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Strategic Management in the Innovation Economy

Strategy Approaches and Tools for Dynamic Innovation Capabilities

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Davenport/Leibold/Voelpel Strategic Management in the Innovation Economy

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Foreword

Many companies know today that the key for survival is in out-innovating the competition by 'leapfrogging' competitors with value innovation, and not with direct competitive strategies. At Siemens we have realized this perhaps earlier than many other companies, especially those in less technology-intensive industries, and we have taken purposeful steps to create and share knowledge inside our company and with our stakeholders for increased levels of innovation. Not surprisingly, we see many companies battling for survival due to mindsets and approaches that are rooted in traditional ways of competing, or attempting to replicate past successes.

While we have seen many scholarly books and articles emerging on innovation management or strategic innovation, we have noticed a dearth of managerial guides concerning appropriate approaches and tools for strategic management focused on the innovation economy. Most textbooks in use at universities and other places of business learning are still primarily based on the primacy of competitive strategies in the industrial economy. I have been gratified to see this book emerging as one of the first to specifically address strategic management mindsets, approaches and tools relevant to the challenges of the innovation economy.

In our globally networked world, characterized by integrated supply and demand chains, outsourcing (even of innovation), innovative new business ecosystems, and the search for value innovation, it is essential that firms keep rejuvenating themselves through the development of new, experimental business models. The challenge of managing both traditional, sustaining business models and innovative, disruptive business models certainly requires particular strategic management mindsets and capabilities. There is no alternative, however, to adopting these for surviving in a turbulent but exciting world of new creative opportunities and challenges.

This book provides a new platform for strategic management approaches and tools, and I trust it will find a particular place in the field of strategic management for innovation, both in business practice and education.

Heinrich von Pierer
Chairman of the Supervisory Board
Siemens AG

Preface

The Challenge to Traditional Concepts of Strategy and Business

Business strategy and strategic management have long been viewed as the concept and process that link an organization and its competitive environment. The turbulence and significant shifts in the environment towards a knowledge-networked society since especially the mid-1990s, and increasing evidence of company failures due to traditional business models and strategy approaches, imply that traditional ways of articulating strategy and practicing strategic management have to be seriously reconsidered.

Since the 1950s, various approaches to strategic management have been popularized, and these were appropriate for the industrial economy and its competitive features. With a significant new era of what some call 'revolutionary' change – the era of the knowledge-networked innovation economy – now being experienced, it is becoming evident that the traditional approaches to strategic management are showing serious deficiencies in dealing with the discontinuous links between an enterprise and its environment. The very nature of the business enterprise of the 21st century is being transformed, as well as the key notions of innovation and its effects on value creation, value capture and value sustainability.

A number of significant new driving forces in the business environment have created substantial uncertainty in the competitive landscape, and are bringing about fundamental changes in the traditional boundaries of nations, industries and companies. And such changes continue to challenge the traditional rules of competition. The driving forces of the innovation economy have removed the certainty and stability in the economic environment from almost every industry.

The competitive landscape has consequently been undergoing a fundamental change to produce a variety of new industries and combination of old industries, e.g. financial services industry, life sciences industry, 'edutainment' (education and entertainment) industry, the ICT industry (information and communications technology), and the 'individual living environment' industry (previously the home furnishings industry). These are not just new names for old diversifying industries, but new industries based on enterprise business models linked to intellectual capital and organizational rejuvenation, in contrast to business models linked to physical capital (land, buildings, machinery, etc.). Numerous examples are highlighted in this book of fundamental changes in the 'way of doing business' of enterprises in various industries, based on new value innovation concepts that have gained rapid customer acceptance.

New Ways of Value Innovation

The shift to new value innovation, i.e. innovative customer value propositions (products and services), and/or how they are innovatively newly created and provided, breaks decisively with the old industrial economy, in which information scarcity encouraged value capture through knowledge hoarding and physical assets. Successful companies today are those that transform purposefully-shared and networked-knowledge into new value-creating innovations, and aggressively use this to capture new opportunities and additional profit. Furthermore, value innovation is no longer achieved by finding and protecting a defensible position in a single, traditional industry. Rather, it is gained by innovating value in a business ecosystem, i.e. a company network spanning a number of potentially synergistic industries and value chains, that is quicker and better at using knowledge, and reinventing or adapting the system as the firm co-evolves with other organizations and individuals. The impact on strategic management, both in strategic thinking (mindset, approaches, formulating), and strategy implementation (implementation processes, methods, tools and practices) is profound.

The drive to innovate is even more important in the knowledge-networked innovation economy of the early 21st century, where the rapid sharing of knowledge forces players to reinvent and adapt constantly. In addition, ruptures in traditional boundaries in value chains are requiring companies to rethink how they go to market, what they need to own, and how they deal with suppliers and customers. The result is industry value chains today undergoing almost continuous innovation. The innovation value chain – one might call its new form a value web, an extended enterprise, a business ecosystem, or a value constellation – challenges firms that thrived with an integrated, self-contained approach.

It is becoming evident that the best value-capturing mechanisms now operate outside the individual firm's boundaries. Yet, the value created by a firm's own initiatives may be essential to the viability of its entire business ecosystem. The nature and definition of the firm are also undergoing profound changes, thanks to the ubiquity of information and leveraging of knowledge. The firm is shifting from a self-contained value-creation and -capture apparatus into one part of an interdependent community whose members continually negotiate responsibility for value creation and the right to value capture.

Focus on a Traditional Business Model only is Inadequate for a Firm's Survival

In the more stable industrial economy, enterprises were used to operate a single business model in a particular industry. In the fast-changing innovation economy, mainly driven by advanced technology, knowledge-networking and globalization, the resulting socio-techno-economic environment is one that challenges the essence of relatively stable traditional business models that firms used to achieve their particular goals.

