification of opportunities and threats for our product-and technology portfolio.		☐	☐	☐	☐	☐
Which departments benefit from strategic foresight? (multiple answers are possible).	☐	Strategic Management				
	☐	Controlling				
	☐	Corporate Development				
	☐	Innovation Management				
	☐	Research & Development				
	other	please specify				

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