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# The nature of strategic foresight research: A systematic literature review

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ABSTRACT

Strategic foresight is a scientific field in rapid development judged from the increase in number of yearly publications the last decade. What characterizes the research in this field? To answer this question we undertook a systematic literature review searching two library databases, Business Source Complete and ScienceDirect, for scientific articles related to the topic ´strategic foresight´ in the context of the organization. The search revealed 59 publications published between January 2000 and October 2014. The articles were systematically organized and analyzed. This review provides the status of this emergent research field. Although we witness a growth of academic interest in strategic foresight, we argue that this scientific field is weakly organized and there is a lack of theoretical progress. We have analyzed the research subjects addressed in the 59 articles, and from this a taxonomy of eight categories. Three categories dominate in terms of frequency of articles: methods applied, organizing practices, and experiences gained. There is only limited research on motivation and use, value contribution, and innovation. Explorative research dominates, and a variety of theoretical perspectives has been used. Some attempts to build conceptual foundations can be observed, but in general, we found no single perspective that deserves loyalty on which a coherent theoretical foundation of strategic foresight is built. Strategic foresight has a great potential of contributing more to the success of a firm if the research moves from today's dominating explorative research to also include more explanatory research.



## 1. Introduction

This article reviews existing research on the use of strategic foresight in firms. Strategic foresight involves understanding the future and applying future oriented insights to an organization's strategic activities and decision making. Rohrbeck et al. (2015) gives an historical background of the foresight research field, from its birth in the 1950s through scenario building in the 1960s–1970s, to organizational integration from 2000 to present. Different terms have been used to relate foresight thinking to strategic decision making in corporations. Hamel and Prahalad (1994) define *industry foresight* to be deep insights into trends that can be used to create new competitive space. Slaughter (1997) uses the term *strategic foresight* to represent a fusion of futures methods with those of strategic management. Ahuja et al. (2005) use foresight as a personal power of foreseeing. They define *managerial foresight* as the ability to predict how managers' actions can create competitive advantage. Rohrbeck et al. (2015) use the term *corporate foresight* as a practice that permits an organization to lay the foundation for a future competitive advantage through value creation.

In 2010, the journal *Technological Forecasting and Social Change* devoted a special issue to *strategic foresight* (vol 77, Issue 9). To introduce the concept of strategic foresight, Coates et al. (2010) use the French concept 'la prospective' as the starting point: "la prospective is foresight when we add the adjective strategic in English, i.e. *strategic foresight*." The reason to look at the French approach to foresight is the emphasis that is put on human decision-making, action consequences of future states, and the participation of the decision-maker in the whole foresight process. With this perspective, strategic foresight has a clear link to strategic management and should be "understood as the processes that assist decision makers in charting the firms' future course of action." (Vecchiato, 2012). On this basis we decided to do a literature review on the term "strategic foresight."

Common to the various foresight terms referred to above, strategic foresight is a dual purpose task of 1) observing, perceiving, and capturing factors that is likely to induce future changes, and 2) dealing with these changes by deciding appropriate organizational responses, as illustrated in Fig. 1. According to the la prospective approach, these two processes should not be dealt with separately where the futurist performs the foresight part and the decision-maker the strategy part. It is an integrated process where the decision-maker participates in the foresight process and vice versa.

The aim of this literature review is threefold. First, we provide an updated overview of strategic foresight that captures the research activities in this rapidly evolving area. We restrict the focus to manuscripts

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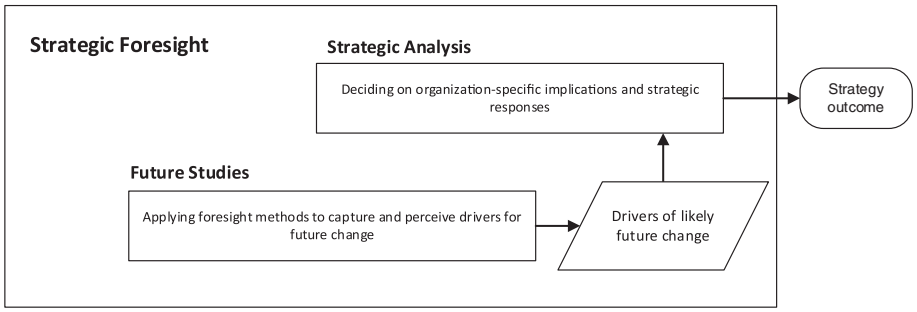


**Fig. 1.** Strategic foresight – a conceptualization.

that explicitly incorporate the research of strategic foresight as envisaged by our conceptual framework. Our second goal is to structure our information in such a way that research contributions can be related to each other. This will ease researchers' search for relevant studies. Third, structuring the literature in a detailed and systematic manner also clarifies which issues are not well covered. We intend to identify knowledge gaps and opportunities for contributions in order to guide future research.

There are several reasons why strategic foresight should attract researchers. First, foresight and foresight methods are well-known areas and have long been applied in practice. Strategic foresight as a concept, however, is fairly new and puts emphasis on bringing these forward-looking techniques into strategic decision making. Strategic foresight provides insights into organizations' operating environment of challenges and opportunities and identification of innovations and opens up the competitive space. Second, strategic foresight must be anchored in strategic management—a multidisciplinary area that should attract researchers from areas such as management, economics, organizations, sociology, and psychology. Third, although research on strategic foresight is still limited (Jissink et al., 2014), there is a growing research interest in the field. The existing literature is nevertheless fragmented and not properly integrated. The academic field is weakly organized (Rohrbeck et al., 2015).

In this study, we set the contextual limitation to contributions presenting research on the adoption and implementation of strategic foresight, including antecedents and consequences. We set the temporal limitations for this review to contributions from January 2000 until October 31, 2014. We utilize research of verified quality, which means that we only address articles in peer-reviewed journals. We describe our methodology in Section 2 and then present our findings in Section 3. In Section 4, we analyze and discuss existing research in order to identify knowledge gaps, and we suggest opportunities and approaches for future research. Section 5 concludes the article.

## 2. Method

Our focus here is on a stand-alone literature review, as opposed to literature reviews that set the theoretical background for a specific research question. Following Fink (2013), a stand-alone literature must be *systematic* in following a methodological approach, *explicit* in explaining the procedures by which it was conducted, *comprehensive* in its scope of including all relevant material, and hence *reproducible* by others who would follow the same approach in reviewing the topic. Our method, as well as the research questions, are based on the guidelines and principles outlined by Okoli and Schabram (2010).

The two main objectives for this review are to identify, classify, and summarize existing research on strategic foresight; and to identify areas and opportunities for future research. The methodology for the systematic literature review is documented below.

### 2.1. Review topics

Research reports published in scientific journals are organized in fairly consistent formats. It starts with an introduction where the research is positioned within a larger context and the research question is presented, followed by the theoretical foundation on which the research is to be based. Then the research design is reported and the methodology specified. Finally, the findings are presented including contributions and conclusions.

The review topics selected and addressed by this literature review follows this general structure. We shall, however, start by collecting some descriptive statistics. More specifically, based on Okoli and Schabram's guidelines (2010), we have defined the following review questions:

RQ1: Which journals are used for publication of strategic foresight research; who publish where and when?

RQ2: What research subjects have been addressed?