No matter how successful and superior a company's current business model has been, it will be easily imitated, diluted and commoditized by others and challenged by new business models in the innovation economy. Moreover, major and unpredictable

changes in the business environment, the increasing importance placed on innovation and knowledge as value-creating attributes, and the accelerating pace of the business environment create major challenges in sustaining the efficacy of existing business models.

Towards a New Strategic Management Approach for the Innovation Economy

This book proposes a new strategic management approach for the innovation economy – the *poised strategy* approach. The innovation economy requires substantially different ways in which corporations are led, businesses are managed, and organizational capabilities and structures are developed and utilized. Managing multiple business models, with different approaches for sustaining and disruptive business models, and shifting the focus to business ecosystem collaboration and not just company and industry value chain effectiveness, renews organizational energies and rejuvenates company life. This raises a number of challenges concerning ambidextrous leadership and managerial capabilities, and innovation-enabling organizational structures, as addressed in this book.

Organizational energy, in the sense of positive and continuous dynamics (or impetus) to be able to rejuvenate organizational value, is the result of managing a portfolio of business models for desired value-innovation activities in business ecosystems. This is achieved through dynamic innovation capabilities, with focus on a relevant range of 'speed-to-market' value-innovation configurations.

The Key Message of This Book

This book provides understanding of the dramatic shifts in the innovation economy and the resulting significant implications for traditional strategic management theory and applications. It furthermore helps the reader to learn and discover pre-eminent writings as well as methods and tools for strategic management in the innovation society. Strategic management in the innovation economy requires a new mindset, rooted in a systemic (networked, interactive) view and not a traditional (mechanistic) value-chain, industry-bound, or an existing (physical, internal) resource capability orientation. Companies can no longer focus only on efficient *intra*-organizational knowledge creation and sharing, but should also include the *inter*-organizational realm, as well as other relevant stakeholders in its business ecosystem.

The *key message is that the new knowledge-networked innovation economy requires a totally different strategic management mindset, approach and toolbox*. The traditional approaches are not completely obsolete, but used on their own they are deficient for sustainable organizational performance and survival in today's knowledge-networked innovation economy.

Step by step, each chapter leads the reader towards a better understanding of the knowledge-networked environment, the need for a new managerial mindset, new strategic management approach, and appropriate tools to assist in the processes of strategic management in the innovation economy. Per chapter the authors furthermore offer

a brief introduction and theoretical overview, followed by selected research papers and viewpoints, which are concluded by clearly related and embedded case examples.

Who Should Read this Book and How Should It Be Used?

The book is aimed primarily for use at MBA-level and business executive courses, as well as for capstone undergraduate courses in strategic management. In addition, strategists and top managers will find it an effective aid in understanding the shifts and impacts of the knowledge-networked society on strategic management in the innovation economy, as well as the need for new tools and methods. The book originated from a realization that students and business leaders cannot be educated/oriented in strategy by simply reviewing extant strategic management theory and applications. Our approach is not to teach theory or cases, but to understand the evolution of strategic management thought, related to historical timeframes and contexts, and the difficulties of extant strategic management approaches and tools in dealing with major shifts and 'discontinuities' in the environment. Additionally, we provide integrated substantiation for a new approach by corporate leaders and strategists to strategic management in the innovation economy – *poised strategic management*.

The contents and style of the book are significantly different from the usual strategic management textbooks. The content is a unique combination of theory, published articles, and case examples, all designed to make key points and bring across messages that substantiate the proposals for new and complementary strategic management approaches and applications. The style of the book is easily readable by advanced students and business executives alike. Case vignettes are provided to amplify key points, and a list of questions are provided at the end of each chapter to stimulate further review, comparison and debate.

The overall learning objective is to provide a strong basis (aptly argued and substantiated) for the acceptance of a new strategic management approach and tools to be used complementary to extant strategy approaches and tools. The purpose is not to make a case that extant approaches and tools are obsolescent or invalid in the innovation economy, but that they are inadequate if used on their own.

The major points of uniqueness of the book are:

- The concept of *poised strategic management*, in contrast to the traditional concept of analytical, mechanistic strategic management approaches and processes.
- The analogy of poised strategy with Einstein's theorem of $E = MC^2$, with *purposeful energetic rejuvenation* – to counter the inexorable process of entropy of an enterprise – through management of multiple business models, both sustaining and disruptive in nature.
- The strong differentiation between, and the linkages necessary, between the concepts of *business model* and *strategy*.
- The total departure from the traditional mechanistic process of analysis-formulation-implementation-change to strategic management (as still evidenced in most strategic management textbooks), to a *holistic, interactive process* that enables the

breaking of the mold of the traditional business model thinking for appropriate disruptive innovation.

- The presentation of a *range of appropriate tools to enable strategy innovation* as part of the poised strategy approach.
- A *framework for appropriate leadership and management requirements* for poised strategic management, with *practical guidelines* and examples for implementation.
- The concept of *poised scorecard* (*PSC*) in contrast to the traditional balanced scorecard (BSC). The latter focuses on single enterprise strategy dynamics, while the PSC emphasizes innovative stakeholder systems dynamics and their measurement, for innovation performance across enterprise value chains and business ecosystems.

