

# Table of Contents

|                                           |             |
|-------------------------------------------|-------------|
| <b>Preface and Acknowledgements .....</b> | <b>V</b>    |
| <b>Table of Figures .....</b>             | <b>XIII</b> |
| <b>Abbreviations.....</b>                 | <b>XVII</b> |

## *Chapter 1*

|                                                                                                |          |
|------------------------------------------------------------------------------------------------|----------|
| <b>Information, Organization, and Management:<br/>The Corporation Without Boundaries .....</b> | <b>1</b> |
| 1.1    Changes in Competitive Environments and Corporate Structures .....                      | 3        |
| 1.2    Transition to New Organization and Management Models .....                              | 7        |
| 1.3    Structure and Special Features of This Book.....                                        | 12       |

## *Chapter 2*

|                                                                                                              |           |
|--------------------------------------------------------------------------------------------------------------|-----------|
| <b>Market Dynamics and Competition: The Fundamental Role<br/>of Information .....</b>                        | <b>19</b> |
| Case Study Chapter 2: The Rise and Fall of Netscape.....                                                     | 21        |
| 2.1    Why Corporations and Markets? .....                                                                   | 22        |
| 2.2    Markets and Entrepreneurship.....                                                                     | 28        |
| 2.3    Theories of Organization .....                                                                        | 34        |
| 2.4    Information and Network Economy .....                                                                 | 51        |
| 2.5    Changes in Firms and Markets Through Improvement in<br>Information and Communication Technology ..... | 58        |
| 2.6    Implications for Management.....                                                                      | 62        |

## *Chapter 3*

|                                                                                                                        |           |
|------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Fundamental Information and Communication Models:<br/>Insights into Communication and Information Behavior.....</b> | <b>65</b> |
| 3.1    The Importance of Information and Communication in<br>Organizations.....                                        | 67        |
| 3.2    Selected Models of Information Behavior .....                                                                   | 68        |
| 3.3    Selected Models of Communication Behavior .....                                                                 | 75        |
| 3.4    Task-Medium-Communication.....                                                                                  | 89        |
| 3.5    Knowledge Models.....                                                                                           | 98        |

|     |                                             |     |
|-----|---------------------------------------------|-----|
| 3.6 | Information, Communication, and Trust ..... | 102 |
| 3.7 | Implications for Management.....            | 111 |

*Chapter 4*

|                                                                                                     |            |
|-----------------------------------------------------------------------------------------------------|------------|
| <b>The Potential of Information and Communication Technology<br/>for Corporate Development.....</b> | <b>115</b> |
|-----------------------------------------------------------------------------------------------------|------------|

|     |                                                                   |     |
|-----|-------------------------------------------------------------------|-----|
| 4.1 | Benefits and Adoption Levels of Technology .....                  | 117 |
| 4.2 | Information and Communication Technology Development Trends ..... | 119 |
| 4.3 | Information Deployment Within the Firm.....                       | 152 |
| 4.4 | Information and Communication Systems .....                       | 164 |
| 4.5 | Implications for Management.....                                  | 181 |

*Chapter 5*

|                                                                          |            |
|--------------------------------------------------------------------------|------------|
| <b>The Dissolving of Hierarchies – Modularizing the Enterprise .....</b> | <b>183</b> |
|--------------------------------------------------------------------------|------------|

|                                                                    |                                                                                             |     |
|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----|
| Case Study Chapter 5: The “Spaghetti Organization” of Oticon ..... | 185                                                                                         |     |
| 5.1                                                                | Fundamentals of Modularization .....                                                        | 186 |
| 5.2                                                                | Implementation Forms of Modularization .....                                                | 194 |
| 5.3                                                                | The Competitive Advantage of Modularization from the<br>Theoretical Model Perspective ..... | 208 |
| 5.4                                                                | The Role of ICT in Modularization .....                                                     | 221 |
| 5.5                                                                | Implications for Management.....                                                            | 230 |

