



A methodology of technological foresight: A proposal and field study

Cinzia Battistella*, Alberto F. De Toni

University of Udine, Department of Electric, Managerial and Mechanical Engineering, via delle Scienze 208, 33100 Udine, Italy

ARTICLE INFO

Article history:

Received 15 February 2010
 Received in revised form 30 October 2010
 Accepted 20 January 2011
 Available online 22 February 2011

Keywords:

Corporate Foresight
 Coherence
 Trend
 Strategic direction
 Future coverage
 Case study

ABSTRACT

The study of one's own business future is a distinctive element of a business strategy. Innovative companies are aware of weak signals coming from the periphery and of trends in their industry, and they monitor the coherence between weak signals and trends (the external perspective) and strategic direction (the internal perspective). The literature today does not provide well-framed and complete methodologies for assessing the coherence among trends, vision and products. Therefore, the authors propose a methodology called "the methodology of future coverage", which measures how much the strategy oriented to the future effectively covers trends and megatrends. In other words, it helps to check the contents and the coherence of the firm's vision and products and those of the trends that will have relevance for the future of the industry, and this process supplies firms with supplementary information on how to improve. The authors tested this methodology and exemplified its use via the Eurotech case study, employing longitudinal analysis. The methodology can be useful as a tool for diagnosing the coherence between trends and company strategy. Moreover, from a dynamic point of view, it can be used as a tool to check on the company's progress in following up on trends by adapting its strategy over time. Finally, the methodology can be also used as a tool for cross-comparison of the "level of future orientation" among companies in the same industry.

© 2011 Elsevier Inc. All rights reserved.

1. Introduction

Literature widely recognises *future studies* as a fundamental element of every strategy [1]. In its vision of economic trends, since the 1980s, it [e.g. 2] has highlighted the relevance of forecasting, but this point is equally true for technological trends (innovation, technology transfer, new products and applications, etc.), cultural and sociological trends (demographic changes, the evolution of consumer tastes, etc.), and political trends (the evolution of norms and regulations, etc.), as underlined by many scholars, among them Porter [3]. Porter highlights that the aim of the strategy is the acquisition and maintenance of competitive advantage in the company's sector, defined as extended competition. This is then a *problem of understanding and developing scenarios for handling industry competition*. Moreover, trends and weak signals detection becomes even more of strategic importance in a context of turbulence [4]. In fact, searching for new opportunities, the innovation-oriented companies need not only to analyse past mistakes or comprehend the "market of today", but also detect the possible scenarios involved in the "market of tomorrow". *This implies the importance to scan the periphery* [5], to catch weak signals, monitor trends and subsequently analyse the firm's present and potential future paths.

Given the importance of foresight and forecasts, the problem is now their integration into the choices and decisions of the company [6]. Every company faces the challenge of adapting to its environment and thereby either surviving or failing [7]. The aims of the company system change in response to external environmental factors and internal development factors. An organisation is in fact a complex adaptive system that works depending on expectations and modifies its behaviour as a consequence of learning from its environment, from competitors' behaviour, from the evolution of the industry, etc. *Strategic fit*

* Corresponding author. Tel.: +39 0432 558043.

E-mail address: cinzia.battistella@uniud.it (C. Battistella).

(also called alignment, coherence, harmony) is crucial to a firm's ability to change and adapt to the context. Organisations constantly seek ways to develop both internal strategic fit [8,9] and external strategic fit [7,10,11]. Many scholars underline that an obsession with short-term profits can theoretically generate an excess of attention inside the company and difficulty taking the evolution of the external environment into account and incorporating it into corporate strategy [12]. The strategic management literature has continuously emphasised this necessity to take into account the possible future evolution of the environment during strategic processes and the resulting need for environmental scanning [13,14]. This is a problem of understanding and developing scenarios [3,15–19], which is also related to decision making [20].

Nevertheless there is still a lack of real integration of the foresight process into the particular strategy and a need for a better linkage of information gathering and taking action in future studies [21–24]. Therefore, the main challenges are *to understand in what way trends can have an influence on the company itself, to update and revise strategies for facing uncertainty and to find methods to be more prepared and as ready as possible for changes and for future opportunities*.