The Writing of This Book

This book became reality due to stimulating personal meetings and an intensive virtual knowledge exchange between the authors. The common systems-oriented background, dynamic teaching and practical experiences, and exposure to learning-based corporate case examples allowed the authors to make it happen. But many other people's contributions have made this book possible. First of all, we are indebted to Gerhard Seitfudem for his incisive and excellent professional editorial assistance. Many thanks are due to Michael Beer, Quinn Mills, Charles Baden-Fuller, Alan MacCormack, Dorothy Leonard, Richard Whittington and other colleagues in personal and group (e.g. conference) interactions. Our discussions with them, their ideas, queries and comments helped us greatly in shaping our thoughts, for which we are of course solely responsible. Special thanks to Ms Hanneke du Preez for the word processing of the chapter texts, and to our research assistants Mr Solomon Habtay and Ms Eden Tekie at Stellenbosch University, and Mr Chris Streb and Ms Alexandra Wisniewski at International University Bremen, for reading and editing ably on the early draft chapters. Walter Claassen, vice-rector (research) at Stellenbosch University, provided strong support by his continuous interest, positive comments, and enabling seminal research funding, and we thank him for that. And last but not least, we thank our postgraduate students as well as the managers and executives who have been exposed to our concepts and ideas, and co-refined these with us over the past two years through critical debate and practical applications.

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Contents

I The Innovation Economy and Strategy

II The Changing Nature of Business and Challenges to Traditional Strategic Management

III A New Strategy Mindset for the Innovation Economy

IV Strategy, Business Models and Organizational Energy

V New Strategic Management Processes and Tools

VI Strategy Leadership and Management in the Innovation Economy

I The Innovation Economy and Strategy

Synopsis

The chapter motivates that there has been a fundamental change from the industrial economy to the innovation economy, and that this has particular implications for strategic management and its traditional dimensions. It includes the initial outline of a new 'formula' for business dynamics, i.e. $E = MC^2$ (Einstein's well-known formula, applied and expanded in later chapters), and three key requirements of management in the innovation economy. Major 'box' examples are of a country (Germany) and an industry (global wine industry), with implications for firms. The case example concerns India and its innovative businesses, and one relevant article is included.

Chapter 1
The Global Innovation Economy and Strategic Management

Nature of the Global Innovation Economy

Historians of the late 20th and early 21st century are already recording the significant shift in the features of the global economy between 1980 and 2005. The proportion of economic value now attributable to the innovative capacity of intangible capital in business has dramatically shifted to 80% of market values as reflected in the Dow Jones Industrial Average (DJIA) in 2005. By contrast, in 1980 the same index reflected market values due to intangible assets at nearly zero. In other words, the value of the DJIA in 1980 – only 25 years ago – was largely confined to traditional book values, or hard assets. Since then, the value of the innovative capacity of intellectual assets as a component of total market values has increased exponentially.

As a consequence, the foundations of traditional economic and business thinking, and strategic management, have been shaking. The nature of economic value and wealth creation, not only for enterprises but also for countries, regions, and industries, has become fundamentally different, requiring not only new mindsets but also new management approaches and tools. It is not surprising to hear the reaction of some observers, rooted in traditional practices that resulted in past successes, that nothing has really changed, that the old economy is "alive and well," or to contend that traditional economic and business activities are 'just more information and knowledge-based' than in the past. The fundamental criterion, however, is how value is created, captured, and sustained in an economy, and if this is fundamentally different from the past, new strategic management approaches have to be adopted.[1]

The speed of technological change has had great impact on the three-phase sequence from value creation to value capture to value sustainability. Innovations such as greater microprocessing power, Internet protocol networking, hyper-storage, and genomics are transforming value chains in almost every industry. In the past, many of these value chains, and the very structure of industry in the old economy, were knitted together by closely-held, protected information in vertically integrated companies. Today, however, these technology innovations are rendering information abundant, ubiquitous, fast, and free, enabling innovative value creation, capture, and sustainability for firms and industries.

The ubiquitous availability of information and knowledge is perhaps the single most significant contributor to corporate innovation and change. As Nobel laureate economist

Ronald Coase concluded almost 70 years ago, the boundaries of the firm are defined by its transaction costs. Hard to acquire and imperfect information contributed to high transaction costs, which in turn led firms in many industries to vertically integrate. For instance, it cost General Motors (GM) far less to source its own parts internally than to search the globe for suppliers. Similarly, by keeping information inside its boundaries, an integrated company could create value in one division (e.g., drug discovery) and capture it in another (e.g., drug sales and marketing). Today, as the costs of sharing and using information fall, companies and their industries have an impetus to "de-integrate," as is consistent with the Coase theory. Think of GM's spin-off of its parts division, now the Delphi Automotive Systems Corporation. The trend of de-integration is accelerating as the Internet and other services give companies access to even more information. Companies can now work with suppliers of both goods and services from virtually any place in the world. The impact: The threshold of cost set by the availability of information can no longer define the firm's or the industry's boundaries.

The drive to innovate is even more important in the new 'innovation economy', where the rapid sharing of knowledge forces players to reinvent and adapt constantly. In addition, ruptures in traditional boundaries in value chains are requiring companies to rethink how they go to market, what they need to own, and how they deal with suppliers and customers. The result is industry value chains of today undergoing almost continuous innovation in products, services, processes, business models, and management approaches. The innovation value chain – one might call its new form a value web, an extended enterprise, a business ecosystem, or a value constellation – challenges firms that thrived with an integrated, self-contained approach.

The best value-capturing mechanisms now operate outside the individual firm's boundaries. Yet, the value created by a firm may be essential to the viability of the entire business ecosystem. The nature and definition of the firm are also undergoing profound changes, thanks to the ubiquity of information. The firm is shifting from a self-contained value-creation and -capture apparatus into one part of an interdependent community whose members continually negotiate responsibility for value creation and the right to value capture (see Box: Getting Innovative at 3M).[2]

The shift to new value innovation breaks decisively with the old economy, in which information scarcity encouraged value capture through knowledge hoarding. Information asymmetries still exist, of course; a company can create a superior competitive position, with advantaged pricing and customer information, for example. But in an information-suffused environment, asymmetries alone are more fleeting and less reliable sources of value capture than they previously were. Companies that close off their knowledge to the outside world may also be closing themselves off from externally-sourced innovations. Successful companies will be those that transform information into value-creating knowledge, and aggressively use this knowledge to innovate and capture additional profit. Knowledge asymmetries may be the best innovation resource in the 'innovation economy', and when used to create further new asymmetries, also the most enduring in terms of their innovative capabilities.

