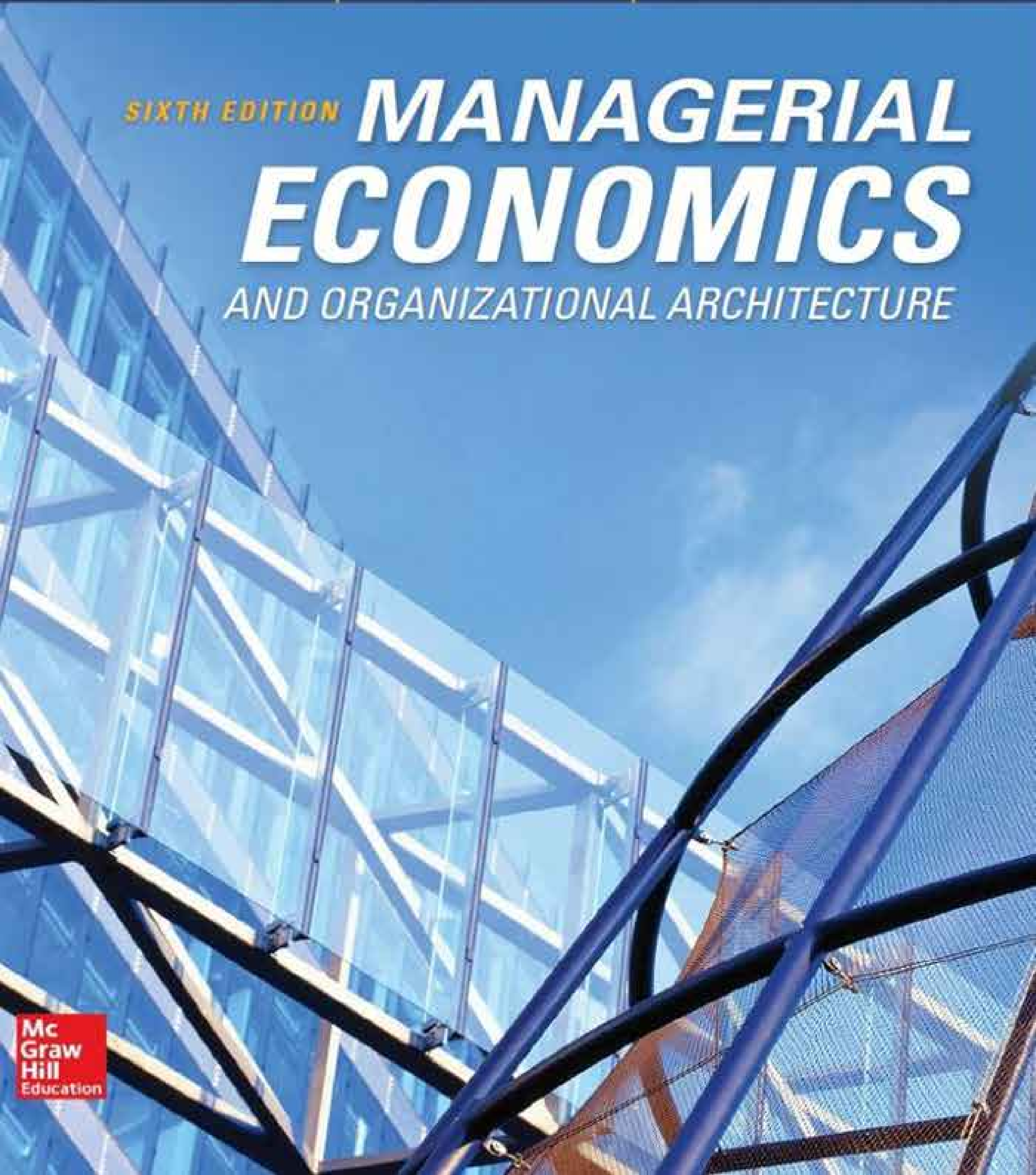
JAMES A. BRICKLEY | CLIFFORD W. SMITH | JEROLD L. ZIMMERMAN

SIXTH EDITION

MANAGERIAL ECONOMICS

AND ORGANIZATIONAL ARCHITECTURE



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Managerial Economics and Organizational Architecture

Sixth Edition

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Mc Graw Hill Education

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Dedicated to our children—

London, Nic, Alexander, Taylor, Morgan, Daneille, and Amy.

PREFACE

The past few decades have witnessed spectacular business failures and scandals. In 2001 and 2002, Enron, WorldCom, Arthur Andersen, as well as other prominent companies imploded in dramatic fashion. Internationally, scandals emerged at companies such as Parmalat, Royal Dutch Shell, Samsung, and Royal Ahold. In 2007 and 2008, prominent financial institutions around the world shocked financial markets by reporting staggering losses from subprime mortgages. Société Générale, the large French bank, reported over $7 billion in losses due to potentially fraudulent securities trading by one of its traders. JPMorgan Chase bailed out Bear Stearns, a top-tier investment bank, following their massive subprime losses. Washington Mutual and Lehman Brothers were added to the list of "top business failures of all time."

Due to these cases and others, executives now face a more skeptical investment community, additional government regulations, and stiffer penalties for misleading public disclosures. A common perception is that bad people caused many of these problems. Others argue that the sheer complexity of today's world has made it virtually impossible to be a "good" manager. These views have raised the cry for increased government regulation, which is argued to be a necessary step in averting future business problems.

We disagree with this view. We suggest that many business problems result from poorly structured organizational architectures. The blueprints for many of these prominent business scandals were designed into the firms' "organizational DNA." This book, in addition to covering traditional managerial economic topics, examines how firms can structure organizations that channel managers' incentives into actions that create, rather than destroy, firm value. This topic is critical to anyone who works in or seeks to manage organizations—whether for-profit or not-for-profit.