RQ3: What theoretical frameworks and reference theories have been applied to study the topic? We would like to know which theories and models have been used in existing research.

RQ4: What research methods have been used? As a guide to future studies, we identify the approaches that have been adopted. We use Orlikowski and Baroudi's (1991) conceptual and empirical categories to organize the approaches. Conceptual research refers to studies that formulate emerging concepts, models, and frameworks, while empirical research refers to surveys, interviews, case studies, multi-method research, and experiments.

RQ5: What conclusions can be drawn from existing research? We summarize and analyze findings from existing research in order to draw conclusions on central issues.

### 2.2. The search process

The search process was organized according to guidelines found in Okoli and Schabram (2010); Webster and Watson (2002); Kitchenham et al. (2009). The key search word was "Strategic Foresight." Our goal was to identify articles presenting research of validated quality. We searched two leading online directories, the Business Source Complete (EBSCO Host) and ScienceDirect. Following the recommendations of Webster and Watson (2002), we also reviewed the citations in the articles identified in the directories.

### 2.3. Inclusion and exclusion criteria

Our review targeted peer-reviewed articles on the use of strategic foresight published between January 1, 2000, and October 31, 2014. Only articles in English were included. Our search included articles on the following three subtopics according to our definition of the concept (Fig. 1):

- Foresight: the application of foresight methods and techniques to capture any political, social, economic and technological drivers for future state conditions
- Interconnection: the linking of drivers to the process of strategic decision making and strategy development in organizations.
- Strategy: the decision-making of defining strategy goals, action and action consequences required for strategy development; transforming the drivers and the strategic decisions to strategy outcome.

Articles on the following topics were excluded:

- Articles on national and regional policy making
- Non-research articles that were purely descriptive
- Articles presenting research in progress
- Articles that did not match the inclusion criteria.

### 2.4. Data collection

The data extracted from each study were:

- The source (journal) and full reference
- The authors, their institutions, and the countries where they were situated
- Classification of research methods
- Theoretical frameworks and reference theories used
- Main topic area
- Research questions
- Summary of the study, including the main research questions and their answers.

Methodologically, we followed the recommendation of Kitchenham et al. (2009); one researcher extracted the data and the other checked the extraction. When there was disagreement, we discussed the issues until we reached an agreement.

## 3. Results

This section presents the results from the review. Below, we discuss the answers to our research questions.

### 3.1. What research has been conducted on strategic foresight?

Overall, we identified 59 relevant studies in a variety of academic journals. See Table 1 for an overview. The most frequently occurring journals are notably Technological Forecasting and Social Change (34%), Futures (27%), Technological Analysis & Strategic Management (7%) and Long Range Planning (5%). A complete list of the articles is given in Appendix 1.

Fig. 2 shows that the number of journal publications has increased, from one article in 2001, published in the Journal of the Academy of Marketing Science, to 14 articles in 2013, published in a variety of journals. Our search for relevant articles ended in October 2014, leaving us with 59 occurrences to be analyzed. At a later time, we have again searched the two online directories (Business Source Complete and ScienceDirect). This search revealed a total of nine articles published in 2014 and a record high number of 17 articles in 2015. During our searches, we observed a number of articles "in press", indicating a continuous academic interest in the field.

Overall, articles originating in UK (25), Germany (16), Italy (5), USA (5) and Australia (3) dominate. One study has Asian authors; Africa, apart from Tunisia, is not represented. Table 2 provides an overview of top countries and researchers, and author affiliation details.

### 3.2. What research subjects have been addressed?

We set out to identify the subjects that existing research has covered as well to catalogue key questions that research has sought to answer. Research on strategic foresight sorts itself into the following categories: adoption (22 articles), approach (55 articles), and outcome (13 articles). Within the approach category, the most popular research question is related to methods, which overall is the most frequently researched topic, while 21 articles investigate how strategic foresight is organized. Within the adoption category, 17 articles address experiences, often in the context of critical success factors. Within the outcome category, seven articles deal with innovation, while six articles address the value contribution of strategic foresight.

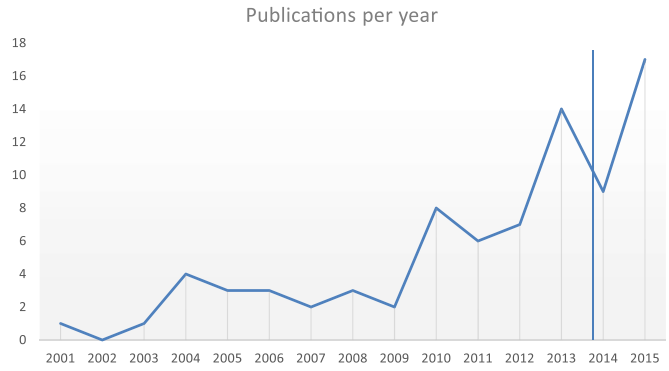


**Fig. 2.** Number of publications per year.

### 3.3. What theoretical frameworks and reference theories have been applied to study the topic?

Research on strategic foresight makes use of a variety of theoretical frameworks and reference theories. However, as many as 25 of the 59 contributions (42%) seem to lack a specific theoretical foundation. Quite a few of the remaining contributions apply strategic thinking and theory, including strategic management, strategic flexibility, strategic planning, strategic conversations, and dynamic capability theory (25%). In addition, organizational theories are well represented in strategic foresight research, including several articles addressing the issue of environmental uncertainty (10%). Organizational behavior and psychology, including decision theory and sensemaking, also appear frequently (15%). In addition, we have identified single contributions based on such concepts and theories as actor network theory, storytelling, autoethnography, and evolutionary biology. Finally, innovation management is the basis for two contributions, and a more philosophical focus, including social constructionism and other social science oriented approaches, appear in close to 10% of the contributions.

As would be expected, research on strategic foresight is quite heterogeneous when it comes to theoretical frameworks and reference theories. In this sense, strategic foresight research has much in common with traditional research on strategic management and planning. It is, however, interesting and surprising to observe so many research articles lacking some sort of theoretical foundation.

**Table 1**
Strategic foresight research published in journals.

| Journal | Number | Percentage | Article ID |
|---|---|---|---|
| Technological Forecasting and Social Change | 20 | 34 | 2, 3, 4, 14, 19, 20, 21, 24, 26, 27, 28, 32, 35, 37, 39, 40, 51, 53, 56, 59 |
| Futures | 16 | 27 | 1, 5, 6, 9, 11, 18, 29, 34, 38, 43, 45, 48, 49, 50, 55, 58 |
| Technology Analysis & Strategic Management | 4 | 7 | 13, 10, 52, 54 |
| Long Range Planning | 3 | 5 | 23, 30, 31 |
| European Management Journal | 2 | 3 | 22, 44 |
| Management Decisions | 2 | 3 | 17, 57 |
| R&D Management | 2 | 3 | 7, 36 |
| California Management Review | 1 | 2 | 16 |
| Creativity & Innovation Management | 1 | 2 | 33 |
| Engineering Management Journal | 1 | 2 | 41 |
| Energy Policy | 1 | 2 | 47 |
| Industrial and Corporate Change | 1 | 2 | 8 |
| International Journal of Business & Management | 1 | 2 | 42 |
| International Journal of Innovation Management | 1 | 2 | 25 |
| Journal of Forecasting | 1 | 2 | 12 |
| Journal of the Academy of Marketing Science | 1 | 2 | 15 |
| Scandinavian Journal of Management | 1 | 2 | 46 |
| | 59 | | |

