

SERIES ON TECHNOLOGY MANAGEMENT – VOL. 3

# FROM KNOWLEDGE MANAGEMENT TO STRATEGIC COMPETENCE

Measuring Technological, Market  
and Organisational Innovation

Second Edition



Editor

**Joe Tidd**

Imperial College Press

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(2nd Edition)**

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# **FROM KNOWLEDGE MANAGEMENT TO STRATEGIC COMPETENCE**

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# Preface to the Second Edition

There continues to be much interest in the business and academic communities in the concept of strategic competencies or core capabilities, that is, how organisations define and differentiate themselves. More recently, this movement has fragmented into a number of related fields with subtle differences in focus: knowledge management — concerned with how organisations identify, share and exploit their internal competencies, in particular the knowledge of individuals; organizational learning — on the relationship between individual and organisational knowledge and how organisations “unlearn” past competencies and acquire new competencies; strategic management — how competencies can be assessed, and how these contribute to performance; and innovation management — on how such competencies are translated into new processes, products and services.

We believe that this fragmentation and increasing specialisation of academic research is counterproductive, and makes it more difficult to provide clear guidance for managers on how to identify, measure, build and exploit strategic competencies. This book attempts to re-establish the links between strategic competencies, knowledge management, organisational learning and innovation management, in an effort to establish a more coherent and integrated framework for future academic research and business practice. We adopt a practical, but rigorous, approach to the subject. Contributors include leading researchers and consultants from the field. We focus on the measurement, management and improvement of organisational, technological and market competencies and, where possible, identify the relationships with strategic, operational and financial performance. Innovation is about creating, capturing and combining knowledge — creating new possibilities through combining different knowledge sets. These can be in the

form of knowledge about what is technically possible or what particular configuration of this would meet an articulated or latent need. Such knowledge may already exist in our experience, based on something we have seen or done before. Or it could result from a process of search — research into technologies, markets, competitor actions, etc. And it could be in explicit form, codified in such a way that others can access it, discuss it, transfer it, — or it can be in tacit form, known about but not actually put into words or formulae (Tidd *et al.*, 2005).

In Part 1, we begin with a review of the relationships between strategic competencies, innovation management and organizational learning, and argue that we need to re-integrate these fields in order to better understand and manage organisations. Specifically, we need to be able to operationalise or measure competencies and knowledge before we can model learning and innovation. Richard Hall follows with a review of the resource-based view of the firm and breaks down strategic competencies into four component capabilities: regulatory, positional, functional and cultural. Regulatory capabilities include contracts, patents and licences. Positional capabilities include reputation, distribution and supply chains and external networks. Functional capabilities include employee and supplier know-how and skills in R&D, operations, marketing and finance. Cultural capabilities include the ability to work in teams, a tradition of customer service and the ability to manage change and innovation (Isaksen and Tidd, 2006). In each case, he makes the distinction between tangible and intangible assets. Based on his own experience and a survey of firms, he argues that it is the intangible resources which contribute most. This provides a link between strategic competencies and knowledge management. Peter Hiscocks and Dan Riff identify some common pitfalls in implementing an innovation strategy and provide some practical advice for translating strategy into action. They propose a systems approach to implementation, which incorporates a range of measures of critical performance indicators. The power of the framework is illustrated with a case study from financial services.

In Part 2, Tony Clayton and Graham Turner describe the PIMS (Profit Impact of Market Strategy) approach to measuring and improving market-based competencies, and provide empirical evidence and case studies of the significance of brand development and maintenance. Ciaran Driver and I extend the analysis and develop a model to link measures of technological and market competencies with financial performance based on an analysis of 40 firms. We demonstrate that whilst there appears to be no significant relationship between innovation and profitability at the level of the firm, there is strong evidence that measures of technological and market innovation have a significant affect on both short-term financial measures — such as value-added — and longer-term measures of financial performance, such as the market to book value. Next David Tranfield and co-authors use an empirical study of four firms to link the fields of knowledge management and innovation. They develop a framework which comprises eight generic routines: search, capture, articulate, contextualise, apply, evaluate, support and re-innovate. This can be applied to external sources of knowledge, including customers and collaborative organisations.

In Part 3, we examine the role and measurement of technological competencies. Pari Patel reviews the range of measures available and discuss their relative merits, including R&D spending, patents, product announcements and innovation surveys. He assesses the relationship between firm size and technological performance, as well as the impact of technological activities on firm performance. He concludes by presenting an analysis of the technological specialisation and performance of a sample of 440 firms based on patent activity. Francis Narin continues the assessment of technological competencies by bibliometric (publication) and patent analysis, specifically by means of the Tech-Line® database of more than 1,000 leading firms, universities and agencies in 26 industry groups in 30 technology areas, over 10 years. For each organisation, the assessment is based on nine technology indicators, including the number and quality of patents and technological and science strength. Donald Hislop completes this section, with a study of how communities of practice and innovation processes interact in



the implementation of organisation-wide technological process innovations such as ERP (Enterprise Resource Planning), based on seven case studies.

In Part 4, we focus on the assessment of internal and external organisational competencies. Dorothy Griffiths and Max Boisot begin with a review of different notions of core competencies and identify some of the problems associated with measurement. They present their own framework, C-Space (culture space), which consists of two dimensions: codification, that is, the extent to which the knowledge is structured; and diffusion, that is, the extent to which the knowledge is shared by a given population. They argue that knowledge moves around this C-space through a social learning cycle of problem-solving, diffusion, absorption and scanning. They demonstrate how this framework can be used in practice to map and identify linkages between technological elements by means of workshop facilitation, and they illustrate this with case studies of three companies. Jonathan Sapsed develops the notion of “knowledge bases” which applies to complex, multi-technology companies. He uses this to explore the classic tension in organisations between the needs of functional specialisation and project co-ordination. He examines attempts to re-organise in two high-technology firms, and concludes that firms should challenge simplistic prescriptions of organisation design, and need to consider likely losses as well as the potential benefits. In the final chapter in this section, Richard Lamming traces the historical development of supplier relations and assessment from adversarial to partnership. He reviews the range of selection and appraisal criteria available against which suppliers are assessed, including price, quality, delivery and responsiveness, as well as the more formal methodologies used in the defence, aerospace and automobile sectors. He argues that differences in supply markets will demand different supplier relations and assessment criteria and, therefore, recommends a flexible approach to exploiting supplier competencies.

In Part 5, we explore how organisations can improve their existing capabilities and, where necessary, develop new competencies. Pervaiz Ahmed and Mohamed Zairi review various methods of benchmarking performance by focussing on benchmarking innovation processes. Finally,

John Bessant provides a practical guide to organisational learning by describing the organisational routines which support the process of continuous improvement: experimentation, experience, reflection and conceptualisation. Throughout, there is a strong emphasis on formal, documented processes and measurement. Based on his research, he presents a reference model against which an organisation can benchmark, as well as a developmental model to enable an organisation to improve its performance.

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January 2006

# Contents

Preface to the Second Edition.....	v
List of Contributors .....	1
<b>Part 1 — Strategic Competencies</b>	<b>3</b>
Chapter 1 .....	5
The Competence Cycle: Translating Knowledge Into New Processes, Products and Services <i>Joe Tidd</i>	
Chapter 2 .....	26
What are Strategic Competencies? <i>Richard Hall</i>	
Chapter 3 .....	50
Making Strategy Happen <i>Peter Hiscocks and Dan Riff</i>	
<b>Part 2 — Market Competencies</b>	<b>75</b>
Chapter 4 .....	77
Brands, Innovation and Growth: The Role of Brands in Innovation and Growth for Consumer Businesses <i>Tony Clayton and Graham Turner</i>	
Chapter 5 .....	94
Technological and Market Competencies and Financial Performance <i>Joe Tidd and Ciaran Driver</i>	

Chapter 6 .....	126
Building Knowledge Management Capabilities for Innovation Projects <i>David Tranfield, Malcolm Young, David Partington, John Bessant and Jonathan Sapsed</i>	
<b>Part 3 — Technological Competencies</b>	<b>151</b>
Chapter 7 .....	153
Technological Indicators of Performance <i>Pari Patel</i>	
Chapter 8 .....	179
Assessing Technological Competencies <i>Francis Narin</i>	
Chapter 9 .....	220
The Complex Relations Between Communities of Practice and the Implementation of Technological Innovations <i>Donald Hislop</i>	
<b>Part 4 — Organisational Competencies</b>	<b>247</b>
Chapter 10 .....	249
Are There Any Competencies Out There? Identifying and Using Technical Competencies <i>Dorothy Griffiths and Max Boisot</i>	
Chapter 11 .....	279
The Organisation of “Knowledge Bases” <i>Jonathan Sapsed</i>	
Chapter 12 .....	309
Assessing Performance in Supply <i>Richard Lamming</i>	

<b>Part 5 — Improving Competencies</b>	<b>335</b>
Chapter 13 .....	337
Innovation: A Performance Measurement Perspective	
<i>Pervaiz K. Ahmed and Mohamed Zairi</i>	
Chapter 14 .....	375
Learning and Continuous Improvement	
<i>John Bessant</i>	
<b>Bibliography</b> .....	<b>401</b>
<b>Index</b> .....	<b>435</b>

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## PART 1

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# STRATEGIC COMPETENCIES