New Demands: Relevant Yet Rigorous Education

Thirty years ago, teaching managerial economics to business students was truly a "dismal science." Many students dismissed standard economic tools of marginal analysis, production theory, and market structure as too esoteric to have any real relevance to the business problems they anticipated encountering. Few students expected they would be responsible for their prospective employers' pricing decisions. Most sought positions in large firms, eventually hoping to manage finance, operations, marketing, or information systems staffs. Traditional managerial economics courses offered few insights that obviously were relevant for such careers. But a new generation of economists began applying traditional economic tools to problems involving corporate governance, mergers and acquisitions, incentive conflicts, and executive compensation. Their analysis focused on the internal structure of the firm—not on the firm's external markets. In this book, we draw heavily from this research and apply it to how organizations can create value through improved organizational design. In addition, we present traditional economic topics—such as demand, supply, markets, and strategy—in a manner that emphasizes their managerial relevance within today's business environment.

Today's students must understand more than just how markets work and the principles of supply and demand. They also must understand how self-interested parties within organizations interact, and how corporate governance mechanisms can control these interactions. Consequently, today's managerial economics course must cover a broader menu of topics that are now more relevant than ever to aspiring managers facing this post-Enron world. Yet, to best serve our students, offering relevant material must not come at the expense of rigor. Students must learn how to think logically about both markets and organizations. The basic tools of economics offer students the skill set necessary for rigorous analysis of business problems they likely will encounter throughout their careers.

Besides the heightened interest in corporate governance, global competition and rapid technological change are prompting firms to undertake major organizational restructurings as well as to produce fundamental industry realignments. Firms now attack problems with focused, cross-functional teams. Many firms are shifting from functional organizational structures (manufacturing, marketing, and distribution) to flatter, more process-oriented organizations organized around product or region. Moreover, this pace of change shows no sign of slowing. Today's students recognize these issues; they want to develop skills that will make them effective executives and prepare them to manage organizational change.

Business school programs are evolving in response to these changes. Narrow technical expertise within a single functional area—whether operations, accounting, finance, information systems, or marketing—is no longer sufficient. Effective managers within this environment require cross-functional skills. To meet these challenges, business schools are becoming more integrated. Problems faced by managers are not just finance problems, operations problems, or marketing problems. Rather, most business problems involve facets that cut across traditional functional areas. For that reason, the curriculum must encourage students to apply concepts they have mastered across a variety of courses.

This book provides a multidisciplinary, cross-functional approach to managerial and organizational economics. We believe that this is its critical strength. Our interests span economics, finance, accounting, information systems, and financial institutions; this allows us to draw examples from a number of functional areas to demonstrate the power of this underlying economic framework to analyze a variety of problems managers face regularly.

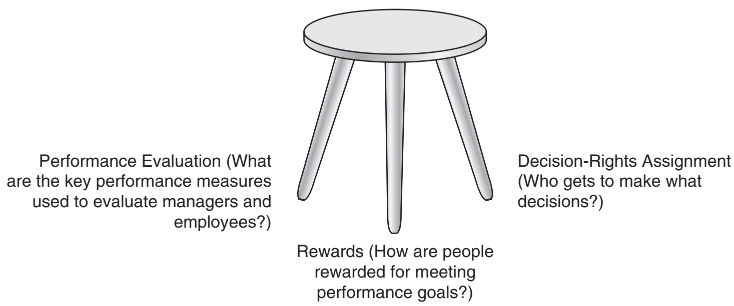
We have been extremely gratified by the reception afforded the first five editions of *Managerial Economics and Organizational Architecture.* Adopters report that the earlier editions helped them transform their courses into one of the most popular courses within their curriculum. This book has been adopted in microeconomics, human resources, and strategy courses in addition to courses that focus specifically on organizational economics. The prior editions were founded on powerful economic tools of analysis that examine how managers can design organizations that motivate self-interested individuals to make choices that increase firm value. Our sixth edition continues to focus on the fundamental importance of markets and organizational design. We use the failures of Enron (Chapter 1), Société Générale (Chapter 1), Arthur Andersen (Chapter 22), and Adelphia (Chapter 10) as case studies to illustrate how poorly designed organizational architectures can be catastrophic. Other books provide little coverage of such managerially critical topics as developing effective organizational architectures, including performance-evaluation systems and compensation plans; assigning decision-making authority among employees; and managing transfer-pricing disputes among divisions. Given the increased importance of corporate governance, this omission has been both significant and problematic. Our primary objective in writing this book is to provide current and aspiring managers with a rigorous, systematic, comprehensive framework for addressing such organizational problems. To that end, we have endeavored to write the underlying theoretical concepts in simple, intuitive terms and illustrate them with numerous examples—most drawn from actual company practice.

The Conceptual Framework

Although the popular press and existing literature on organizations are replete with jargon—TQM, reengineering, outsourcing, teaming, venturing, empowerment, and corporate culture—they fail to provide managers with a systematic, comprehensive framework for examining organizational problems. This book uses economic analysis to develop such a framework and then employs that framework to organize and integrate the important organizational problems, thereby making the topics more accessible.

Throughout the text, readers will gain an understanding of the basic tools of economics and how to apply them to solve important business problems. While the book covers the standard managerial economics problems of pricing and production, it pays special attention to organizational issues. In particular, the book will help readers understand:

- How the business environment (technology, regulation, and competition in input and output markets) drives the firm's choice of strategy.
- How strategy and the business environment affect the firm's choice of organizational design—what we call *organizational architecture*.
- How the firm's organizational architecture is like its DNA; it plays a key role in determining a firm's ultimate success or failure, since it affects how people in the organization will behave in terms of creating or destroying firm value.
- How corporate policies such as strategy, financing, accounting, marketing, information systems, operations, compensation, and human resources are interrelated and thus why it is critically important that they be coordinated.
- How the three key features of organizational architecture—the assignment of decision-making authority, the reward system, and the performance-evaluation system—can be structured to help managers to achieve their desired results.