The above line of reasoning suggests that value capture is no longer achieved by finding and protecting a defensible position in a single, traditional industry. Rather, it is gained by innovating value in a business ecosystem that is quicker and better at

Getting Innovative at 3M

Few companies in the world are more famous for their exceptional product ideas and innovations than 3M. Founded in 1902, the company first focused on sandpaper products. In the 1920s, the company invented the world's first waterproof sandpaper, which reduced airborne dusts in automobile manufacturing. The next major breakthrough occurred in 1925 when a young lab assistant came up with the idea for masking tape. This soon led to more diversification of the product and became the first of a variety of Scotch Tapes. During the next decades, the company's history was marked by milestones of innovation in various industries such as pharmaceuticals, radiology, and energy control. Today everybody knows and uses Post-it, one of the company's most simple, but best-known products.

For this company it is an everyday challenge to come up with new innovative ideas and to turn them into a commercial success. In today's economy, growth and innovative breakthroughs often determine the survival of the company itself. In the 1990s, 3M realized that product developers did not know how to make big, profitable innovations and breakthroughs part of their daily routine. There was no system that they could utilize to become innovative, therefore breakthroughs were a matter of coincidence. This was dangerous for a company whose reputation and survival largely depended on successful innovations. Management 'managed' the product developers, who were largely working independently, by keeping out of their way. The developers, on the other hand, worked according to the aphorism: 'It's better to seek forgiveness than ask for permission'.

3M became aware that too much of the company's growth was the result of incremental changes to existing products. In fact, new innovations were few and far between. This was not what the top managers at 3M expected of their company, so they came up with a very challenging objective: in future, 30% of sales would have to come from products that had not existed four years earlier.

This had an effect on the way many employees, especially the product developers and scientists, perceived their role in innovation. The answer to that challenge: They introduced the 'lead user process' to become more innovative and make big breakthroughs. Research and experience have found that many breakthroughs were initially not made by manufacturers, but by lead users. These can be companies, organizations, or individuals in more than one industry, with needs advanced beyond those of the average user and beyond the scope of ordinary product solutions – needs that often lead them to search for solutions themselves. Using this insight, the lead user process within a business ecosystem refines those ideas into commercially useful and marketable innovations and products, of both incremental and disruptive nature.

In the 2000 decade, with a new CEO from General Electric, 3M began to focus not just on product innovations, but on new business processes and management approaches. The company adopted the Six Sigma approach to process improvement and employed it across the enterprise. There was also a new focus on individual productivity and the use of knowledge worker technology. With both innovative new products and effective ways of doing business, 3M's profits and market value rose substantially.

using knowledge, and reinventing or adapting the system as the industry evolves. The impact on strategic management, both in strategic thinking (mindset, approaches, formulating), and strategy implementation (implementation processes, methods, tools, and practices) is profound.

Drivers of the Innovation Economy

We believe that the global economy has passed a 'tipping point'[3] in the transition from an industrial, goods-centered to an innovation, service-centered logic. Dominant logic and innovative technologies, methods and concepts evolve in a particular way to form something new. This is not an abrupt emergence, since the underlying elements change gradually. Instead, there is a tipping point that signals and validates a radical shift. A two-question stress test can be applied to the proposition that we are now in an innovation economy: First, what are the underlying enablers or drivers for this transition? If the enablers have endurance, the new dominant logic will likely be sustained and advanced. Second, will it change the view of how resources and capabilities are converted into new value and competitive advantage? If an innovation economy logic prevails, this logic should fundamentally change the mindsets, approaches, and mental models of the managers and researchers who determine how value and competitive advantage are conceptualized, and how resources are leveraged and allocated. Eight drivers of the transition to an innovation economy are listed below.[4]

Eight Drivers of the Innovation Economy

1. *New Global Infrastructure for Wealth Creation*. Networks, enabled by the Internet and mobile communications, are becoming the basis of economic activity and progress. This is not unlike how railroads, roads, power grids, and the telephone supported the vertically integrated enterprise in the industrial economy.

2. *New Sources of Value*. In the innovation economy, value is mainly created by knowledge and intellectual capital, not physical assets. These resources provide increasing returns and not decreasing returns, if rightly applied. Innovations in services, processes, business models, and management approaches become as important as innovations in physical products.

3. *New Ownership of Wealth*. In the industrial economy, wealth was owned by powerful individuals (tycoons) and groups. Today stock ownership is more dispersed, and growth in wealth comes especially from new entrepreneurs.

4. *New Educational Models and Institutions*. The model of pedagogy and knowledge-enabling is changing to interactive, dispersed, self-paced learning. Physical location is less important than nodes of learning communication networks. Knowledge and learning are not separate activities, but are embedded into the work process as needed.

5. *New Business Models*. The possibilities of significant disintermediation of traditional vertically integrated enterprises and their value chains have enabled a plethora of new business models (new configurations of the business concept of value creation, value capture, and value sustainability) to arise. The value engineering focus has shifted to value innovation.

6. *Empowered Customers*. Knowledge-empowered customers are driving innovations in many industries and enterprises. Customers co-create value along with the companies that serve them. Customer knowledge management (CKM) is a rich source of new value creation (beyond CRM).

7. *Leveraging of Global Supply and Demand Chains*. Globalization of the world economy, and network-integration of supply and demand chains enable innovative value configurations. Value innovation shifts from the supply chain to the demand chain, with focus on brand equity development.

8. *New Governance Structures*. Industrial-age bureaucracies are transforming into network-driven governance structures, with performance measures shifting to network scorecards for knowledge, innovation, and sustainable value creation and capture.

A common denominator of the drivers of the innovation economy is that each draws on information and communications technology (ICT) advances that enable universal access to knowledge that previously was dispersed and difficult to reach. This connected knowledge system, based on accepted compatibility standards, enables the real-time coordination of dispersed organizational activities and groups, the management of cross-functional processes, and the synchronization of the myriad points of customer contact that are integral to the new dominant economic logic. However, even with advanced ICT, coordination and integration are still difficult. Some industries and businesses are still in the early stages of transition to the new innovation-centered dominant logic, and the tipping point argument is based on the fact that all industries and enterprises are now affected by the new economic realities and their impacts.

What is a Business Model?

A business model is simply the 'way of doing business' that a firm has chosen: its entire system for creating and providing consistent value to customers and earning a profit from that activity, as well as benefit for its broader stakeholders. It refers to the core architecture or configuration of the firm, specifically how it deploys all relevant resources (not just those within its corporate boundaries), to create differentiated value for customers at a profit, with responsibility to the physical environment and society at large (profit, planet, and people).

(See also Chapter 4 for elaboration of the concept of a business model.)

The innovation economy does not mean that the business fundamentals of profitability, competitive customer value propositions, efficient and effective business processes (and their reengineering), and learning and growth objectives have changed. What has changed dramatically, however, is the way in which these are achieved. Historically, strategists were not particularly concerned with business models (see box), because each industry had a standard model, and strategists assumed the model in that industry; today, with the disintermediation of traditional vertically integrated enterprises and their value chains, a myriad of new business models have emerged that are different from the industrial-age template, often making old business models obsolete.

The following two diagrams illustrate the major differences in features between the industrial economy and the innovation economy (Figure 1.1), with illustration of how the latter is underpinned by new (empowered) customer needs (Figure 1.2).

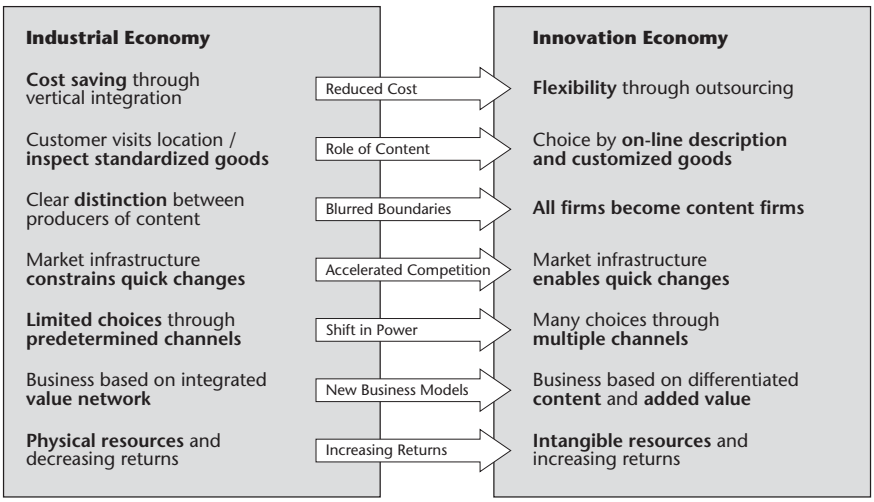

Figure 1.1 From the industrial economy to the innovation economy

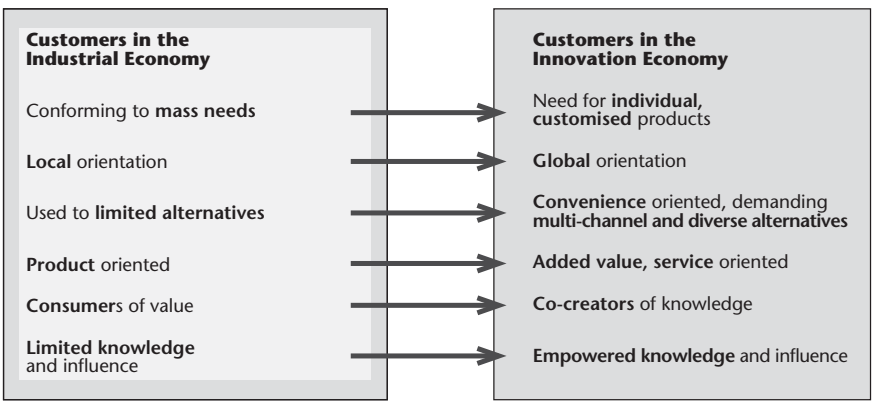

Figure 1.2 Underpinned by new customer needs

Implications of the Innovation Economy for Business Enterprises and Public Institutions

The era of the innovation economy is already transforming the leading companies in each industry worldwide, and forcing them to compete in entirely new ways that take advantage of this vast array of changes. Simultaneously, it is causing innovative entrepreneurial firms to arise, and together this is causing major disruptions in all traditional industries as we knew them in the 20th century.

Although ICT is often cited as spearheading this change in especially two ways, i.e. an exponential increase in processing power (Moore's law[5]) and an exponential increase in connectivity (Metcalfe's law[6]), the causes of fundamental change in enterprises and industries are much wider – residing in managerial mindsets, management principles and practices, and organizational cultures. Moore's law (the power of information and computer technology grows exponentially as its cost diminishes) now applies to industries and enterprise conditions as much as to technology. Metcalfe's law (the value of a network increases by n^2, with n = the number of players in the network) is leveraging human, financial, and brand capital on a worldwide basis, often disruptively in comparison to traditional industry practices and business models.