*Chapter 6*

|                                                                 |            |
|-----------------------------------------------------------------|------------|
| <b>Dissolution of the Company – Symbiosis and Networks.....</b> | <b>233</b> |
|-----------------------------------------------------------------|------------|

|                                                                                                                         |                                                         |     |
|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|-----|
| Case Study Chapter 6: Colliers International Property Inc. –<br>An Example of a Worldwide Entrepreneurial Network ..... | 235                                                     |     |
| 6.1                                                                                                                     | The Basic Idea of Hybrid Organization Structures.....   | 236 |
| 6.2                                                                                                                     | Explaining the Development of Hybrid Organizations..... | 237 |
| 6.3                                                                                                                     | Implementation Forms of Hybrid Organizations.....       | 246 |
| 6.4                                                                                                                     | The Role of ICT.....                                    | 259 |
| 6.5                                                                                                                     | Implications for Management.....                        | 265 |

*Chapter 7*

|                                                                    |            |
|--------------------------------------------------------------------|------------|
| <b>New Forms of Market Coordination – Electronic Markets .....</b> | <b>271</b> |
|--------------------------------------------------------------------|------------|

|                                                                                                 |                                           |     |
|-------------------------------------------------------------------------------------------------|-------------------------------------------|-----|
| Case Study Chapter 7: Covisint – An Electronic Marketplace for the<br>Automobile Industry ..... | 273                                       |     |
| 7.1                                                                                             | Basic Concept of Electronic Markets ..... | 274 |
| 7.2                                                                                             | Types of Electronic Markets.....          | 276 |

|     |                                                           |     |
|-----|-----------------------------------------------------------|-----|
| 7.3 | Approaches for the Explanation of Electronic Markets..... | 285 |
| 7.4 | The Role of Information and Communication Technology..... | 312 |
| 7.5 | Implications for Management.....                          | 313 |

*Chapter 8*

|                                                                                     |            |
|-------------------------------------------------------------------------------------|------------|
| <b>Overcoming Location Boundaries: Telecooperation and Virtual Enterprises.....</b> | <b>317</b> |
|-------------------------------------------------------------------------------------|------------|

|                                                                            |     |
|----------------------------------------------------------------------------|-----|
| Case Study Chapter 8: "The Worldwide Group" – A Future Work Scenario? .... | 319 |
|----------------------------------------------------------------------------|-----|

|     |                                                           |     |
|-----|-----------------------------------------------------------|-----|
| 8.1 | The Fundamental Idea of Dispersed Organizations.....      | 323 |
| 8.2 | Implementation Models of Dispersed Organizations .....    | 330 |
| 8.3 | Explanatory Approaches for Dispersed Organizations.....   | 352 |
| 8.4 | The Role of Communication and Information Technology..... | 360 |
| 8.5 | Implications for Management.....                          | 363 |

*Chapter 9*

|                                                                                             |            |
|---------------------------------------------------------------------------------------------|------------|
| <b>People in the Boundaryless Organization: New Demands on Employees and Managers .....</b> | <b>369</b> |
|---------------------------------------------------------------------------------------------|------------|

|     |                                                                                       |     |
|-----|---------------------------------------------------------------------------------------|-----|
| 9.1 | People in the Boundaryless Organization.....                                          | 371 |
| 9.2 | New Roles of Customers, Employees, and Managers in the Boundaryless Organization..... | 376 |
| 9.3 | How Communication and Organization Change Affect People .....                         | 384 |
| 9.4 | Tackling the Future Organization and Its Challenges for People .....                  | 403 |
| 9.5 | ICT and the New Role of People Within Boundaryless Organizations.....                 | 418 |
| 9.6 | Implications for Management.....                                                      | 420 |

*Chapter 10*

|                                                                                      |            |
|--------------------------------------------------------------------------------------|------------|
| <b>Controlling the Boundaryless Enterprise: Strategies and Control Systems .....</b> | <b>423</b> |
|--------------------------------------------------------------------------------------|------------|

|                                                                                         |     |
|-----------------------------------------------------------------------------------------|-----|
| Case Study Chapter 10: The Virtual Factory of North West Switzerland / Mittelland ..... | 425 |
|-----------------------------------------------------------------------------------------|-----|

|      |                                                              |     |
|------|--------------------------------------------------------------|-----|
| 10.1 | Strategic Challenges for Boundaryless Organizations.....     | 427 |
| 10.2 | Controlling Challenges in Boundaryless Organizations .....   | 433 |
| 10.3 | Interface Coordination in the Boundaryless Organization..... | 436 |
| 10.4 | Area of Tension Between Direct and Indirect Management.....  | 440 |
| 10.5 | Controlling Systems .....                                    | 446 |
| 10.6 | Implications for Management.....                             | 475 |

|                         |            |
|-------------------------|------------|
| <b>References .....</b> | <b>477</b> |
|-------------------------|------------|

|                    |            |
|--------------------|------------|
| <b>Index .....</b> | <b>533</b> |
|--------------------|------------|