The components of organizational architecture are like three legs of a stool. It is important that all three legs be designed so that the stool is *balanced*. Changing one leg without the careful consideration of the other two is typically a mistake.

These three components of organizational architecture are like three legs of the accompanying stool. Firms must coordinate each leg with the other two so that the stool remains functional. Moreover, each firm's architecture must match its strategy; a balanced stool in the wrong setting is dysfunctional: Although milking stools are quite productive in a barn, tavern owners purchase taller stools.

Reasons for Adopting Our Approach

This book focuses on topics that we believe are most relevant to managers. For instance, it provides an in-depth treatment of traditional microeconomic topics (demand, supply, pricing, and game theory) in addition to corporate governance topics (assigning decision-making authority, centralization versus decentralization, measuring and rewarding performance, outsourcing, and transfer pricing). We believe these topics are more valuable to prospective managers than topics typically covered in economics texts such as public-policy aspects of minimum-wage legislation, antitrust policy, and income redistribution. A number of other important features differentiate this book from others currently available, such as:

- Our book provides a comprehensive, cross-functional framework for analyzing organizational problems. We do this by first describing and integrating important research findings published across several functional areas, then demonstrating how to apply the framework to specific organizational problems.
- This text integrates the topics of strategy and organizational architecture. Students learn how elements of the business environment (technology, competition, and regulation) drive the firm's choice of strategy as well as the interaction of strategy choice and organizational architecture.
- Reviewers, instructors, and students found the prior editions accessible and engaging. The text uses intuitive descriptions and simple examples; more technical material is provided in appendices for those who wish to pursue it.
- Numerous examples drawn from the business press and our experiences illustrate the theoretical concepts. For example, the effect of the 9/11 terrorist attacks on demand curves is described in Chapter 4 and how one devastated company located in the World Trade Center responded is discussed in Chapter 14. These illustrations, many highlighted in boxes, reinforce the underlying principles and help the reader visualize the application of more abstract ideas. Each chapter begins with a specific case history that is used throughout the chapter to unify the material and aid the reader in recalling and applying the main constructs.
- Nontraditional economics topics dealing with strategy, outsourcing, leadership, organizational form, corporate ethics, and the implementation of management innovations are examined. Business school curricula often are criticized for being slow in covering topics of current interest to business, such as corporate governance. The last six chapters examine recent management trends and demonstrate how the book's framework can be used to analyze and understand topical issues.
- Problems, both within and at the end of chapter, are drawn from real organizational experience—from the business press as well as our contact with executive MBA students and consulting engagements. We have structured exercises that provide readers with a broad array of opportunities to apply the framework to problems like ones they will encounter as managers.

Organization of the Book

- **Part 1: Basic Concepts** lays the groundwork for the book. Chapter 2 summarizes the economic view of behavior, stressing its management implications. Chapter 3 presents an overview of markets, provides a rationale for the existence of organizations, and stresses the critical role of the distribution of knowledge within the organization.
- **Part 2: Managerial Economics** applies the basic tools of economic theory to the firm. Chapters 4 through 7 cover the traditional managerial-economics topics of demand, production and cost, market structure, and pricing. These four chapters provide the reader with a fundamental set of microeconomic tools and

use these tools to analyze basic operational policies such as input, output, and product pricing decisions. Chapters 8 and 9 focus on corporate strategy—the former on creating and capturing values and the latter on employing game theory methods to examine the interaction between the firm and its competitors, suppliers, as well as other parties. These chapters also provide important background material for the subsequent chapters on organizations: A robust understanding of the market environment is important for making sound organizational decisions. Chapter 10 examines conflicts of interest that exist within firms and how contracts can be structured to reduce or control these conflicts.

- **Part 3: Designing Organizational Architecture** develops the core framework of the book. Chapter 11 provides a basic overview of the organizational-design problem. Chapters 12 and 13 focus on two aspects of the assignment of decision rights within the firm—the level of decentralization chosen for various decisions followed by the bundling of various tasks into jobs and then jobs into subunits. Chapters 14 and 15 examine compensation policy. First we focus on the level of compensation necessary to attract and retain an appropriate group of employees. We then discuss the composition of the compensation package, examining how the mix of salary, fringe benefits, and incentive compensation affects the value of the firm. In Chapters 16 and 17, we analyze individual and divisional performance evaluation. Part 3 concludes with a capstone case on Arthur Andersen.
- **Part 4: Applications of Organizational Architecture** uses the framework that we have developed to provide insights into contemporary management issues. Chapters 18 through 23 discuss the legal form of organization, outsourcing, leadership, regulation, ethics, and management innovations.

Fitting the Text into the Business Curriculum

Our book is an effective tool for a variety of classes at the MBA, executive MBA, and undergraduate level. Although this text grew out of an MBA elective course in the economics of organizations at the University of Rochester, the book's modular design allows its use in a variety of courses. We have been encouraged by the creativity instructors have shown in the diversity of courses adopting this text. Besides the introductory microeconomics course, this book also is used in elective courses on corporate governance, strategy, the economics of organizations, and human resources management. The basic material on managerial economics is presented in the first 10 chapters. The tools necessary for understanding and applying the organizational framework we develop within this text have been selected for their managerial relevance. In our experience, these economics tools are invaluable for those students with extensive work experience, and for those who didn't major in economics as an undergraduate. Those with an economics background may choose to forgo components of this material. We have structured our discussions of demand, production/cost, market structure, pricing, and strategy to be optional. Thus, readers who do not require a review of these tools can skip Chapters 4 through 9 without loss of continuity.

We strongly recommend that all readers cover Chapters 1 through 3 and 10; these chapters introduce the underlying tools and framework for the text. Chapters 4 through 9, as we noted above, cover the basic managerial-economics topics of demand, costs, production, market structure, pricing, and strategy. Chapters 11 through 17 develop the organizational architecture framework; we recommend that these be covered in sequence. Finally, Chapters 18 through 23 cover special managerial topics: outsourcing, leadership, regulation, ethics, and the process of management innovation and managing organizational change. They are capstone chapters—chapters that apply and illustrate the framework. Instructors can assign them based on their specific interests and available time.

