Available online at www.sciencedirect.com
SCIENCE DIRECT®
Technovation 26 (2006) 60–75
technovation
www.elsevier.com/locate/technovation

Strategic resonance between technological and organisational capabilities in the innovation process within firms

Steve Brown[a,*], Felicia Fai[b]

[a]School of Business and Economics, University of Exeter, Streatham Court, Rennes Drive, Exeter EX4 4PU, UK
[b]School of Management, University of Bath, Claverton Down, Bath BA2 7AY, UK

Abstract

The literature on innovation has been both rich and varied in approach and has provided much insight into the process of, and difficulties contained within, innovation. A number of important concepts including those of path dependency, technological trajectories, together with the plethora of articles concerned with organizational learning, involving the contribution and limitations of tacit knowledge, have helped us to understand the nature of innovation. As important as these strands of literature are, we suggest that a key weakness in much of the literature on innovation is that it does not deal sufficiently with the contextual issues concerning the changing paradigms of manufacturing and the profound impact that these developments have had upon the innovation process. We offer the concept of *strategic resonance* as a missing ingredient within some firms who are now faced with conditions of hyper competition where ongoing innovation is a key requirement. The concept of strategic resonance is not offered as a prescriptive panacea but it is suggested that firms need to understand and remove the blockages to strategic resonance as part of their innovation development processes.

Keywords: Strategic resonance; Technological and organisational capability; Innovation process

1. Introduction

In this paper, we put forward the concept of *strategic resonance* as a necessary (but not necessarily sufficient) dynamic attribute within manufacturing/assembly firms competing in today's environment of hyper-competition (D'Aveni, 1994). Although strategy is clearly a complex issue (Whittington, 2002; Mintzberg et al., 2000), for the purpose of this paper the context in which we use the term is based upon the following factors. For us, strategy is:

- Concerned with meeting existing market needs as well as exploiting opportunities for potential market segments (Kim and Mauborgne, 2002; Nunes and Cespedes, 2003)
- About making the best use of resources, and to leverage these resources either alone or with partners (Wernerfelt, 1984; Barney, 1991; Dierickx and Cool, 1989; Lamming, 1993; Hines, 1994; Stump et al., 2002; Ireland et al., 2002).
- The ultimate responsibility of senior-level managers within the firm—of course we recognise the vital of importance of a range of stakeholders in the process both within the firm and with eternal linkages to the enterprise (Frambach et al., 2003; Hax and Majluf, 1991; Dougherty and Corse, 1995). This factor of seniority is important to innovation because these managers will have responsibility for allocating resources for innovation processes.
- About devising and implementing processes that will enable the enterprise to compete and, ideally, to create competitive advantage (Whittington, 2002; Hamilton et al., 1998).
- Concerned with developing capabilities within the firm's operations that are superior to other competitors and which other competitors either cannot copy, or will find it extremely difficult, to copy (Teece et al., 1997; Eisenhardt and Martin, 2000).

We offer this list as an indication of the role and scope of strategy, which is important because the term, strategy, is used throughout the paper. Moreover, we will discuss how,

* Corresponding author. Tel.: +44 1392 263200; fax: +44 1392 263242.
E-mail address: stevebrown@exeter.ac.uk (S. Brown).

0166-4972/$ - see front matter © 2004 Elsevier Ltd. All rights reserved.
doi:10.1016/j.technovation.2004.08.008

although innovation is a strategic issue for firms, senior-level personnel, charged with strategic decision-making of the firm may not be aware of, or be able to capitalise upon, the operations capabilities that reside within the firm. We shall argue that the problems of not understanding, or being unable to utilise, the resources that reside within the firm's operations are issues that continue to plague the innovation process within firms.

The key issue for us is that although a number of important contributions to the literature see innovation as a key strategic issue (e.g. Hamel, 2001; Christensen, 1997; Acs and Audretsch 1991; Ali, 1994; Anderson and Tushman 1990; Ettlie et al., 1984; Henderson and Clark, 1990; Nelson and Winter 1982; Tushman and Anderson, 1986; Utterback, 1994), we suggest that the specific role of operations is underplayed in much of the literature.

It is axiomatic that operations personnel will be involved in innovation simply due to the fact that they will be charged with producing or assembling the new product. But the assertion that manufacturing personnel should be involved in NPD is not enough because the specific role and contribution from operations personnel in innovation is still far from clear in spite of the plethora of articles related to the subject.

We suggest that capabilities in innovation do not come about by chance but, instead, owe a great deal to the role of strategy in accruing and guarding a range of capabilities that might lead to successful innovations (Dierickx and Cool, 1989). We will argue that firms struggle with devising strategies, particularly related to innovation, not because these firms are inept or stupid but because they remain stuck in old manufacturing paradigms, even though these firms may realise that the current manufacturing era bears little resemblance to these past modes of production. We suggest that the reason why this hurdle is, often, not overcome is that, as we shall see in the discussion of examples, firms have not dealt organisationally with the change of manufacturing paradigms over time.

We recognize that innovation is a profoundly difficult task for firms (Pavitt, 1990) and that a panacea for all firms in all types of industries is a non-sensical proposition. However, we propose that, in the current era, firms need to develop capabilities in strategic resonance in order both to align functions within the firm, as well as between the firm and its market segments.

As a conceptual paper, we offer some evidence to support our proposition, although we recognise that to support our proposition more fully in the future, empirical research must be carried out in future studies.

This paper takes the following structure. First, we will provide a detailed definition of the concept of *strategic resonance* and indicate its significance. Second, we discuss how the transition from craft through mass production to the current era of manufacturing led to *strategic dissonance* in the strategy process and how this impacted upon innovation. Third, we provide evidence of strategic resonance and strategic dissonance within two industries (automobiles and computing). We then discuss how organisational responses to mass production may not be enough and why these need to be changed in order to deal with the current era of hypercompetition. Finally, we conclude with a review of strategic resonance.

2. Strategic resonance

Brown (2000: p6) has previously defined strategic resonance as:

> "an ongoing, dynamic, strategic process whereby customer requirements and organizational capabilities are in harmony and resonate. Strategic resonance is more than strategic fit—a term which has often been used (rightly in the past) to describe the 'fit' between the firms' capabilities and the market that it serves. Strategic resonance goes beyond that. Strategic fit may be likened to a jigsaw where all parts fit together. This is a useful view but it can have [...] a very static feel to it. In strategic fit it is as if once the 'bits' are in place, the strategic planning is done. By contrast, strategic resonance is a dynamic, organic process, which is about ensuring continuous linkages and harmonization between:
>
> - The market and the firm's operations capabilities
> - The firm's strategy and its operations capabilities
> - All functions and all levels within the firm.
>
> Firms need to find and exploit their strategic resonance—between markets and the firm; within the firm itself; and between senior level strategists and plant-level, operations capabilities."

The concept of strategic resonance is illustrated in Fig. 1:

In essence strategic resonance is concerned with managing two sets of capabilities that need to be in place simultaneously. These are:

1. Within the firm's functions so that there is cohesion and strategic alignment within them.
2. Between the firm's capabilities and the market segments in which the firm wishes to compete.

Strategic resonance is also about ensuring that the firm will develop and protect those capabilities that can be used to exploit market opportunities. As we have indicated, such capabilities do not come about by chance. For example, as Kay (1993) has noted, there are two accounts of Honda's success—one by the Boston Consulting Group, which suggests that Honda's success was the result of an intense and deliberately planned pursuit of the market; the other account by Pascale (1984) suggests that it was more to do with good fortune. However, Kay (1993) provides a telling insight of Pascale's 'good fortune' view of Honda's success