**Table 2**
Top countries and researchers.

| Top country by number of researchers | Number of researcher involved in the reviewed articles |
|---|---|
| 1. UK | 23 researcher |
| 2. Germany | 15 researcher |
| 3. Italy | 5 researchers |
| 4. USA | 5 researchers |
| 5. Australia | 4 researchers |
| 6. Portugal | 3 researchers |

| Top researchers | Country | Number of articles | Articles |
|---|---|---|---|
| Rohrbeck, R. | Denmark | 6 | 19, 36, 37, 38, 39, 40 |
| Sarpong, D | UK | 4 | 43, 44, 45, 46 |
| Maclean, M. | UK | 4 | 43, 44, 45, 46 |
| Wright, G. | UK | 3 | 5, 58, 59 |
| Vecchiato, R. | Italy | 3 | 52, 53, 54 |
| Cunha, M.P. | Portugal | 3 | 23, 29, 30 |
| Bradfield, R. | United Arab Emirates/UK | 3 | 5, 58, 59 |
| Burt, G. | UK | 3 | 5, 6, 58 |
| Van der Heijden | UK | 3 | 5, 6, 58 |
| Cairns, K. | UK | 3 | 5, 58, 59 |

### 3.4. What research methods have been used?

Our analysis in this section follows Orlikowski and Baroudi's (1991) categorization scheme. The research contributions were grouped into two broad categories: conceptual and empirical. The conceptual research approach refers to studies that formulate concepts, models, and frameworks, including literature reviews. Nineteen articles belong to this category. Empirical research includes research with some form of empirical data collection and analysis. The empirical contributions were further categorized into five sub-categories: surveys, interviews, case studies, and experiments. Our analysis revealed that case studies are the most frequently applied research strategy for empirical research, with 33 articles, followed by surveys, with five articles. Table 3 shows the results of our categorization.

**Table 3**
Research design applied by research.

| Research design | Number | Article ID |
|---|---|---|
| Conceptual | 19 | 2, 5, 7, 9, 12, 15, 17, 18, 21, 26, 29, 30, 38, 45, 48, 50, 51, 57, 59 |
| Empirical | 40 | |
| • Surveys | 5 | 13, 22, 34, 39, 42 |
| • Interviews | 1 | 20 |
| • Case studies | 33 | 1, 3, 4, 6, 8, 10, 11, 14, 16, 23, 24, 25, 27 28, 31, 32, 33, 35, 36, 37, 40, 41, 43, 44, 46, 47, 49, 52, 53, 54, 55, 56, 58 |
| • Experiments | 1 | 19 |

## 4. Discussion

In this section, we analyze findings from current research in order to answer research question 5: What conclusions can be drawn from existing research? In our analysis, we focused on the three main subjects: Adoption, Approach, and Outcome.

### 4.1. Adoption

#### 4.1.1. Use of strategic foresight and motivation

Research has studied the attractiveness of strategic foresight at two levels of analysis: the national and regional level and the business sector level. At the national and regional level, we identified two studies. In a 2008 survey that included 44 large European firms (A13), the researcher found that an overwhelming majority of the participants had many years' experience with strategic foresight. Fifty percent of the responding companies had run their own foresight process for up to 10 years, and about 25% for up to 3 years. In contrast, a 2013 survey found that the practice of foresight in Tunisian companies was limited but that interest was increasing (A42). We identified one study at the business sector level, a 2009 multiple-case study among 30 biotechnological firms in Germany (A25). This study concluded that the application of strategic foresight was low, even by companies already using it to some extent.

More research on this topic may be warranted. Future research should investigate status at all levels, regional, national and business sector levels. At the business sector level, more research may enable us to understand if and why strategic foresight is regarded as more suitable and valuable in some sectors than in others. Cultural differences may be applied as a theoretical framework, for example, by applying the competing values framework (Quinn and Rohrbaugh, 1983). Regarding the research approach, existing surveys at the national and regional level tend to evaluate the spread of strategic foresight by asking firms if they are using or planning to use strategic foresight. For all levels, more critical research is needed in order to investigate and understand the implementation maturity level in firms. If a firm reports that "we are using strategic foresight," appropriate follow-up questions could be: How long have you been running strategic foresight processes? How many strategic foresight programs have you conducted? Is strategic foresight a well-established practice in your firm?

Research on motivation presents a variety of reasons why firms are adopting strategic foresight (Jissink et al., 2014; Ruff, 2006). Our literature review revealed that strategic foresight programs in firms are motivated by the need to support decision making, improve long-term planning, enable early warning, improve the innovation process, and improve the speed in reacting to environmental change. Based on a multiple case study (A33), the authors found that for the individual participants, strategic foresight was motivated by the opportunity to widen their professional knowledge and to update their knowledge in specific areas. Two approaches were applied to answer this research question. Case studies mainly asked why companies are using strategic foresight, and the survey presented the respondents with predefined alternatives and asked the respondents to state the relevance of each alternative. Our review did not identify any underlying theory used to explore this research question, for example, "new institutionalism" (DiMaggio and Powell, 1991). Further, the above-mentioned studies mostly fail to discuss motives in relation to context: What are the external or internal conditions? What are the challenges that companies face? What are the strategic decisions that lead companies to initiate strategic foresight?

#### 4.1.2. Experiences

Experience with strategic foresight, including critical success factors, barriers for adoption, and lessons learned, is one of the most frequently addressed themes of research. Seventeen articles address this research theme: 12 case studies (A4, A6, A11, A14, A25, A27, A27, A31, A33, A49, A52, A58), three surveys (A13, A34, A42), and two conceptual studies (A5, A38). The research is not conclusive regarding the critical success factors. Two groups of factors, however, seem to recur: factors related to the "participants" and factors related to the foresight "method and process."

Within the participant topic, a 2006 survey involving 44 European firms (A13) reports that top management involvement increases the impact from foresight processes. One case study (A32) supports this conclusion. Among the other success factors we found: the conscious involvement of internal stakeholders (A13), participants that are committed to creating value (A13, A14), a qualified facilitator (A4), administrative support to the foresight process (A4), trusting relationship between the participants (A6), incentives to get people involved and to stay in the process (A33), and a common language in multidisciplinary foresight processes (A33). Within the method and process topic, we

found the following factors: the need for a structured foresight process (A11, A14), the need for tailoring the method and process to companies' needs (A13, A14), innovative thinking throughout the process (A4), and extensive communication between participants (A11, A13). One of the conceptual papers argues that foresight programs cannot start from scratch, they must engage (critically) with the existing situation (A5).

Another line of research investigated factors that may hamper the proliferation of strategic foresight in firms. Based on data from a multiple case study (A52), the authors found that graduate training and a coherent code of established and certified practice are lacking in the field, which in their case may explain the low level of acceptance. In a case study (A27) addressing the issue of competence and skills, lack of familiarization with the scenarios and lack of knowledge and experience with appropriate tools are factors that arguably reduce the spread of scenarios in firms. In this study, analysis revealed that there was a lack of continuity between scenario developers and scenario users; the firm failed to link scenario development with strategy creation and execution efforts. In a multiple case study (A25), the researchers identified defensive management, short-term planning horizon, lack of resources, lack of knowledge, and lack of preparedness among the reasons for not applying strategic foresight in firms. By analyzing data from a longitudinal study on scenario planning involving a number of firms (A6), the authors identified three hurdles to overcome in order to succeed with strategic foresight: a) the cultural assumptions regarding scenario development, including management style and the thinking horizon in firms; b) the client's state of mind, including preference for incremental change; and c) fear of engaging with the outside world and the future.

Critical success factors within the context of this research can be defined as the few key areas where "things must go right" (Rockart, 1979) in order for the strategic foresight process to achieve a high level of success. Overall, two approaches have been used to answer this research question. Case studies have mainly asked what the most important success factors are, and surveys have presented the respondents with predefined alternatives and asked them to rank the relevance of each alternative. This review has not identified any theory used to address this research question.

Does research provide business managers with valuable and constructive advice in this area? What are the implications for practice? Would a particular strategic foresight program succeed if it successfully manages to handle the factors identified by research? Although existing research points to an array of factors critical for success, there is little empirical evidence on how to conduct a strategic foresight program successfully and how to measure the success of an effort. The set of success factors has not yet been tested and validated. Further, the notion of critical success factors requires a limited set of key factors. Preliminary analysis of factors extracted from the literature suggests 11 candidate success factors derived from empirical research results: top management involvement, conscious selection of stakeholders, incentives to get people stay in the process, a trusting relationship between the scenario practitioner and the client, ongoing communication between participants, understanding the present, innovative thinking throughout the process, strategic relevance, a tailored process and method, a qualified facilitator, and administrative support. These factors were broadly grouped within two categories; project-specific factors and process and method related factors (See Fig. 4). The available list of factors suggested by present research currently exceeds a manageable number of key areas. This should be addressed by future research.

### 4.2. Approach

#### 4.2.1. Organizing

A number of studies reported in the literature addressed the issue of organizing practices and approaches to strategic foresight. Some of the studies present alternative approaches while others are more concerned with certain stages or elements in the foresight process. A process-oriented approach to organizing strategic foresight could be defined as a methodology. It is hard to find a common denominator in the reviewed contributions. Hence, it is relatively safe to conclude that there is no "one-size-fits-all" approach to strategic foresight (A25).

In the former group (alternative approaches), we found studies that show that there can be several alternative ways to a good result, i.e., effective strategic foresight. Many of these studies, however, are inconclusive as to what is the best or most preferred approach. One exception is A13 in which the authors establish arguments for different paradigms representing corporate foresight waves. In a survey of 152 large European companies, it is shown that strategic foresight processes typically are framed by what the authors call a dominant paradigm or logic. By studying the development of corporate foresight from the mid-1970s on, the authors suggest that "… three distinct (although overlapping) phases or waves can be identified, all grounded in (hidden) assumptions, expressing the dominant logic of futures studies/foresight and the broader socio-cultural context of the respective phase." While these three waves have been dominated by expert-based, model-based, and trend-based foresight, open foresight is presented as "… the next phase which is emerging." Hence, this research is advocating a new and up-to-date way of approaching and organizing corporate foresight in which anticipation of the dynamic interaction between social, technological, and economic forces is accomplished through open dialogue. It should be noted, however, that there is no obvious link between the survey results and open foresight as a new wave apart from an observation that soft factors today play a more critical role in determining the success of corporate foresight.

In a case study research of 30 biotechnology companies in Germany, the authors use qualitative content analysis and a search grid to extract data from different sources (A25). Based on this analysis, they identify six different approaches that describe the action in strategic foresight: (i) science-driven approach, (ii) network-oriented approach, (iii) market-driven approach, (iv) gatekeeper approach, (v) financial controlling-based approach, and (vi) no strategic foresight at all. However, the authors are not able to offer advice as to what is the best approach. They conclude that strategic foresight in general is strongly characterized by formal and informal networks as the preferred approach for information gathering for strategic decisions. Based on their analysis, they also claim that foresight processes need to be customized in addition to requiring a future-open mindset of the management.

In a study of the organization of corporate foresight in the telecommunication industry, the purpose was to investigate how companies organize the implementation of corporate foresight and if and how the way of organizing influences foresight performance (A3). Based on insight offered by such renowned researchers as Henry Mintzberg (1979) and Gareth Jones (2007), the author conceives the general foresight organization as a set of four basic elements: structure, coordination, decision-making processes, and control systems. According to the author, the case studies contributed to finding the most important foresight organizing practices. Based on an exploratory analysis of case study data, it could be determined how the four above-mentioned organization elements are linked with foresight performance (effectiveness/efficiency). The analysis generates five theoretical propositions, each of which links an organizational element with either effectiveness or efficiency. Generally speaking, this study is a good starting point for further research.

As part of an inductive theory-building study (A1), the authors identify seven key processes through which a high-performing new product design consultancy mobilizes strategic foresight. Data from the case study revealed that staff are enabled to constantly probe the future through a variety of processes: constant experimentation, knowledge brokering, formal and informal updating processes that keep the staff informed about past and recent developments, blue-sky projects that enable the generation of wild and impractical ideas, brainstorming on an everyday basis, constant scanning of the external environment, and collaboration within a virtual network of partner firms. All these

practices constitute a formalized system of perpetual probing and learning processes. The question is whether the case firm is sufficiently representative for firms in general or at least representative for high-performing innovation firms.

Several studies focus on how firms can organize to cope with environmental uncertainties (e.g., A16, A48). One way to respond is by building up strategic flexibility. In a study of airlines' responses to regulatory uncertainty, firms were shown to respond by developing such flexibility in two ways, either by anticipating the potential consequences of changing regulatory conditions and trying to prepare for them or by adapting quickly and efficiently to them once the regulatory situation has become clear (A16). Firms adopting the former strategy will typically consider more than one potential future and develop several options to deal with these futures. Firms adopting the latter strategy will typically "wait-and-see" and adapt swiftly to the one regulatory situation that has actually materialized. The authors then discuss what organizational capabilities are required for the development of strategic flexibility. In another study, the author claims that a scenario-planning process consists of two sequential stages: (i) scenario development process, in which macro external uncertainties are dealt with, and (ii) strategy development process, in which micro and internal environmental uncertainties are addressed (A48).

A group of researchers studied foresight as organizing practices (A43, A44, A45, A46). In one study (A46), they identified three distinct and embedded organizing practices: individual prospective sense making, multi-lateral conversations within teams about future possibilities, and application of futures techniques and methodologies. According to the authors, these practices should not be considered as mutually exclusive as they are complexly interconnected. In one of the other studies (A45), the authors delineate strategic foresight as a continuous and contextual practice of "way-finding." They present a framework within which the indivisible and interdependent phases of practice are driven by strategic conversation and reflexivity-in-practice. In yet another study (A44), the authors investigated how organizing practices and routines can influence organizational foresight. They identified over-compartmentalization (too much emphasis on such things as roles, duties, functions, grouping), over-determinism (too much emphasis on formal knowledge and reasoning at the expense of other ways of knowing and imagination), and congruence-of-values (choices about the future that are consistent with collective values and beliefs) as organizing practices that enable (or impede) the organizational foresight ability.