Sixth Edition

This book is noted for using economics to analyze real-world management problems. The sixth edition maintains and extends this focus. Changes from the fifth edition include:

- Learning objectives have been added to focus on the core concepts of the chapter to aid in the assessment of learning outcomes.
- Extended and more in-depth coverage of important managerial economics concepts, including supply and demand analysis, comparative advantage, constant versus increasing cost industries, price competition with differentiated products, inter-temporal decisions (Fisher Separation Theorem) and behavioral economics.
- Managerial applications, examples, exhibits, and other boxed materials have been updated.
- Key managerial insights from important recent research in organizational economics have been added.
- Data has been updated, where appropriate.
- We have responded in various ways to reader feedback from earlier editions.

Supplements

The following ancillaries are available for quick download and convenient access via the Instructor Library material available through McGraw-Hill Connect®.

- **PowerPoint Presentations:** Fully updated for the sixth edition, each chapter's PowerPoint slides are closely tied to the book material and are enhanced by animated graphs. You can edit, print, or rearrange the slides to fit the needs of your course.
- **Test Bank:** The test bank offers hundreds of questions categorized by level of difficulty, AACSB learning categories, Bloom's taxonomy, and topic.
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- **Instructor's Manual:** The instructor's Manual provides chapter overviews, teaching tips, and suggested answers to the end-of-chapter Self-Evaluation Problems and Review Questions.

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ACKNOWLEDGMENTS

No textbook springs from virgin soil. This book has its intellectual roots firmly planted in the work of dozens who have toiled to develop, test, and apply organization theory. As we detailed in the preface to the first edition, the genesis of this book was a course William Meckling and Michael Jensen taught on the economics of organizations at the University of Rochester in the 1970s. Bill's and Mike's research and teaching stimulated our interest in the economics of organizations, prompted much of our research focused on organizational issues, and had a profound effect on this text. No amount of citation or acknowledgments can adequately reflect the encouragement and stimulation that they provided, both personally and through their writings.

Bill and Mike emphasized three critical features of organizational design: (1) the assignment of decision rights within the organization, (2) the reward system, and (3) the performance-evaluation system. These three elements, which we call *organizational architecture,* serve as an important organizing device for this book. As readers will discover, this structure offers a rich body of knowledge useful for managerial decision making.

Important contributions to the literature on the economics of organizations have been made by a host of scholars. Through the work of these individuals, we have learned a tremendous amount. A number of our colleagues at Rochester also contributed to the development of the book. Ray Ball, Rajiv Dewan, Shane Heitzman, Scott Keating, Stacey Kole, Andy Leone, Glenn MacDonald, Larry Matteson, David Mayers, Kevin Murphy, Michael Raith, Mike Ryall, Greg Schaffer, Ronald Schmidt, Larry Van Horn, Karen Van Nuys, Ross Watts, Gerald Wedig, Michael Weisbach, and Ron Yeaple offered thoughtful comments and suggestions that helped to clarify our thinking on key issues. Don Chew, editor of the *Journal of Applied Corporate Finance,* provided invaluable assistance in publishing a series of articles based on the book; his assistance in writing these articles improved the exposition of this book enormously. Our collaboration with Janice Willett on *Designing Organizations to Create Value: From Strategy to Structure* (McGraw-Hill, 2003) enriched our understanding and exposition of many important topics.

This project also has benefited from an extensive development effort. In addition to generations of Simon School students, dozens of colleagues both in the United States and overseas formally reviewed the manuscript and gave us detailed feedback, for which we are very grateful. We offer our sincere thanks to following reviewers, for their thorough and thoughtful suggestions:

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This book represents the current state of the art. Nonetheless, development is ongoing as the research evolves and as we continue to learn. *Managerial Economics and Organizational Architecture* covers an exciting, dynamic area. We hope that a small portion of that excitement is communicated through this text. Reviewers, instructors, and students frequently mention the relevance of material to the business community, the accessibility of the text, and the logical flow within the text's framework. However, in the final analysis, it is instructors and their students who will determine the true value of our efforts.

We appreciate the extensive feedback we have received from many readers; their generous comments have improved this edition substantially. Although we had a definite objective in mind as we wrote this book, it is important to be open to suggestions and willing to learn from others who are traveling a similar yet distinct path. Although we are unlikely to please everyone, we will continue to evaluate suggestions critically and to be responsive where consistent with our mission. If readers would like to share their thoughts on this work or their classroom experiences, please feel free to contact any of us at the University of Rochester. Many thanks in advance for the assistance.

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Contents in Brief

*These Web chapters and the Glossary can be found online via the Instructor Library material available through McGraw-Hill *Connect*®.

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chapter 1

Introduction

CHAPTER OUTLINE

LEARNING OBJECTIVES

1. Define organizational architecture and discuss how economics can be used to help managers solve organizational problems and structure more effective organizational architectures.
2. Define Economic Darwinism and discuss its implications related to the benchmarking of business practices.

Enron Corporation was created in 1985 by the merger of two gas pipeline companies. Convinced that impending deregulation of the energy business would create opportunities for firms with the vision to recognize and the willingness to exploit them, Enron moved aggressively to build and implement an innovative business model. It was a pioneer in the trading of derivative securities tied to assets like natural gas, electricity, and coal. In its transformation from a traditional, capital-intensive gas pipeline company, it established a dramatically smaller reliance on hard assets, a flatter management structure, and an entrepreneurial, risk-taking environment—one that was quite open to creative and unconventional products and practices. It garnered tremendous recognition for these accomplishments; for six years in a row, it was named "Most Innovative" among *Fortune*'s Most Admired Companies list.