The core principles that underpin the modern enterprise are all being challenged – replication, specialization, hierarchy, extrinsic rewards, restructuring, business process reengineering, enterprise resource planning, supply chain synchronization, customer relationship management – if not in their fundamental nature, then in their application. While most traditional business management principles of the industrial economy are still valid in a limited sense (for existing, proven business models that are still successful in some environments), they are totally inadequate in coping with disruptive change, either in an adaptive or creative way.

Competition in the innovation economy is now increasingly characterized by the rapid emergence of brand-owning companies that devote their energies to organizational and strategic fitness[7] to create and meet customer need experiences, and to drive value innovation in business processes across supply and demand chains and within their particular links. Effective supply and demand chains support deeper levels of customer 'success' (beyond customer satisfaction and relationships), as well as leverage and utilize customer knowledge (CKM),[8] and value chain partner knowledge for appropriate innovation.

The innovation economy requires a new formula for successful business dynamics, akin to Einstein's classic equation for the relationship between energy and mass (energy equals mass multiplied by the speed of light squared). This is a highly useful metaphor[9] in understanding the new dynamics of successful business enterprises in the innovation economy:

$E = MC^2$ (Einstein's classic equation)

$E_b = MI^2$ (Applied in 21st century business context – see the next line)

or $Energy_{business}$ = Management × (Innovation × Speed)

This means that the energy of a business model (be it the business model of a company, non-profit organization, industry, country, or region) equates to the required nature of management particularly oriented towards innovation and speed-rate of continuous value innovation, relevant to particular market needs, and speed-to-market with consistency and reliability in a business ecosystem. The equation is based on the previously outlined innovation economy characteristics and drivers, and subsequent elaboration in this book.

The resulting key requirements of management in the innovation economy are:

- *Foresight and insight* into global changes at all levels of society, and the imagination and instinct for innovation to enable them to design and test entirely new approaches to business based on these principles.
- A *co-creating mentality* to enable changes in the business ecosystem environment, processes, and practices, jointly with business and governmental 'partners' (i.e., not only an 'adaptive' mentality, but also actively 'co-creative', requiring high levels of courage and risk acceptance). This implies also the targeted co-sharing of capabilities with selected outside organizations, and the sourcing of innovation from any possible provider.
- *Broad innovation* in all aspects of a business – not just in products or the Research & Development (R&D) organization.
- *Ability to effect cultural change and unleash energy in organizations* for high levels of paradox: a climate for continuous and speedy disruptive innovations, with simultaneous focus on effectiveness and efficiency of proven business models.

These key managerial requirements apply not only to corporate and business management, but also to the management of public institutions and even countries. Strategic political and public leadership based on foresight, insight, courage to co-creatively effect fundamental change with associated risks, and ability to change stakeholder (e.g., community) mindsets and practices are essential to lead public institutions and countries wisely in the global innovation economy (see Box with example of Germany).[10]

As in the relativity equation, time accelerates (C^2) and shortens the period for reaching higher capital market valuations and earnings multiples for companies because of greater innovation leverage in human, financial, and brand capital. Because of the ubiquity, anonymity, and accessibility of network technology and its potential for co-creating new, innovative value through leveraging intangible capital through multitudes of stakeholder connectivities, it is creating a new meritocracy in which capable managers from all corners of the globe compete with far less restrictions than ever before. It provides the greatest new opportunities in memory for developing countries, where the fear of the 'digital divide' is strongest. We are now poised for a managerial mindset to move from 'competition for survival' to 'competition for the earned privilege of defining future innovative value' that includes new business models, economic models, and socio-cultural models.[11]

The Challenge Facing Germany in the Global Innovation Economy

In many ways, Germany could not be a better launching pad for new companies or technologies. It is a rich country, offering young people an excellent practical and academic education, and its central position in the increasingly integrated European market provides easy access to suppliers and customers, thanks mainly to a highly efficient infrastructure and a modern communications network. Yet Germany has one big weakness in building high-tech industries: a decades-old entrepreneurial gap. Compared with Silicon Valley, where 73 percent of all companies that have annual sales of more than $50 million were established after 1985, the share of such companies in Munich and Stuttgart is only 17 percent and 20 percent, respectively. Except for the software powerhouse SAP, no company founded in Germany since the early 1970s has become a global leader in a new technology. This deficit is all the more unfortunate because technology companies are the most likely to grow at above-average rates and – in contrast to most established businesses – to raise employment levels.

The source of the problem is not a shortage of financial capital available for new enterprises, as many people assume, but rather a shortage of adequate human capital. Germany has a number of skilled fund managers but still lacks a broad base of experienced venture capitalists and first-generation entrepreneurs who – mostly after selling their businesses – can pass on their know-how to the next generation of high-tech enterprises. To mitigate this shortage, the private and public sectors in Germany have launched imaginative initiatives that help people with good ideas enter business and help big, established companies develop and finance innovations.

Spurring Innovation in Big Companies

Young people already know how greatly stock markets value innovation. But big German companies also need to see and act on the link between growth through innovation and higher share values. Market capitalization focuses much more strongly on growth expectations in the long term (upward of five years) than on short-term profit forecasts. At many established German companies, attempts to create a broadly innovative climate are still in their infancy. Such companies must try to inject the mechanisms of a start-up into the culture of an existing corporation – a process described as the creation of a "virtual start-up." This requires a great deal of sensitivity on management's part. People who run established companies are finding that entrenched faith in their core businesses counts for little in fast-moving, innovative industries. Increasingly, success or failure depends on how quickly a company's virtual start-up can transform ideas into attractive products and services and innovate to meet sophisticated customer requirements.

It is important for innovative companies not only to generate internal ventures but also to get firsthand experience of the way venture capital can successfully spur innovations, for such investment plays a crucial role in weaving start-ups into established corporations. Germany's industry has awakened to the strategic importance of venture capital: BASF, DaimlerChrysler, Deutsche Telekom, SAP, Siemens, and other companies have set up corporate venture capital funds. But many of them must still develop clearer value propositions, both for themselves and for their start-ups, and gain the confidence of the top managers of young firms, who often fear getting sucked into big corporations or developing a big-company mentality. Germany still has a long way to go before it matches the United States, where more than 25 percent of venture capital invested in new companies comes from existing companies in established industries.

Implications for Strategic Management: Challenges to Traditional Orthodoxy

The purpose of this book (see also Foreword) is to propose strategic management frameworks, approaches, tools, and their underlying managerial-cultural mentalities, appropriate for the necessary levels of enterprise value creation, value capture, and value sustainability in the innovation economy. This section provides an overview of these challenges and their key dimensions, with elaboration in the subsequent chapters of the book.

What are the implications of the innovation economy (and its drivers) for strategic management? Do these shifts in the economic features and business practices of the early 21st century change any of the well-established paradigms of strategic management, or should there be a need for change? Especially in the past fifteen years, many strategic management thinkers have been drawn into the search for new approaches to make sense of the increasingly turbulent environment, and to develop tools to identify new sources of value and sustainable exploitation of that value. The major themes of the previous decade – shareholder value maximization, resource-based theory, and dynamic organizational capabilities – continue to influence strategic management theory and research. Whereas the 1980s were dominated by aggressive competitive strategic thinking that was reflected in market share gains, economies of experience, competitive positioning, and business portfolio optimization, the 1990s were characterized by a focus on efficiencies as a principal source of increased profitability: restructuring, refocusing, cost cutting, unbundling, downsizing, outsourcing, and reengineering.

The critical strategic management challenge in the first decade of the 21st century now becomes how organizations can continually adapt, shape, change, innovate, create, and network to survive and prosper in global market environments that are quickly becoming more unpredictable, with organizations that have become more virtual, mobile, and porous, with technologies that are becoming revolutionary and integrative, and with people that are more independent, knowledgeable, assertive, and mobile. A new overall organizational purpose, or strategic thrust, seems to emerge: unlocking the mystery of organizational self-renewal and innovation resulting from knowledge-centered creativity and energy leveraged inside and outside the organization and beyond the confines of a single traditional industry.

This task is daunting, as the fundamental shifts in environmental forces seem to challenge deeply held strategic management ideas, beliefs, orientations, approaches, and tools. Table 1.1 indicates these challenges to strategic management orthodoxy.

In the more turbulent world of the innovation economy, traditional approaches and structured processes to strategic management can no longer cope with the complexity of new value opportunities and demands. New problems are being confronted, requiring new solutions that involve fundamental transformation of strategic management thinking and practices.

When organizations fail to make this leap into new strategic management thinking, they quickly find themselves supplanted by new entrepreneurs who are not encum-

Table 1.1 Challenges to strategic management orthodoxy

	From	**To**
Ideas & values	• Classical/neo-classical strategy (orthodox) • Organization as systematic machine	• Multiple changing paradoxes • Organization as systemic organism
Strategic orientation	• Strategic planning and "fit" • Rational strategy and single business model • Resources & competencies	• Strategic 'shaping' and partial 'misfit' in traditional boundaries • 'Fuzzy' strategy and multiple business models • Capabilities & innovation
Market environment	• Local/national/regional • Traditional industry and value chain	• Global, transnational, metanational, glocal • Reinvented industry; business ecosystem
Organization & control	• Bureaucratic • Direction, control • Value chain; single (and internal) organization	• Meritocratic • Guiding, cohering, focusing, measuring • Value system; multiple (internal & external) organizations
Performance measures	• Shareholder value • Financial performance	• Stakeholder value • Non-financial performance (in addition to financial)
Objectives	• Profit/growth/control • Single organization objectives	• Self-renewal/sustainability/ innovation • Multiple org. objectives
Role of the managerial team	• Optimization of quality and productivity • Application of raw energy • Repetitive day-to-day operations • Processing of resources & information • Separation and specialization of work and organization	• Quality = productivity = adaptability and response • Application of ideas • Quest for innovation • Processing of knowledge & capabilities • Holistic approach and integration to work and organization
Process perspective	• Parts interact in sequence of steps • End-to-end efficiency; standardization the answer • Hierarchical, linear information flows	• Whole emerges from interacting parts • Micro- to macro-integrity key; feedback and customization the answer • Multiple, boundary-less, non-linear knowledge networking

bered by the technology, structures, and assumptions of traditional players. This has indeed been happening in computer software, telecommunications, airlines, beverages, financial services, life sciences, and almost all other industries.

Each one of the above challenges is addressed and illustrated in practical business context throughout this book, including examples of how firms are now complementing traditional strategic management approaches with innovative approaches for renewal and sustainability. The implications of these challenges for strategy dimensions of context, content, and process are outlined below.