Research in the area of approaches to strategic foresight is characterized by not being particularly theory based. Some of the main contributions, e.g., A3, A13, A25, A28, A36, and A55, are based on case or survey data from studies that are exploratory and highly descriptive in nature. For example, in A13, which is based on a survey of large European companies, the authors simply outline what they call a historical contextualization of foresight practices. The outcome of many of these articles may, however, provide practical value to managers. As such, most organizing practices discussed in the articles are just that—practices or practical approaches to foresight.

To the extent that contributions are built on theoretical frameworks or reference theories, strategic management, dynamic capability theory, and social science seem to be the most common. However, the majority of the articles are characterized by having no specific theoretical framework or reference theory.

Articles dealing with organizing practices and approaches to strategic foresight are typically published in journals that combine planning, strategy, and technology. A majority of these articles can be found either in *Futures* or in *Technological Forecasting & Social Change*.

#### 4.2.2. Methods

We define *method* to be a logical or prescribed practice or systematic process of achieving a certain end result. The methods of foresight used by the research studies of this review fall into two main groups: (1) those that focus on linking business strategy and strategic decision making with foresight methods and (2) those that focus on foresight methods and variations of these. In the first group are articles that build conceptual frameworks for strategic foresight activities that relate strategy to environmental drivers (A2, A15, A50, A52, A53, and A54). The theoretical foundations of these research studies, however, are very divergent. A52, A53, and A54 build on a conceptualization of environmental uncertainty and how this shapes companies' approaches to strategic foresight. Based on several case studies, they show why companies in various industries have used different strategic approaches. A15 provides a framework using feedback effects to construct dynamic mental models in scenario planning that help managers shift focus to flows rather than stocks; and A50 draws on sociological research on enactment and presents a goal-oriented scenario planning method consisting of five steps with the purpose of being more creative than reactive to the future. A2 presents a "methodology of future coverage" to measure a firm's coherence between external trends and internal vision and products. To measure the coherence, a coverage index is defined using a scale from 0 to 3. Three different participating teams perform the processes. A case study is presented to show the feasibility of the methodology.

The second group encompasses research aimed at enhancing the conventional forecast methods: A6, A19, A20, A26, A32, A35, A36, A41 and A49. Most of these contributions (A6, A19, A21, A26, A35 and A49) are based on the scenario planning methodology. A35 discusses the role of the scenario methodology; A19 describes a collaborative process of exploring new business fields using scenario analysis to analyze the environment and identify "wild cards." A49 discusses a scenario planning method using self-critical reflections based on the principle of autoethnography; A26 presents a Delphi-based scenario planning method; A32 describes early-warning scanning with scenarios; and finally, A6 is a discussion on purposeful scenario activities.

We found two surveys in our review. A25 is an examination of 30 small- and medium-sized biotechnology firms within the scope of a case study. The study reveals that the methods used are mainly heuristic (internet search, screening of websites, customer inquiries, and strategic workshops). Reasons for this low sophistication of foresight are lack of resources, lack of methodological knowledge, and high expenses. A13 presents an analysis of the role of corporate foresight based on a survey of 44 responding large European companies. With respect to methods, trend analysis and media/publication analysis rank highest with 26 of 40 companies reporting regular use of these methods, followed by scenarios (19) and roadmapping (12).

The two remaining articles focus on other foresight methods: technology scouting (A36) and a modified Delphi method using end-user participation. Finally, A41 is a development study of a collaborative tool, called Experience Scan (cf. the next section), defining steps of workshop sessions.

What has the research on methods provided? Development of methods is a design problem. Most papers in this review develop methods and demonstrate their use but do not address validation. The papers are predominately explorative using case studies. Evaluation of these approaches are lacking, thus one misses the explanatory dimension of why one method is preferred in preference to others.

In our findings on method developments, the articles seem to fall into two major groups, one dealing with conceptual frameworks for strategic foresight and the other enhancing foresight methods for strategic foresight. In the first group, linking foresight methods to strategic decision making, conceptual frameworks are presented drawing on concepts from strategic management. The frameworks, however, are sketchy and kept in broad terms. The second group, focusing on foresight methods applied to strategic foresight, is dominated by variations of the scenario planning method. A variety of theoretical perspectives have been used to enhance the foresight method for strategic decision making. Each article is interesting in itself, but it is difficult to see how

they collectively bring forward the field of strategic foresight as part of the strategic management research area.

Sixteen of the 22 papers dealing with methods have been published within the last 5 years. Furthermore, the outlets to the scientific community are very narrow and concentrated in three journals: *Futures* (4), *Technology Analysis & Strategic Management* (4), and *Technological Forecasting and Social Change* (8).

To conclude the research on methods, we can refer to one of the reviewed articles:

> *CF* [Corporate Foresight] *operates with a variety of approaches, organizational forms and tools as well as diverging aims and different kinds of outputs. However, it is also obvious that the problems that occur and need to be resolved in any CF activity are similar in most cases. This includes the tension between pressure for quickly achieving outputs and a demand for methodological rigor, lack of which types of tools are appropriate in relation to the aims of the exercise, as well as new needs for communicating results and linking them firmly to today's decision making.* (*A13, p. 327*).

#### 4.2.3. Techniques and tools

We define technique to be a systematic procedure, formula, or routine by which a specific task is accomplished and a tool to be an artifact or instrument used in performing this task. We identified eight articles describing techniques and tools supporting strategic foresight tasks. Four of these, A10, A13, A17 and A54, present techniques, while the remaining four, A21, A24, A40 and A41 present tools or toolkits. Article A54 is a description of how to select foresight techniques on the basis of boundary uncertainty and environmental drivers. The technique is demonstrated with four companies in different industries. A10 focuses on developing a strategic management plan for an innovation agency by building strategic roadmaps that connect visions, values, and objectives with strategic actions. A17 gives a detailed description of a future scorecard combining market-based (external) and resource-based (internal) scenarios that addresses future developments in three different ways: changing the operation, changing the strategy, or changing the view of the future. A13 presents a context-based open foresight technique that combines trend thinking and strategy. The term open foresight relates to the concept of open innovation.

All the tools presented in this review sample to some extent deal with supportive aids in communication and organizational learning. A41 presents the Experience Scan, a workshop-supported practical tool for engineering managers that enables sharing experiences and a mechanism to reflect on the past. Trial participant feedback indicates that it is a useful tool for organizations with a history on which to reflect. An Experience Scan workshop should be run in conjunction with forward-looking techniques, such as roadmapping. A24 presents the Future Markets-Radar based on a semantic database with the aim of exploring future market opportunities and establishing a successful future strategy. A40 presents a set of IT tools developed into a system supporting change discoveries and cues interpretations and triggering managerial responses. Finally, A21 presents a comprehensive management toolkit to be used in collaborative environments. The toolkit is founded on seven principles: human centric, workshop-based, neutrally facilitated, lightly processed, modular, scalable, and visual.