By 2000, Enron operated in several different business segments: *transportation and distribution,* supplying gas and electric transmission services; *wholesale services,* providing energy services and other products to energy suppliers and other firms; *retail services,* offering business customers energy products and services; *broadband services,* providing various service providers with access to a fiber-optic cable network; and *other businesses,* including water resources and wind energy. In 1990, 80 percent of Enron's revenues came from its regulated gas pipeline business, but by 2000, over 90 percent of revenues came from its wholesale energy operations and services segment. Enron's management argued that vertically integrated giants—like ExxonMobil, whose balance sheet was awash with oil reserves, gas stations, refineries, and other hard assets—were dinosaurs. "In the old days, people worked for the assets," said CEO Jeffrey Skilling. "We've turned it around—what we've said is the assets work for the people."

To finance this rapidly expanding array of businesses Enron relied on its bright young CFO, Andrew Fastow. In addition to tapping traditional sources of debt and equity capital, Fastow made extensive use of sophisticated partnerships whose financing details were kept off Enron's balance sheet.[1] For example, to finance its water business, Enron formed Azurix Corporation and raised $695 million by selling one-third of the company to public investors. Enron also formed a partnership called the Atlantic Water Trust in which it held a 50 percent stake. Enron's partner was Marlin Water Trust, which was marketed to institutional investors. To help attract lenders, Enron guaranteed the debt with its own stock: If Enron's credit rating fell below investment grade and the stock fell below a stipulated price, Enron itself would be responsible for the partnership's $915 million debt.

So long as Enron prospered, these guarantees appeared to cost the company little. But several of Enron's business segments began to experience significant problems. In late summer of 2000, a power shortage in California resulted in blackouts. Enron (along with other energy companies) was blamed by state politicians: California launched an investigation into price gouging by Enron and other power marketers. Enron's investment in water concessions in Brazil and England ran into political obstacles. For instance, British regulators cut the rates that it was allowed to charge its customers. Enron had a 65 percent stake in a $3 billion power project in India. But the power plant became embroiled in a dispute with its largest customer, who refused to pay for electricity. Following the September 11, 2001, terrorist attacks, the precipitous fall in oil prices generated losses for Enron's trading operations, and technology changes produced a glut of broadband services.

After reaching a peak of nearly $70 billion in August 2000, Enron's market value collapsed. Its bankruptcy filing in December 2001 is one of the most spectacular business failures ever seen.[2] November 2004 saw it emerge from one of the most complex bankruptcies in U.S. history. After 2006 Enron existed as an assetless shell corporation.

What went wrong? According to *BusinessWeek,*

> *Enron didn't fail just because of improper accounting or alleged corruption at the top. . . . The unrelenting emphasis on earnings growth and individual initiative, coupled with a shocking absence of the usual corporate checks and balances, tipped the culture from one that rewarded aggressive strategy to one that increasingly relied on unethical corner cutting. In the end, too much leeway was given to young, inexperienced managers without the necessary controls to minimize failures. This was a company that simply placed a lot of bad bets on businesses that weren't so promising to begin with.*

Thus, *BusinessWeek* suggests, Enron's problems were rooted in a fundamentally flawed organizational design. At fault were three key aspects of the company's corporate structure. First, in the course of flattening its management structure, Enron delegated an extraordinary level of decision-making authority to lower-level employees without retaining an appropriate degree of oversight. Second, performance was evaluated largely on near-term earnings growth and success in closing deals. Third, the company offered enormous compensation to its top performers, which encouraged excessive risk taking. Enron's internal risk management group was charged with reviewing deals, but the performance appraisals of the 180 employees within the group were based in part on the recommendations of the very people who

[1]It should be noted that Fastow was recognized by *CFO Magazine* in October 1999 with their CFO Excellence Award for Capital Structure Management.

[2]While the largest U.S. corporate bankruptcy at the time, Enron is now far from the largest. Lehman Brothers ($691 billion in 2008), Washington Mutual ($327 billion in 2008), WorldCom ($103.9 billion in 2002), General Motors ($91 billion in 2009 and CIT Group ($80.4 billion in 2009) were all greater in size.

generated the deals. Enron's problems appear to stem, at least in part, from its organizational design.

Managerial Economics and Organizational Architecture

Standard managerial economics books address a number of questions that are important for organizational success:

- Which markets will the firm enter?
- How differentiated will the firm's products be?
- What mix of inputs should the firm use in its production?
- How should the firm price its products?
- Who are the firm's competitors, and how are they likely to respond to the firm's product offerings?

Addressing these questions is certainly important—and in this book, we do—yet this tale of Enron's implosion suggests that this list is woefully incomplete. It is also important to address questions about the internal organization of the firm. A poorly designed organization can result in lost profits and even in the failure of the institution.

With the benefit of hindsight, it seems easy to identify elements of Enron's organization that, if changed, might have reduced the likelihood of its collapse. But the critical managerial question is whether before the fact one reasonably could be expected to identify the potential problems and to structure more productive organizations. We believe the answer to this fundamental managerial question is a resounding yes. To examine these issues, a rich framework that can be applied consistently is required.

We are not, of course, the first to recognize the importance of corporate organization or to offer analysis of how to improve it. The business section of any good bookstore displays a virtually endless array of prescriptions: *benchmarking, empowerment, total quality management, reengineering, outsourcing, teaming, corporate culture, venturing, matrix organizations, just-in-time production, and downsizing.* The authors of all these books would strongly agree that the firm's organization and the associated policies, adopted by management, can have profound effects on performance and firm value; and all buttress their recommendations with selected stories of firms that followed their advice and realized fabulous successes.

The problem with such approaches, however, is that each tends to focus on a particular facet of the organization—whether it be quality control, or worker empowerment, or the compensation system—to the virtual exclusion of all others. As a consequence, the suggestions offered by the business press are regularly myopic. These publications tend to offer little guidance as to which tools are most appropriate in which circumstances. The implicit assumption of most is that their technique can be successfully adopted by all companies. This presumption, however, is invariably wrong. Ultimately, this literature fails to provide managers with a productive framework for identifying and resolving organizational problems.

Organizational Architecture

In contrast to the approach of most business best sellers, we seek to provide a systematic framework for analyzing such issues—one that can be applied consistently in addressing organizational problems and structuring more effective organizations.

In this book, we offer a framework that identifies three critical aspects of corporate organization:

- The assignment of decision rights within the company
- The methods of rewarding individuals
- The structure of systems to evaluate the performance of both individuals and business units

Not coincidentally, these are the same three aspects of the organization we identified in the Enron case.

We introduce the term *organizational architecture* to refer specifically to these three key aspects of the firm. We hesitate to simply use "organization" to refer to these three corporate features because common usage of that term refers only to the organization's hierarchical structure—that is, decision-right assignments and reporting relationships—while it generally ignores the performance-evaluation and reward systems. We thus use organizational architecture to help focus specific attention on all three of these critical aspects of the organization.

Stated as briefly as possible, our argument is that successful firms assign decision rights in ways that effectively link decision-making authority with the relevant information for making good decisions. When assigning decision rights, however, senior leadership—including both management and the company's Board of Directors—must also ensure that the company's reward and performance-evaluation systems provide decision makers with appropriate incentives to make value-increasing decisions.

Depending on its specific circumstances, the firm will assign decision-making authority differently (some will decentralize particular decisions but centralize others) and will tailor its reward and performance-evaluation systems. Even though no two firms might adopt precisely the same architecture, successful firms ensure that these three critical aspects of organizational architecture are coordinated.

Our approach is integrative in the sense that it draws on a number of disciplines: accounting, finance, information systems, marketing, management, operations, political science, and strategy. But what also distinguishes our approach most clearly from that of the best sellers is our central reliance on the basic principles of economics.

Economic Analysis

Economics long has been applied to questions of pricing policy—for example, "how would raising the price of the firm's products affect sales and firm value?" We address standard managerial-economics questions involving pricing, advertising, scale, and the choice of inputs to employ in production. In addition, we apply these same tools to examine questions of organizational architecture. For example, "how would changing a division from a cost center to a profit center change incentives, alter employee decisions, and impact firm value?"

In essence, economics provides a theory to explain the way individuals make choices. For example, in designing organizations, it is important to keep in mind that individuals respond to incentives. Managers and employees can be incredibly resourceful in devising methods to exploit the opportunities they face. This also means, however, that when their incentives are structured inappropriately, they can act in ways that reduce the firm's value. In choosing corporate policies, it is critical that managers anticipate potential responses by customers, suppliers, or employees that might produce undesirable outcomes. Neglecting to do so invites individuals to "game" the system and can result in utter failure of well-intentioned policies.

ACADEMIC APPLICATIONS

R&D and Executive Turnover

Suppose a firm links the CEO's bonus to earnings and the CEO plans to retire in two years. The CEO might reduce the firm's research and development budget to boost earnings this year and next. Five years down the road, earnings will suffer with no new products coming on stream. By then, however, this CEO will be long gone. In fact, research suggests that this can be a problem for some R&D-intensive firms.

Source: P. Dechow and R. Sloan (1991), "Executive Incentives and the Horizon Problem," *Journal of Accounting and Economics* 14, 51–89.

We use economics to examine how managers can design organizations that motivate individuals to make choices that will increase a firm's value. For example, the evidence suggests that the problem highlighted in the accompanying box on chief executive officers slashing R&D budgets prior to their retirement is not widespread.[3] The research suggests that these perverse incentives can be controlled by basing the CEO's incentive compensation on stock prices and by managing CEO succession, so that decision rights are gradually transferred to the successor over the years prior to the final departure. Moreover, CEOs' postretirement opportunities for election to board seats appear linked to performance over the final years of their tenure.[4]

Standard economic analysis generally characterizes the firm simply as a "black box" that transforms inputs (labor, capital, and raw materials) into outputs. Little consideration traditionally has been given to the internal architecture of the firm.[5] In recent years, economists have focused more on questions of organizational architecture.[6] But little effort has been devoted to synthesizing the material in an accessible form that emphasizes the managerial implications of the analysis. We apply the basic tools of economics to examine the likely effect on a firm's value of decisions such as centralization versus decentralization, the bundling of tasks into specific jobs and jobs into business units within the firm, the use of objective versus subjective performance measures, compensating employees through fixed versus variable (or "incentive") compensation, and retaining activities within the firm versus outsourcing. In sum, we examine how managers can structure organizational architecture to motivate individuals to make choices that increase the firm's value.

[3]K. Murphy and J. Zimmerman (1993), "Financial Performance Surrounding CEO Turnover," *Journal of Accounting and Economics* 16, 273–315.

[4]J. Brickley, J. Linck, and J. Coles (1999), "What Happens to CEOs after They Retire? New Evidence on Career Concerns, Horizon Problems, and CEO Incentives," *Journal of Financial Economics* 52, 341–378.

[5]Of course, there are several notable exceptions: F. Knight (1921), *Risk, Uncertainty, and Profit* (London School of Economics: London); R. Coase (1937), "The Nature of the Firm," *Economica* 4, 386–405; and F. Hayek (1945), "The Use of Knowledge in Society," *American Economic Review* 35, 519–530.

[6]For example, R. Coase (1960), "The Problem of Social Cost," *Journal of Law and Economics* 3, 1–44; S. Cheung (1969), "Transaction Costs, Risk Aversion, and the Choice of Contractual Arrangements," *Journal of Law and Economics* 12, 23–42; A. Alchian and H. Demsetz (1972), "Production, Information Costs, and Economic Organization," *American Economic Review* 62, 777–795; K. Arrow (1974), *The Limits of Organization* (W. W. Norton: New York); M. Jensen and W. Meckling (1976), "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure," *Journal of Financial Economics* 3, 305–360; Y. Barzel (1982), "Measurement Costs and the Organization of Markets," *Journal of Law and Economics* 25, 27–48; O. Williamson (1985), *The Economic Institutions of Capitalism: Firms, Markets, Rational Contracting* (Free Press: New York); and B. Holmstrom and J. Tirole (1989), "The Theory of the Firm," in R. Schmalensee and R. Willig (Eds.), *Handbook of Industrial Economics* (North-Holland: New York).

MANAGERIAL APPLICATIONS

Economic Incentives and the Subprime Mortgage Crisis

"Subprime mortgages" are made to borrowers who do not qualify for standard market interest rates because of problems with their credit histories or inability to prove that they have enough income to support the monthly payments. In March 2007, the value of U.S. subprime mortgages was estimated at $1.3 trillion with over 7.5 million mortgages outstanding. During the second half of 2007, investors in subprime mortgages such as banks, mortgage lenders, real estate investment trusts, and hedge funds reported losses of close to $100 billion as a result of subprime mortgage defaults and devaluations. The stock market fell and became quite volatile as more details about the mortgage crisis were revealed over time.

One important factor that contributed to this crisis was the incentives of the mortgage brokers that originated the loans. Mortgage brokers, who originated nearly 70 percent of residential mortgages in recent years, don't lend their own money. They are paid for originating loans, which are sold to other investors who bear the primary risk. In many cases, the more loans they originate, the higher their compensation.

The financial incentives for originating mortgages motivated financial companies to offer products that made it easier for borrowers to qualify for the loans. For example, companies began offering "stated income loans" that required no proof of income. Consistent with the theory in this book, some borrowers overstated their incomes. In a recent review of 100 of these so-called liar loans, almost 60 percent of the stated amounts were exaggerated by over 50 percent. For example, in Atlanta a borrower received a $1.8 million loan by stating that he and his wife were top executives at a marketing firm who earned more than $600,000 per year with personal assets totaling $3 million. In reality, he was a phone company technician who earned $105,000 per year with savings of only $35,000.

The financial incentives and associated lack of controls produced not only risky loans but also billions of dollars of fraud. Rings of fraudulent borrowers would (1) recruit people with good credit to apply for very large loans using false income and asset statements, (2) find home appraisers to significantly inflate the values of the underlying properties, (3) pay the much lower asking prices to the sellers, and (4) pocket the difference, splitting the proceeds among the members of the ring. The houses then would go into foreclosure as the loans were not repaid.

Banking executives subsequently testified that they did not foresee this problem—"fraud was not really a consideration in our world." The premise of this book is that a careful analysis of the underlying organizational architecture (incentives and decision-right assignments) can help managers anticipate these types of problems and develop mechanisms to reduce their severity.

Source: M. Corkery (2007), "Fraud Seen as a Driver in Wave of Foreclosures," *The Wall Street Journal* (December 21), A1.

In this analysis, ideas of equilibrium—the interplay of supply and demand in product, labor, and capital markets—represent important constraints on managerial decisions. Understanding how prices and quantities change in response to changes in costs, product characteristics, or the terms of sale is a critical managerial skill. For example, the more than five-fold increase in crude oil prices from below $12 per barrel in 1999 to over $135 in 2008 prompted oil companies to

MANAGERIAL APPLICATIONS

Creative Responses to a Poorly Designed Incentive System

A manager at a software company wanted to find and fix software bugs more quickly. He devised an incentive plan that paid $20 for each bug the Quality Assurance people found and $20 for each bug the programmers fixed. Since the programmers who created the bugs were also in charge of fixing them, they responded to the plan by creating bugs in software programs. This action increased their payoffs under the plan—there were more bugs to detect and fix. The plan was canceled within a single week after one employee netted $1,700 under the new program.

Source: S. Adams (1995), "Manager's Journal: The Dilbert Principle," *The Wall Street Journal* (May 22), A12.

increase production, encouraged petrochemical companies to alter their input mix to economize on a now-more-expensive input, made salespeople reevaluate their decisions about contacting potential customers by phone rather than in person, and encouraged auto producers to focus more on gas economy in the design of new models. Yet these incentives to change depend on the structure of the organization. For instance, a salesperson is less likely to switch to greater reliance on telephone and mail when the firm reimburses all selling expenses than when salespeople are responsible for the costs of contacting potential customers.

Economic Darwinism

Survival of the Fittest[7]

The collapse of Enron, Charles Darwin might have noted, is an example of how competition tends to weed out the less fit. As described in *The Origin of Species,* natural history illustrates the principle of "survival of the fittest." In industry, we see *economic Darwinism* in operation as competition weeds out ill-designed organizations that fail to adapt. Competition in the marketplace provides strong pressures for efficient decisions—including organizational decisions. Competition among firms dictates that those firms with low costs are more likely to survive. If firms adopt inefficient, high-cost policies—including their organizational architecture—competition will place strong pressures on these firms to either adapt or close.

Fama and Jensen suggest that "the form of organization that survives in an activity is the one that delivers the product demanded by customers at the lowest price while covering costs." This survival criterion helps highlight that while a well-crafted organizational architecture can contribute to a firm's success, it is not sufficient for success. The firm must have a business strategy that includes products for which the prices customers are willing to pay exceed costs. The potential for value creation by a company that manufactures only buggy whips is quite limited no matter how well structured the firm's organizational architecture.

Nonetheless, given a firm's business strategy (including its product mix), its choice of organizational architecture can have an important impact on profitability and value. An appropriate architecture can lower costs by promoting efficient production; it also can boost the prices customers are willing to pay by helping to ensure high-quality production, reliable delivery, and responsive service.