# Table of Figures

|                   |                                                                                             |    |
|-------------------|---------------------------------------------------------------------------------------------|----|
| <b>Fig. 1.1.</b>  | Potential for innovation, competitive markets, and innovation strategies .....              | 3  |
| <b>Fig. 1.2.</b>  | New models for innovation strategies.....                                                   | 10 |
| <b>Fig. 1.3.</b>  | The emergence of coordination forms .....                                                   | 12 |
| <b>Fig. 2.1.</b>  | The organization problem .....                                                              | 25 |
| <b>Fig. 2.2.</b>  | Proportion of transaction costs of the US gross national product.....                       | 26 |
| <b>Fig. 2.3.</b>  | Possible results within a market period .....                                               | 30 |
| <b>Fig. 2.4.</b>  | The fundamental entrepreneurial idea as creative bridging between information spheres ..... | 34 |
| <b>Fig. 2.5.</b>  | (Pure) coordination problem: choice between two norms .....                                 | 36 |
| <b>Fig. 2.6.</b>  | Motivation problem: the prisoner's dilemma situation.....                                   | 37 |
| <b>Fig. 2.7.</b>  | Solution of the motivation problem by means of norms requiring supervision .....            | 38 |
| <b>Fig. 2.8.</b>  | Trade-off between welfare losses through external effects and transaction costs .....       | 42 |
| <b>Fig. 2.9.</b>  | Factors influencing transaction costs .....                                                 | 43 |
| <b>Fig. 2.10.</b> | Examples of alternative decisions for optimizing the delivery of goods and services.....    | 45 |
| <b>Fig. 2.11.</b> | Integrated forms and specificity .....                                                      | 46 |
| <b>Fig. 2.12.</b> | Overview of principal-agent theory .....                                                    | 50 |
| <b>Fig. 2.13.</b> | Typology of standardization processes.....                                                  | 55 |
| <b>Fig. 2.14.</b> | Move to the market due to decreasing transaction costs .....                                | 60 |
| <b>Fig. 3.1.</b>  | Information need and information supply.....                                                | 69 |
| <b>Fig. 3.2.</b>  | Confirmation, newness and pragmatic information .....                                       | 71 |
| <b>Fig. 3.3.</b>  | Levels of information transmission analysis.....                                            | 76 |
| <b>Fig. 3.4.</b>  | Technical communication model by Shannon / Weaver 1949 .....                                | 78 |
| <b>Fig. 3.5.</b>  | Axioms of communication according to Watzlawick, Beavin and Jackson 1990.....               | 79 |
| <b>Fig. 3.6.</b>  | Four sides of a message .....                                                               | 81 |
| <b>Fig. 3.7.</b>  | The TALK model .....                                                                        | 82 |
| <b>Fig. 3.8.</b>  | Action types according to Habermas .....                                                    | 85 |
| <b>Fig. 3.9.</b>  | The task-oriented communication model.....                                                  | 92 |
| <b>Fig. 3.10.</b> | The media richness model based on Daft and Lengel.....                                      | 93 |
| <b>Fig. 3.11.</b> | Media sensitivity and management success .....                                              | 94 |
| <b>Fig. 3.12.</b> | Comparison of time and activity profiles of upper level managers.....                       | 96 |