The contributions within this topic are concerned with research opportunities in technique and tool developments. The research aims to support the strategic foresight process by improving communication, organizational learning, and experience sharing in collaborative environments. The articles in this group, which to a large extent coincide with articles dealt with under methods, describe interesting developments of techniques of foresight processes and of tools to support these processes.

There is no common conceptual foundation on which these techniques and tools are built. They draw on a variety of theoretical disciplines from sociology, such as ethnography and autoethnography, to management, such as scorecards. We have a well-developed basis of foresight methods and in terms of foresight practice. We need to anchor the development of strategic foresight techniques and tools in strategy and its reference disciplines. Furthermore, we need to move from demonstrating the use of a technique to explaining why it is a good technique.

### 4.3. Outcome

#### 4.3.1. Value contribution

What is the value contribution from strategic foresight? Six studies tried to find answers to that question (A9, A14, A32, A38, A39, A58). Based on a survey (A39) involving 77 large multinational firms, the researchers found that foresight can generate value through a) an enhanced capacity to perceive change, b) an enhanced capacity to interpret and respond to change, c) influencing other actors, and d) enhanced capacity for organizational learning. Enhanced perception is the most prominent of all value contributions. Using data from 20 case studies (A38), the authors conclude that strategic foresight can be a good investment as such initiatives identify change, trigger innovation initiatives, and challenge innovation development, thus overcoming dominant mental models. By analyzing several scenario cases, results revealed that such practices could strengthen innovation practices by legitimizing action and empowering stakeholders (A14). Other benefits identified are the reduction of decision failures (A9), reframing of managerial attention and improved strategic conversation (A32), and stimulating the management team to question each other for further insights about new concepts and ideas (A58).

While it is obvious that the impact of strategic foresight may be restricted by confidentiality (Daheim and Uerz, 2008), we agree with those who claim that most scholars have failed to clearly define the value added of strategic foresight and to provide empirical evidence of its contribution to sustain the advantage of the firm over time (Vecchiato, 2012). Prevailing research has provided a list of "generic" values, but this should be treated with care. For example, "enhanced capacity for organizational learning" and "improved strategic conversation"—what does this really mean and how can it be measured? How can we evaluate the output of strategic foresight? A factor that limits our research abilities on the relationship between strategic foresight and its value contribution is that the effects are only measurable or observable in the long-term (Horton, 1999). This is a challenge for further research. Foresight should primarily be used to achieve "hard" objectives and identify drivers for change. In the decision-making and strategy-planning process, these drivers should be investigated and decided upon in order to provide a strategic outcome (the conceptual model in Fig. 1). One reason for the challenges strategic foresight is facing is the lack of clarity in its objectives. In one study (A13), the researchers found that only three-quarters of the participants had explicit targets for their strategic foresight programs.

#### 4.3.2. Innovation

As shown in Fig. 3, we found seven articles devoted specifically to integrating strategic foresight with innovation. These articles are published in either *Futures* (3) or *Technology Forecasting and Social Change* (4).

A51 proposes an approach to bridge the gap between technology and people with more focus being placed on innovating solutions for people than designing new technology. The paper describes a process of extracting values, preferences, and behavior of people and provides a few stereotypical user experiences. The research is not theoretically grounded in marketing, user behavior, or adoption theory. Instead, it is grounded in daily life practices. Criteria for making choices are lacking, thus making the argumentation rather arbitrary. A43 is another practice-based approach to innovation. This research draws on social theory of practice and looks at scenario thinking as a social practice leading to innovations. It adopts a case-based approach using innovation teams as

the level of analysis. The research contributes to the understanding of the causal link between scenario thinking and innovation.

Two other articles relate scenario planning and innovation. By analyzing 17 scenario cases, A14 identifies how elements of good practices and principles can strengthen the innovation process. The paper links groups of future scenario practice with modes of future thinking and develops a framework for orientating innovation systems via future scenarios. Theoretically, the research is based on scenario methodology and sociology (reflexive inquiry). In A56, an innovation-focused scenario process is presented. The approach is structured into four levels: develop future scenarios, understand future markets, recognize customer requirements and values, and generate a business model. The research lacks an explicit theoretical basis.

In A37, the roles that strategic foresight can play in enhancing the innovation capacity of a firm are explored. By means of a multiple case study approach using 19 companies, three roles are identified: the strategist role, the initiator role, and the opponent role. Each role is discussed in depth.

In A55, a portfolio approach, called "Future-Fitness-Portfolio," which enables companies to qualitatively compare among others and identify organizational improvement potential, is developed. By structuring innovation management into four innovation approaches—technology-based, demand-based, hybrid, and open network innovation—and corporate foresight into four elements—expert-based, model-based, trend-based, and open foresight—they end up with the Future-Fitness-Portfolio grid consisting of 16 elements. The paper outlines five clusters: beginners, midfielders, innovator, futurists, and future fittest. The paper is explorative and requires more cases.

The inductive case study discussed in A1 highlights seven key practices that mobilize foresight in multiple-product innovation settings. It is based on a single case study.

## 5. Conclusion

Strategic foresight is a systematic approach to learning and understanding possible futures and building shared visions and is aimed at guiding and enabling present-day decisions. It is "… understood as the processes that assist decision makers in charting the firm's future course of action" (Vecchiato, 2012).

In this literature review, we systematically reviewed research articles on strategic foresight in an organizational context. We analyzed the contributions with respect to specific research questions. This review contributes to research in several ways. First, it provides a systematic overview of existing research in this area. We identified 59 significant contributions. The contributions were systematically categorized, which provides the current status of this emergent research field and will ease researchers' search for relevant studies. Second, through a thorough analysis, we proposed potential areas and approaches for future studies. The review concludes that method, organizing, and experiences are the most dominant topics in current research. The review showed that there is only limited research on motivation and use, value contribution, and innovation. We encourage researchers to join this current research area.

This study also contributes to practice, and managers would benefit from our review. The summaries of the various issues may serve as guidelines for managers who are planning to adopt or already are adopting strategic foresight in their firms. Our catalogue of findings and the proposed a priori success model may be especially significant. In addition to organizing their initiatives well, managers should also plan ahead to realize the benefits from their efforts. This may be facilitated by the value contributions summarized by this review.

Although there is little empirical evidence on how to succeed with a strategic foresight program, we do find ample evidence of potential success factors, i.e. factors that should be taken into account and should be managed well in order to achieve success. We have grouped the identified factors into two categories; (i) project-specific factors, and (ii) process and method related factors, cf. Fig. 4. This a priori success model does provide practitioners with valuable and constructive advice on how to succeed with a strategic foresight program. For example, in planning and conducting a strategic foresight program, practitioners should pay attention to such factors as top management involvement, incentives to get people stay in the process, ongoing (continuous) communication between participants, a qualified facilitator, and a tailored process and method.

The issue of organizing practices and approaches to strategic foresight is widely studied and analyzed by researchers in the field. Although we conclude that there is no "one-size-fits-all" approach to strategic foresight, the outcome of many of the published articles in this area may provide substantial value to practitioners involved in organizing and conducting strategic foresight processes.

What has the research on strategic foresight provided? Can we see a cumulative research tradition emerging? In general, we found no single perspective that deserves loyalty on which a coherent theoretical foundation of strategic foresight is built. We found epistemological pluralism in the research where each perspective or school contains important insights useful in different contexts.