The discipline known as *Corporate Foresight* (CF) pertains to the study of these weak signals, of discontinuities between the various PEEST (political, economic ecological, sociological and technological) contexts and of the emerging markets as intended to encourage understanding of future strategy and innovation policies [5,25–28]. The development of forecasts, trends, scenarios, and other forms of analysis about the future requires the study of a complex interplay of different factors. A variety of tools and methodologies have been developed with wide applications both in governmental policy-making and in corporate strategising. For companies in particular, foresight is becoming important in dealing with uncertainty from a dynamic perspective. In our opinion, foresight has a double aim in the company: to feed innovation and research and to strategically guide decision-making and planning [27,29–34]. Preliminary conclusions suggest that methods of using foresight are relevant to corporate strategy; however, their availability and implementation should be systematised and adapted to the particular needs and capabilities of the company in question [35].

Specifically, companies need to develop methods for assessing the “strategic fit with the future”, in other words have processes in place for monitoring the coherence and alignment between strategic direction (the internal perspective) and weak signals and trends (the external perspective). In a future studies logic, the literature does not provide us with precise and complete methodologies for how to control this coherence among trends, vision and products. The authors will therefore propose a methodology called the “*methodology of future coverage*”, which measures to what degree strategy is effectively aligned with trends and megatrends. The methodology will be tested using the Eurotech case study via a longitudinal analysis. This methodology is useful because it helps one to verify the contents and the coherence of the vision and the company products and of the trends that will be pertinent in the future and eventually supplies supplementary information to improve them.

After indicating the theoretical background and the research gaps (Section 2) and the research methodology (Section 3), the paper describes the proposed methodology of future coverage (Section 4), which is then tested in a case study (Section 5); then, finally, we conclude with managerial and academic indications and possible future research developments (Section 6).

2. Theoretical background

2.1. Tools and methodologies for addressing the future

The literature offers different papers that review the different methodologies that have been developed in the last 50–60 years in the fields of future studies, foresight, forecasting, strategy for the future, etc. Although there is no standard classification of these methods, they are in general based on four trade-off: top-down versus bottom-up, explorative versus normative, quantitative versus qualitative, and expert-based versus assumption-based [36]. Popper [37] suggests an alternative classification called the “foresight diamond” based on the method's capability (the ability to gather and process information): evidence, expertise, interaction and creativity. Some reviews [38–40] classify the approaches and methods as following a common framework; others [41–48] are more focused on a particular area of future studies, and still others [49] focus more on the practitioners. Finally, there are reviews that highlight the level of use of the foresight methods [50,51].

The literature also presents advancements in traditional techniques: for example, improvements to and alternative means of scenario construction [52] with the Delphi method [53], Trend Impact Analysis [54], dynamic forecasting models [55], the “three horizons” method [56], cross-impact analysis [57], etc. There are also new approaches: for example: the abduction-based method [58], variation analysis [59], war-gaming [60], the application of TRIZ to technology forecasting [61], the quick technology intelligence process (QTIP) [62], the scenario-based assessment model (SBAM) [63], Comprehensive Situation Mapping (CSM) [64], etc.

Although resourceful, most of these recent developments aim to diversify the strategic toolbox but not to integrate the foresight process into the particular managerial strategy. In this sense, a Delphi study [65] suggests how future studies will become more important in corporations and underlines how implementation remains a major concern.

2.2. Need to link foresight and strategy

Strategic management scholars have historically emphasised the focus of strategy on the future [66–69]. Already in the 1960s, Ansoff in *Corporate Strategy* [15] was describing the decisional flux that helps in managing a company in a context of turbulence and environmental discontinuity (like the American one during that time). For Andrews [16], a basis for economic strategy was the identification of trends, whereas Grant [15], in the resource-based view, underlined the importance of understanding future potentialities. More recently, D'Aveni [18], in his hyper-competition model, has highlighted the need to be ready for the future and quick to adapt to changes, while for Stacey [19], the future is an open system, and the system has to be conducted away from the

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات