Available online at www.sciencedirect.com
ScienceDirect
International Journal of Forecasting 25 (2009) 813–825
international journal of forecasting
www.elsevier.com/locate/ijforecast

Decision making and planning under low levels of predictability: Enhancing the scenario method

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Abstract

In this paper we review and analyse scenario planning as an aid to anticipation of the future under conditions of low predictability. We examine how successful the method is in mitigating issues to do with inappropriate framing, cognitive and motivational bias, and inappropriate attributions of causality. Although we demonstrate that the scenario method contains weaknesses, we identify a potential for improvement. Four general principles that should help to enhance the role of scenario planning when predictability is low are discussed: (i) challenging mental frames, (ii) understanding human motivations, (iii) augmenting scenario planning through adopting the approach of crisis management, and (iv) assessing the flexibility, diversity, and insurability of strategic options in a structured option-against-scenario evaluation.

Keywords: Scenario planning; Crisis management; Framing; Judgment; Heuristics and biases; Low predictability; Rare events

1. Introduction

Consider the following events which have occurred in the last twenty-five years: 9/11, the rise of SMS text messaging, the predominance of Google, the collapse of share prices on 19 October 1987, Black Monday, and the global financial melt-down of 2008. All of them have two attributes in common: they took most people by surprise and they have had a large impact on the lives of many people. But did these events have a low level of predictability? Predictability can be viewed from two perspectives: (i) our ability to arrive at reliable or well-calibrated probabilities, and (ii) the dispersion of the underlying probability distribution. If well-calibrated probabilities can be established, decision theory can be used to indicate how to make rational decisions on the basis of them, even if the dispersion of the underlying probability distribution is large (Goodwin & Wright, 2004). The problem of low predictability therefore arises: (i) when it is not possible to arrive at well-calibrated

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0169-2070/$ - see front matter
doi:10.1016/j.ijforecast.2009.05.019

probabilities, and/or (ii) when it is not possible to measure calibration, so that one cannot assess the level of confidence that one should attribute to probabilities. This means that unpredictability is a major concern in relation to unique, unprecedented, or rare events which, if they occur, will have a high impact. In particular, there is the potential to underestimate the probabilities of these events by implicitly, or even explicitly, assigning to them extremely low probabilities or probabilities of zero. Moreover, an absence of past data means that the calibration (or reliability) of such probabilities cannot be assessed, so any biases associated with them will not be recognised. We will first examine the potential reasons why the predictability of specific high-impact events may be low. Then we evaluate the effectiveness of the scenario method — a method that attempts to avoid these problems by excluding a direct consideration of probabilities. Having identified the weaknesses of the scenario method, we then discuss potential improvements.

2. Reasons for low predictability

2.1. Inappropriate framing

The way in which a decision or planning problem is framed, or viewed, will determine the extent to which account is taken of the different uncertainties that may impinge on the problem. Research suggests that planners and decision makers often have overly narrow frames of reference, or frames that are too embedded in the past — so that inadequate attention is paid to changes and the potential threats and opportunities that these may represent. For example, in one study it was found that Scottish textile producers saw other Scottish companies as their main competitors, despite the fact that foreign companies represented their most serious challenge (Porac, Thomas, & Baden-Fuller, 1989). At the extreme, an important threat or opportunity may go totally unrecognised (de facto, a zero probability is given to its occurrence), with the result that the organisation is totally unprepared when the event occurs. Incomplete, inaccurate, and otherwise inappropriate mental models may "prevent managers from sensing problems, delay changes in strategy, and lead to action that is ineffective in a new environment" (Barr, Stimpert, & Huff, 1992). In times of rapid change, Wack (1985) contends, strategic failure "is often caused by a crisis of perception, that is, the inability to see an emergent novel reality due to being locked inside obsolete assumptions, particularly in large, well-run companies". Further evidence of inappropriate framing comes from Johnson's (1987) single longitudinal case study of the UK retail clothing industry. The focus of the study was on the (mis)match between changes in the firm's strategy as it sought to succeed in a changing environment, with the objective of the study being to identify whether incremental changes in strategy were beneficial or harmful to the overall survival and success. The study concluded that market signals of a failing strategy were not interpreted as such within the organisation, and that managers in a previously successful business sought to reduce the perceived importance of dissonant information, such that the prevailing strategy was not threatened. Johnson showed that the resultant incremental change in strategy did not keep pace with environmental change, leading ultimately to strategic drift. The objective sensing of external signals, it was reasoned, is muted within the organisation because the signals are not meaningful in themselves, but take on relevance from the viewpoint of the manager's mental model. This so-called frame blindness can lead to effort being wasted in forecasting the wrong events, or predictions being based on erroneous assumptions about the nature of the real world.

Experts in many fields are particularly susceptible to the adoption of particular frames which are consistent with their specialism or prejudices, so we should be somewhat sceptical of the confidence levels assigned to their forecasts (Armstrong, 1980; Tetlock, 2005). Indeed, in a huge study of 28,000 predictions, made by around 280 experts, that were related to the political and economic futures of approximately 60 countries, Tetlock found that experts usually fared no better than simple statistical models. Moreover, Tetlock found that experts usually fail to question their own frames when evidence emerges that their forecasts are wrong. Instead, they have a developed an impressive ability to explain away their errors by redefining inaccurate forecasts as relatively accurate: "the forecasted event almost occurred" or "OK, the event has not happened yet, but it will" or "my timing was just off". In addition, Tetlock found that the