Linking foresight methods to strategic decision making, one would expect that a theory of strategic foresight is a theory that uses as its reference points the main schools or perspectives of strategic management, organizational economics, decision sciences, psychology, or

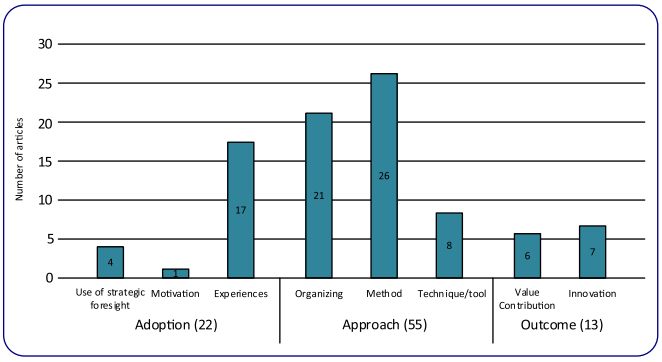


**Fig. 3.** Number of articles per category and subcategory.

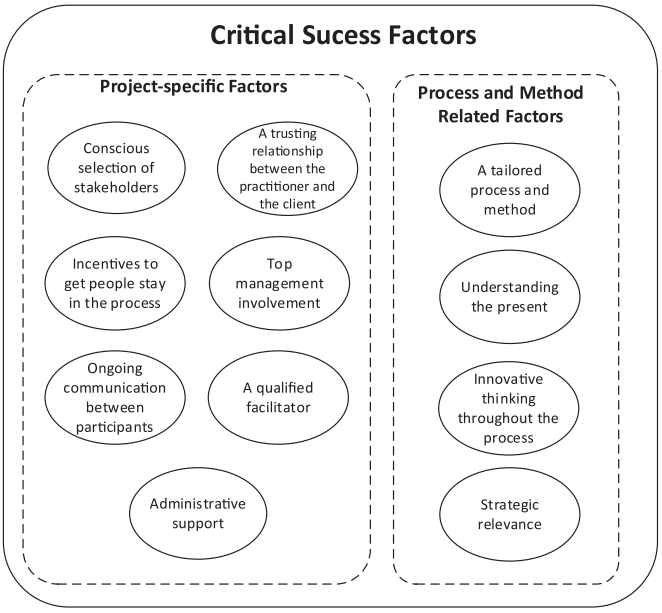


**Fig. 4.** The a priori success model for strategic foresight.

sociology. Some of the contributions discuss aspects of strategic management, for instance, environmental uncertainty and its implications for decision making, but it is difficult to find theoretical precision in concept formulations and the formulation of conceptual frameworks. Concepts are used in ad hoc structures without explicit propositions. A variety of theoretical perspectives has been used to enhance the foresight method for strategic decision making. Each paper is interesting in itself, but it is difficult to see how they collectively can bring forward the field of strategic foresight as part of the strategic management research area.

We acknowledge that strategic decision making is approached from several scientific academic disciplines with different perspectives, frameworks, models, and paradigms, thus giving rise to different conceptual foundations of the field. It may, therefore, be difficult to establish a more accepted epistemological foundation of the field. At the moment, however, there is no coherence of the research, even within one single theoretical perspective. The field looks immature, dominated by explorative research using case studies to construct arbitrary categories in order to organize and summarize empirical observations. Some attempts to build conceptual foundations can be observed, but these are without formal structures of explicit assumed propositions. Ad hoc hypotheses are drawn from single observations.

One notable exception is the introductory article to the Special Issue on Corporate Foresight of Technological Forecasting & Social Change (Rohrbeck et al., 2015). In this article, which is meant to accelerate the academic debate and stimulate future research on strategic foresight, they argue for a combined academic and practitioner discussion around the subject, building on theoretical foundations from general management theory as well as empirical evidence from strategic foresight related research. They suggest three optional theoretical bases (they use the term "theoretical launching platforms") for such research: (i) Managerial cognition, (ii) Forward-looking search, which is based on the behavioral theory of the firm, and (iii) Prospective sensemaking. This list of options is not exhaustive but may be a good starting point for advancing research on strategic foresight.

As far as we can observe from this literature review, no evaluation of the feasibility and effectiveness of foresight methods for strategic decision-making has been presented. The review and the search process are based on methodological recommendations prescribed in the literature (B. Kitchenham, 2004; Okoli and Schabram, 2010; Webster and Watson, 2002), which makes us confident that our review has been thoroughly conducted. However, the selection of key words, sources, inclusion and exclusion criteria, and time frame is based on our own judgment.

**Appendix 1. Articles reviewed by this research.**

| ID | Article |
|---|---|
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| A2 | Battistella, C. & De Toni, A.F. (2011). A methodology of technological foresight: A proposal and field study. Technological Forecasting & Social Change, 78(6), 1029–1048. |
| A3 | Battistella, C. (2014). The organisation of Corporate Foresight: A multiple case study in the telecommunication industry. Technological Forecasting & Social Change, 87, 60–79. |
| A4 | Bowman, G., MacKay, R.B., Masrani, S. & McKieman, P. (2013). Storytelling and the scenario process: Understanding success and failure. Technological Forecasting and Social Change, 80(4), 735–748. |
| A5 | Bradfield, R., Wright, G., Burt, G., Cairns, K. & van Der Heijden, K. (2005). The origins and evolution of scenario techniques in long range business planning. Futures, 37, 795–812. |
| A6 | Burt, G. & van der Heijden, K. (2004). First steps: towards purposeful activities in scenario thinking and future studies. Futures, 35, 1011–1026. |
| A7 | Calof, J. & Smith, J. (2010). The integrative domain of foresight and competitive intelligence and its impact on R&D management. R&D management, 40(1), 31–39. |
| A8 | Cattani, G. (2006). Technological pre-adaption, speciation, and emergence of new technologies: how Corning invented and developed fiber optics. Industrial and Corporate Change, 15(2), 285–318. |
| A9 | Chermack, T.J. (2004). Improving decision-making with scenario planning. Futures, 36, 295–309. |
| A10 | Coelho, G.M., Galvao, A.C.F., Guedes, A.C., Carneiro, I. A., Chauke, C.N. & Filho, L.F. (2012). Strategic Foresight applied to the management plan of an innovation development agency. Technology Analysis & Strategic Management, 24(3), 267–283. |
| A11 | Costanzo, L. (2004). Strategic foresight in a high-speed environment. Futures, 36(2), 219–235. |
| A12 | Cuhls, K. (2003). From Forecasting to Foresight Processes – New Participative Foresight Activities in Germany. Journal of Forecasting, 22(2/3), 93–111. |
| A13 | Daheim, C. & Uerz, C. (2008). Corporate foresight in Europe: from trend based logics to open foresight. Technology Analysis & Strategic Management, 20(3), 321–336. |
| A14 | De Smedt, P., Borch, K. & Fuller, T. (2013). Future scenarios to inspire innovation. Technological Forecasting and Social Change, 80(3), 432–443. |
| A15 | Dickson, P.R., Farris, P.W. & Verbeke, W. J.M.I. (2001). Dynamic Strategic Thinking. Journal of the Academy of Marketing Science, 29(3), 216–237. |
| A16 | Engau, C., Hoffmann, V.H. & Busch, T. (2011). Airlines' Flexibility in Facing Regulatory Uncertainty: To anticipate or adapt? California Management Review, 54(1), 107–125. |
| A17 | Fink, A., Marr, B., Siebe, A. & Kuhle, J-P. (2005). The future scorecard: combining external and internal scenarios to create strategic foresight. Management Decisions, 43(3), 360–381. |
| A18 | Floyd, J. (2008). Towards an integral renewal of systems methodology for futures studies. Futures, 40(2), 138–149. |
| A19 | Heger, T. & Rohrbeck, R. (2012). Strategic foresight for collaborative exploration of new business fields. Technological Forecasting and Social Change, 79(5), 819–831. |
| A20 | Hung, C-Y, Lee, W-Y & Wang, D-S. (2013). Strategic foresight using a modified Delphi with end-user participation: A case study of the iPad's impact on Taiwan's PC ecosystem. Technological Forecasting and Social Change, 80(3), 485–497. |
| A21 | Kerr, C., Farrukh, C., Phaal, R. & Probert, D. (2013). Key principles for developing industrially relevant strategic technology management toolkits. Technological Forecasting & Social Change, 80(6) 1050–1070. |
| A22 | Lueg, R. & Borisov, B.G. (2014). Archival or perceived measures of environmental uncertainty? Conceptualization and new empirical evidence. European Management Journal, 32(4), 658–671. |
| A23 | Mendosa, S., Cunha, M., Ruff, F., Kaivo-oja, J. (2009). Venturing into the Wilderness: Preparing for Wild Cards in the Civil Aircraft and Asset-Management Industries. Long Range Planning, 42, 23–41. |
| A24 | Micic, P. (2010). Future Markets-Radar: A case study of applied strategic foresight. Technological Forecasting and Social Change, 77(9), 1499–1505. |
| A25 | Mietzner, D. & Reger, G. (2009). Practices of strategic foresight in biotech companies. International Journal of Innovation Management, 13(2), 273–294. |
| A26 | Nowack, M., Endrikat, J. & Guenther, E. (2011). Review of Delphi-based scenario studies: Quality and Design considerations. Technological Forecasting & Social Change, 78(9), 1603–1615. |
| A27 | O'Brien, F.A. & Meadows, M. (2013). Scenario orientation and use to support strategy development. Technological Forecasting and Social Change, 80(4), 643–656. |
| A28 | Peter, M.K. & Jarratt, D.G. (2015). The practice of foresight in long-term planning. Technological Forecasting & Social Change, 101, 49–61. |