Economic Darwinism and Benchmarking

In the biological systems that Darwin analyzed, the major forces at work were random mutations in organisms and shocks from the external environment (for instance, from changes in weather). But in the economic systems on which we focus, purposeful voluntary changes occur. For instance, in order to compete more effectively with Coke, Pepsi copied many of Coke's practices. Pepsi spun off its fast-food chains

[7]This section draws on A. Alchian (1950), "Uncertainty, Evolution, and Economic Theory," *Journal of Political Economy* 58, 211–221; G. Stigler (1951), "The Economics of Scale," *Journal of Law and Economics* 1, 54–71; and E. Fama and M. Jensen (1983), "Separation of Ownership and Control," *Journal of Law and Economics* 26, 301–325.

MANAGERIAL APPLICATIONS

Economic Darwinism: The Growth in Lead Directors

The collapse of Enron in December 2001 and subsequent scandals at Adelphia, Tyco, WorldCom, and other companies in 2002 shook public confidence in corporate governance. In July 2002, the United States enacted the Sarbanes–Oxley Act, which mandated substantial changes in corporate accounting and governance practices. Additional scandals and failures during the 2007–2008 financial crisis raised additional concerns about corporate governance and motivated additional legislation and regulation.

These events altered the basic business environment for publicly traded corporations. Over the past decade, investors, regulators, stock exchanges, the media and the general public have placed increased pressure on corporate boards of directors to become more independent and diligent in their monitoring of CEOs. One important trend in corporate governance has been the large increase in presiding and lead directors. Presiding directors are independent directors (a director with no other direct ties to the company or corporate management) who chair executive sessions of outside directors. Lead directors are more powerful, taking on additional responsibilities (such as serving as the principal liaison between the independent directors and the CEI and taking the lead role in overseeing formal evaluations of board members and the CEO). In 2003, only 36 percent of S&P 500 firms had presiding or lead directors, compared to 90 percent in 2013. Over 60 percent of the S&P 500 firms with presiding or lead directors in 2013 employed the more powerful position of lead director.

If you were to benchmark the current governance practices of large publicly traded corporations, you would find the appointment of a lead director is a dominant surviving practice in the current business environment. "One size," however, is unlikely to fit all firms. Managers should not simply adopt the prevailing organizational practices of other firms. More careful analysis is required.

Source: Spencer Stuart (2013), "Spencer Stuart Board Index 2013," www.spencerstuart.com.

(Taco Bell, KFC, and Pizza Hut) to focus on its core business—just as Coca Cola had done. Also, Pepsi changed its network of bottlers. One analyst remarked, "Pepsi is starting to look a lot more like Coke."[8] In fact, this practice has been formalized in the process of *benchmarking*.

Benchmarking generally means looking at those companies that are doing something best and learning how they do it in order to emulate them. But this process also occurs in less formal ways. As Armen Alchian argued, "Whenever successful enterprises are observed, the elements common to those observed successes will be associated with success and copied by others in their pursuit of profits or success."[9] For example, if the cover article in the next *Fortune* reports an innovative inventory control system at Toyota, managers across the country—indeed, around the globe—will read it and ask, *Would that work in my company, too?* Undoubtedly, the managers with the strongest interest in trying it will be those within firms currently suffering inventory problems.[10] Some will achieve success, but others may experience disastrous results caused by unintended though largely predictable organizational "side effects" (like Fastow's unchecked incentive for risk taking).

[8]N. Harris (1997), "If You Can't Beat 'Em, Copy 'Em," *BusinessWeek* (November), 50.

[9]A. Alchian. "Uncertainty, Evolution, and Economic Theory," *The Journal of Political Economy*, Vol. 58, No. 3 (Jun., 1950), p. 218.

[10]This raises the question of why any firm with an innovative idea would voluntarily disclose it. Perhaps the free publicity outweighs the lost competitive advantage.

MANAGERIAL APPLICATIONS

Organizing Xerox Service Center

Xerox has developed an expert system to assist employees who answer the company service center's 800 number to help callers who have problems with their photocopy machines. The system is designed to lead the employee through a set of questions to diagnose and fix the problem. If the machine operator cannot fix the problem with the assistance of the input from the service center employee, a service representative is dispatched to make a service call. This expert system is designed to evolve more effective prompts as experience accumulates. This will be accomplished by having service representatives call the service center after a service call. The nature of the problem and the actions taken are to be entered into the system. Xerox bases pay for the individuals who answer the 800 number on the number of service calls they handle; it bases compensation for service representatives on the number of service calls they make. Discuss the incentives these compensation practices create.

Although competition tends to produce efficiently organized firms over the longer run, uncritical experimentation with the organizational innovation *du jour* can expose the firm to an uncomfortably high risk of failure. Organizational change is expensive. Moreover, successful organizations are not just a collection of "good ideas." The elements of a successful organization must be carefully coordinated: The different elements of the firm's architecture must be structured to work together to achieve the firm's goals. For this reason, it is important to be able to analyze the likely consequences of a contemplated organizational change and forecast its impact on the entire firm.

This concept of economic Darwinism thus has important managerial implications. First, existing architectures are not random; there are sound economic explanations for the dominant organization of firms in most industries. Second, surviving architectures at any point in time are optimal in a *relative* rather than an *absolute* sense; that is, they are the best among the competition—not necessarily the best possible. Third, if the environment in which the firm operates changes—if technology, competition, or regulation change—then the appropriate organizational architecture normally changes as well. These three observations together suggest that although improvements in architecture are certainly always possible, a manager should resist condemning prevailing structures without careful analysis. Before undertaking major changes, executives should have a good understanding of how the firm arrived at its existing architecture and, more generally, develop a broader perspective of why specific types of organizations work well in particular settings. Finally, an executive should be particularly skeptical of claimed benefits of proposed organizational changes if the environment has been relatively stable.

Purpose of the Book

The primary thrust of this book is to provide a solid conceptual framework for analyzing organizational problems and structuring an effective organizational architecture. The book also provides basic material on managerial economics and discusses how it can be used for making operational decisions—for example, input, output, and pricing decisions. This material additionally supplies a set of tools and an understanding of markets, that is, important for making good organizational decisions.