Implications for Strategy Dimensions: Context, Content, and Process

Three dimensions of strategy, and thus strategic management, are usually identified: *context*, *content,* and *process*. The implications of the major shifts due to the global innovation economy on these strategic management dimensions are subsequently reviewed.

a) Strategy Context: Global, Multiple Business Models, Customization, and Collaboration

Strategy researchers, writers, and practitioners largely agree that every strategy context is unique and amenable to analysis in terms of boundaries, borders, structures, systems, and policies. With increasing globalization, emergence of virtual corporations, and breakdown of traditional industry boundaries, the traditional ways of approaching strategy context are being challenged. Analytical approaches alone are unable to capture the multidimensionality and heterogeneity of the global environment, as one views four major contexts for strategy-making today:

- *Globalization*: The world market for capital and human capital has few barriers at the moment, and manufacturing capacity is also becoming increasingly mobile. More enterprises are entering global markets as multinational, transnational, and metanational organizations. Traditional classifications according to country, industry, and organizational type are consequently becoming increasingly irrelevant. The major reason for this is that knowledge and innovation move quickly and easily across traditional boundaries and industries.
- *Multiple business models*: Due to the fast rate of change and innovation today, organizations have to develop and manage multiple business models simultaneously, both traditional ones for efficiency and new ones for experimentation, incubation, and learning. While overall corporate strategy now requires multiple business models, each business model requires a different strategy – and this is not the same as traditional business entity strategy. Yet in one recent research study, many executives were not even able to identify the primary business model used in their companies.[12]

- *Customization*: This refers to the new focus on customers as the real "drivers" of organizations, even co-creators of value, rather than something external and ancillary to the organization. Knowledge-driven technologies enable this occurrence.
- *Collaboration*: Integrated global demand and supply chains require a significantly different degree of collaboration among stakeholders. In many parts of supply and demand chains, collaboration is now replacing competition, as witnessed especially in supply chains of automobiles, computers, and telecommunications. Furthermore, many traditional internal value chain functions are now moving to outside the company, such as R&D, production, and raw material sourcing, in collaboration with former competitors (e.g., 'open-source' innovation).[13]

b) Strategy Content: Functional, Business, Corporate, and Network Levels

The product of a strategy process is referred to as the strategy content – what is, and what should be, the strategy for the enterprise and each of its constituent units. Most often, this is encapsulated in documented 'plans' on four levels of the organization, viz., functional, business, corporate, and network levels.

- *Functional Level*: This involves strategies for different activities within an organization linked to specialization skills, such as marketing strategy, financial strategy, operations strategy, etc. This traditional categorization often results in internal organizational barriers, 'silos' of knowledge, and resistance to change. In a turbulent environment, such functional strategy content results in the inability to respond rapidly and innovatively in a coherent, integrated way.
- *Business Level*: Strategy at business level requires the grouping of functional level strategies for a distinct set of products and/or services, intended for a specific group of customers. Often termed strategic business units (SBUs), these organizations focus narrowly on their own industry and market share, and consequently suffer from a lack of agility and adaptability, not to mention a lack of pro-active innovation of their core businesses.
- *Corporate Level*: Many enterprises are in two or more distinctly differentiated types of businesses, i.e. multi-businesses (several SBUs) or multi-industry activities, requiring corporate level strategy. A well-known technique is to consider a corporation as a "portfolio" of discrete businesses, each in a separate industry, but logically synergizing in terms of technologies, processes, or markets.

  The challenge of turbulent, knowledge-enhanced environments is that traditional synergy measurement tools (such as core competencies) and traditional opportunity evaluation tools (such as market opportunity analysis) are unable to cope with the dynamic nature of knowledge-networked environments. Corporate portfolio tools and measures to 'fit' into traditional competitive environments have often been devised for relatively static industry and market conditions.
- *Network Level*: Most multi-company organizations consist of a few parties, such as strategic alliances, joint ventures, and consortia. When a strategy is developed for a group of such firms, which may number from a few to hundreds, it is called a network level strategy. Such multi-company strategies are rare, and should be pursued more frequently. Yet even they are insufficient for today's business envi-

ronment. The difficulty with this approach is that today network strategies are not only on multi-company levels, but also on functional, process, business, and corporate levels of organizations. Vertical and horizontal knowledge networking is proliferating on a formal and informal basis (e.g., 'communities of practice'), and traditional strategy content approaches are unable to capture the dynamics of these networking for sustainable value innovation. Traditionally, innovation has been seen as the domain of R&D, marketing (e.g., product development), and processes/technology. Today, entire new industries are being created due to rapid and widespread innovations in customer value propositions and value system configurations (disintermediation, reintermediation, convergence, etc.) that "leapfrog" traditional industries, which is in turn fueled by the knowledge economy.

c) Strategy Process: Analysis, Formulation, Implementation, and Change

Traditionally, most strategic management textbooks have portrayed the strategy process as a basically linear progression through several distinct steps. A differentiation is usually made between *strategy analysis, strategy formulation, strategy implementation, and strategy change*.

In the *analysis* stage, a SWOT-analysis (strengths-weaknesses-opportunities-threats analysis) of the organization is usually made. Next, in the *formulation* stage, strategists determine which strategic options are available to them, evaluate each of the so-called "generic" or "grand" strategy options, and choose one or more of them. Subsequently, in the *implementation* stage, the selected strategic option(s) is translated into a number of concrete activities/programs that are then started. Finally, in the strategy *change* stage, the documented strategy (or strategic plan) is periodically reviewed, results are compared, and changed if required.

This view of the strategy process is now being seriously challenged due to the realities of the global innovation economy and its major forces. Four significant deficiencies can be highlighted:

- *The emphasis on rationality and analysis*:
  The true nature of strategic thinking is now emerging as more emergent, holistic, intuitive and creative rather than as analytical and rational.[14] Strategizing is about envisioning opportunities and threats, perceiving strengths and weaknesses, and creating or shaping the future, for which sense-making, imagination, and judgment are more important than analysis and logic. This constitutes a fundamental shift in the view of cognitive processes of the strategist.
- *The presumption of linearity of processes*:
  The division of the strategy process into a number of sequential steps is fallacious, because, in reality, the strategy process is fuzzier, with analysis, formulation, and implementation activities on-going and intertwined. Strategies are usually formed incrementally through various forms of interaction inside and outside organizations, including inter-related processes, as managers continually think and act, letting strategies emerge as they progress. At the same time, rigorous thinking is still necessary in strategy, with conclusions tied to evidence and analysis whenever possible.