(continued on next page)

**Appendix 1.** (*continued*)

| ID | Article |
|---|---|
| A29 | Pina e Cunha, M., Palma, P. & da Costa, N.G. (2006). Fear of foresight: Knowledge and ignorance in organizational foresight. Futures, 38(8), 942–955. |
| A30 | Pina e Cunha, M. & Chia, R. (2007). Using Teams to Avoid Peripheral Blindness. Long Range Planning, 40(6), 559–573. |
| A31 | Ramírez, R., Roodhart, L. & Manders, W. (2011). How Shell's Domains Link Innovation and Strategy. Long Range Planning, 44(4), 250–270. |
| A32 | Ramírez, R., Österman, R. & Grönquist, D. (2012). Scenarios and early warnings as dynamic capabilities to frame managerial attention. Technological Forecasting & Social Change 80(4), 825–838. |
| A33 | Rasmussen, B., Andersen, P. D. & Borch, K. (2010). Managing Transdisciplinarity in Strategic Foresight. Creativity & Innovation Management, 19(1), 37–46. |
| A34 | Reid, D. M. & Zyglidopoulos, S. C. (2004). Causes and consequences of the lack of strategic foresight in the decisions of multinational enterprises to enter China. Futures, 36(2), 237–252. |
| A35 | Ringland, G. (2010). The role of scenarios in strategic foresight. Technological Forecasting and Social Change, 77(9), 1493–1498. |
| A36 | Rohrbeck, R. (2010). Harnessing a network of experts for competitive advantage: Technology scouting in the ICT industry. R & D Management, 40(2), 169–180. |
| A37 | Rohrbeck, R. & Gemünden, H.G. (2011). Corporate foresight: Its three roles in enhancing the innovation capacity of a firm. Technological Forecasting & Social Change, 78(2), 231–243. |
| A38 | Rohrbeck, R. (2012). Exploring value creation from corporate-foresight activities. Futures, 44 (5), 440–452. |
| A39 | Rohrbeck, R. & Schwarz, J.O. (2013). The value contribution of strategic foresight: Insights from an empirical study of large European companies. Technological Forecasting and Social Change, 80(8), 1593–1606. |
| A40 | Rohrbeck, R., Thom, N. & Arnold, H. (2015). IT tools for foresight: The integrated insight and response system of Deutsche Telekom Innovation Laboratories. Technological Forecasting & Social Change, 97, 115–126. |
| A41 | Routley, M., Phaal, R., Athanassopoulou, N. & Probert, D. (2013). Mapping Experiences in organizations: A learning process for strategic technology planning. Engineering Management Journal, 25(1), 35–47. |
| A42 | Said, W.B. & Hellara, S. (2013). Prospects for the Application of Strategic Foresight in the Tunisian Context: The Case of Industrial Companies. International Journal of Business & Management, 8(15), 99–111. |
| A43 | Sarpong, D. & Maclean, M. (2011). Scenario thinking: A practice-based approach for the identification of opportunities for innovation. Futures, 43(10), 1154–1163. |
| A44 | Sarpong, D., Maclean, M. & Davies, C. (2013). A matter of foresight: How practices enable (or impede) organizational foresightfulness. European Management Journal, 31, 613–625. |
| A45 | Sarpong, D., Maclean, M. & Alexander, E. (2013). Organizing strategic foresight: A contextual practice of 'way finding'. Futures, 53, 33–41. |
| A46 | Sarpong, D. & Maclean, M. (2014). Unpacking strategic foresight: A practice approach. Scandinavian Journal of Management. 30(1), 16–26. |
| A47 | Shah, A.N., Palacios, M. & Ruiz, F. (2013). Strategic rigidity and foresight for technology adoption among electric utilities. Energy Policy, 63, 1233–1239. |
| A48 | Tapinos, E. (2012). Perceived Environmental Uncertainty in scenario planning. Futures, 44(4), 338–345. |
| A49 | Tapinos, E. (2013). Scenario planning at business unit level. Futures, 47(1), 17–27. |
| A50 | Tevis, R.E. (2010). Creating the future: Goal-oriented Scenario Planning. Futures, 42(4), 337–344. |
| A51 | Un, S. & Price, N. (2007). Bridging the gap between technological possibilities and people: Involving people in the early phases of technology development. Technological Forecasting & Social Change, 74(9), 1758–1772. |
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| A54 | Vecchiato, R. (2012). Strategic Foresight: matching environmental uncertainty. Technology Analysis & Strategic Management, 24(8), 783–796. |
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| A58 | Wright, G., van der Heijden, K., Burt, G., Bradfield, R. & Cairns, G. (2008). Scenario planning interventions in organizations: an analysis of the causes of success and failure. Futures, 40, 218–236. |
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