



# Firm behaviour and innovative performance

## An empirical exploration of the selection–adaptation debate

Marius T.H. Meeus<sup>\*</sup>, Leon A.G. Oerlemans<sup>1</sup>

*Eindhoven Centre for Innovation Studies, Faculty of Technology Management, Eindhoven University of Technology, P.O. Box 513 Building D.G. 1.16, 5600 Eindhoven, MB, Netherlands*

Received 18 March 1998; received in revised form 23 October 1998; accepted 9 April 1999

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### Abstract

Innovation is a complex trade-off between routinisation and change, between reliability and accountability of firms and timely adaptation. This innovator's dilemma confronts innovation theory with the question, how to align routinisation with innovation induced organisational change and consistent performance. Obviously it is a complex issue. Dominant innovation theory neglects this subject due to its pro-innovation bias, while evolutionary organisation and innovation theory give opposite perspectives on this problem. The adaptation perspective considers pro-active behaviour as the best condition for innovative performance, whereas the selection perspective advances inert firm behaviour as the best alternative to achieve successful innovations. Our *research question* focuses on the explanatory value of either the selection or the adaptation perspective for the innovative performance of industrial firms. Our empirical findings confirm the adaptation perspective and reject the selection perspective. Comparatively, firm behaviour involving the highest risks and uncertainties—e.g., high environmental dynamics and high levels of adaptive activity—contributes most significant to the explanation of innovative performance. Inert, risk averse behaviour, conversely, does not improve or even impedes innovative performance compared with other types of firm behaviour. © 2000 Elsevier Science B.V. All rights reserved.

*Keywords:* Innovative performance; Adaptation; Selection; Firm behaviour; Routines; Risks

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### 1. Introduction

Technological competition and innovation confronts firms with the innovator's dilemma (Christensen, 1997). Basically this dilemma is a variant of the

flexibility–stability dilemma, which revolves around the question: How do firms reconcile the need for persistence in the pursuit of organisational goals and the need for change in the pursuit of organisational survival? Indeed innovation is a trade-off between competing risks; the risk of changing products, processes and routines threatening the reliability and accountability of organisations and the risk of organisational decline or even death due to a lack of

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<sup>\*</sup> Corresponding author. Tel.: +31-40-2473-450/2741/2640; E-mail: m.t.h.meeus@tm.tue.nl

<sup>1</sup> E-mail: l.a.g.oerlemans@tm.tue.nl.

change. Innovation processes in organisations appear to have both effects. On the one hand empirical research revealed that innovation enhances the growth and survival of firms.<sup>2</sup> On the other hand innovation is a very complex and risky process, with low success rates, and sometimes lethal effects.<sup>3</sup>

Due to its pro-innovation bias and its adaptationist perspective (Drazin and Schoonhoven, 1996), much innovation research tends to stress that innovation benefits its producers and users, and simultaneously ignores the risks of the associated change processes (Abrahamson, 1991; Leonard-Barton and Doyle, 1996; Freeman and Soete, 1997), or disregards its complexity.<sup>4</sup> These theoretical and empirical flaws in innovation research hampered a full treatment of the innovator's dilemma.

In this paper we pursue a full treatment of the innovator's dilemma with the development of a theoretical framework that adjusts these flaws. This is achieved by an integration of two branches of evolutionary thinking on organisation and innovation: an adaptationist perspective derived from the evolutionary theory of the firm (Haveman, 1992; Teece and Pisano, 1998) and a selection perspective which builds on inertia theory (Hannan and Freeman, 1984) derived from population ecology. Despite many similarities, both perspectives have a different appraisal of firms' change capabilities and the impacts of change on survival. Inertia theory seems to rule out certain structures and practices that can overcome inertia and can increase the generation of innovation, whereas adaptation theory allows for the emergence

of such strategies. The position of inertia theory challenges the key assumption of innovation theory pertaining to the capacity of firms to adapt and to innovate. The issue remains as to the validity of these claims for the explanation of innovative performance at the level of firms, because inertia theory is applied mainly at the level of population explaining population dynamics covering long periods (Baum, 1996). We tap into inertia theory to adjust the pro-innovation bias of much innovation research, by means of an elaboration of the inertia concept allowing for a comparative analysis of inertia with other kinds of organisational behaviour at the level of the firm. This yields four types of adaptive behaviour within three categories of adaptive behaviour pertaining to technology, strategy and organisation.

This paper performs several functions in innovation research. Our typology of adaptive behaviour indicates varying responses to feedback from one's environment and represents a fit or misfit between levels of environmental dynamics and activity levels. In general neither a full treatment of the environment–organisation nexus, nor a specification to distinctive organisational domain is the case in studies of organisational change or innovation.<sup>5</sup> An empirical exploration of the relation between different types and categories of adaptive behaviour and innovative performance is not available. In this study we sought to fill this empirical gap, which contributes to our insight in: (1) the prevalence of the claims of the selection and adaptation perspective for the relation between adaptive firm behaviour and innovative performance, (2) the validity of these claims for firm

<sup>2</sup> Innovation does contribute substantially to organisational survival by offering new growth opportunities (Brouwer and Kleinknecht, 1994; Audretsch, 1995; Metcalfe, 1995; Archibugi and Pianta, 1996; Lawless and Anderson, 1996).

<sup>3</sup> Innovations potentially disrupt and reform the organisational fabric, often in a fairly unpredictable and situation-specific way (Leonard-Barton, 1988; Dean and Snell, 1991; Lundvall, 1992; Zammuto and O'Connor, 1992; Dougherty and Hardy, 1996). One study revealed lethal effects of innovation (Barnett, 1994).

<sup>4</sup> To the extent that risks are associated with innovation, they are treated, as is the case for other decisions, as statistical uncertainties with a probability distribution known to all (Gopalakrishnan and Damanpour, 1997).

<sup>5</sup> Most studies concentrate on activities, or on effects of different environmental conditions (market structures, rivalry) on firm behaviour (Miller and Chen, 1994; Baum, 1996), which is also prevalent in industrial economics (Baldwin and Scott, 1987). Most researchers contemplating the opposition between both approaches, either take the selection approach as a starting point (Miller and Chen, 1994), or the adaptation approach (Haveman, 1992; Romanelli and Tushman, 1994). Young (1988) and Amburgery and Rao (1996) assert that existing studies contrasting adaptation and selection have tended to neglect the effects of changes in goals, authority, and technology on the life chances of organisations and their financial performance.

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