|                   |                                                                                             |     |
|-------------------|---------------------------------------------------------------------------------------------|-----|
| <b>Fig. 3.13.</b> | Systematization of knowledge .....                                                          | 99  |
| <b>Fig. 3.14.</b> | Trust – trust expectations and actions .....                                                | 104 |
| <b>Fig. 3.15.</b> | Typical trust categories .....                                                              | 105 |
| <b>Fig. 3.16.</b> | Structure of the information transfer dilemma .....                                         | 107 |
| <b>Fig. 4.1.</b>  | The three-level model of information management .....                                       | 118 |
| <b>Fig. 4.2.</b>  | The development of microcomputer processor speed and storage capacity .....                 | 119 |
| <b>Fig. 4.3.</b>  | Development of communication technologies .....                                             | 122 |
| <b>Fig. 4.4.</b>  | Worldwide Internet users in November 2007 .....                                             | 125 |
| <b>Fig. 4.5.</b>  | Classification of Internet services .....                                                   | 126 |
| <b>Fig. 4.6.</b>  | Object structure .....                                                                      | 129 |
| <b>Fig. 4.7.</b>  | Stages of convergence .....                                                                 | 132 |
| <b>Fig. 4.8.</b>  | Contextual and process-oriented forms of support of cooperative task accomplishment .....   | 136 |
| <b>Fig. 4.9.</b>  | Three-level architecture of a database system .....                                         | 137 |
| <b>Fig. 4.10.</b> | Synchronous/asynchronous and distributed/not distributed communication .....                | 139 |
| <b>Fig. 4.11.</b> | The client/server concept .....                                                             | 143 |
| <b>Fig. 4.12.</b> | Application system architecture from the client/server perspective .....                    | 143 |
| <b>Fig. 4.13.</b> | Storage needs of digitalized information .....                                              | 146 |
| <b>Fig. 4.14.</b> | The ISO/OSI 7-layer reference model .....                                                   | 148 |
| <b>Fig. 4.15.</b> | Standards for trade, products, and text data exchange .....                                 | 149 |
| <b>Fig. 4.16.</b> | Information intensity portfolio .....                                                       | 153 |
| <b>Fig. 4.17.</b> | Strategy-oriented development and deployment of information and communication systems ..... | 154 |
| <b>Fig. 4.18.</b> | Life cycle model for the production of information .....                                    | 156 |
| <b>Fig. 4.19.</b> | Explanations for the information technology productivity paradox .....                      | 158 |
| <b>Fig. 4.20.</b> | Appraisal problems of networked information and communication technology .....              | 161 |
| <b>Fig. 4.21.</b> | Fundamental concept of the evaluation approach of networked economic efficiency .....       | 163 |
| <b>Fig. 4.22.</b> | Organizational forms and macrostructures of information and communication systems .....     | 165 |
| <b>Fig. 4.23.</b> | Modeling .....                                                                              | 169 |
| <b>Fig. 4.24.</b> | Example of a conversation network modeled as an automaton .....                             | 171 |
| <b>Fig. 4.25.</b> | The waterfall model of software development .....                                           | 174 |
| <b>Fig. 4.26.</b> | The spiral model .....                                                                      | 175 |
| <b>Fig. 4.27.</b> | The ARIS concept .....                                                                      | 178 |
| <b>Fig. 4.28.</b> | The event-controlled process chain “order entry” .....                                      | 179 |
| <b>Fig. 4.29.</b> | Simple Petri net model: sheet metal and screws .....                                        | 180 |
| <b>Fig. 5.1.</b>  | A model of Tayloristic work organization .....                                              | 193 |
| <b>Fig. 5.2.</b>  | Tasks of a management holding company .....                                                 | 196 |

---

|                   |                                                                                                                 |     |
|-------------------|-----------------------------------------------------------------------------------------------------------------|-----|
| <b>Fig. 5.3.</b>  | Core competencies exemplified by Canon.....                                                                     | 197 |
| <b>Fig. 5.4.</b>  | Strategic norms for (de)centralization of functions .....                                                       | 200 |
| <b>Fig. 5.5.</b>  | Fundamental characteristics of the product island and product segments.....                                     | 201 |
| <b>Fig. 5.6.</b>  | Modularization concepts along the value chain .....                                                             | 202 |
| <b>Fig. 5.7.</b>  | The system of overlapping groups.....                                                                           | 207 |
| <b>Fig. 5.8.</b>  | The systematization of strategies.....                                                                          | 209 |
| <b>Fig. 5.9.</b>  | Model of room to maneuver .....                                                                                 | 215 |
| <b>Fig. 5.10.</b> | Relationship between production-based problem, production type, and decision field .....                        | 217 |
| <b>Fig. 5.11.</b> | Production-based task fields .....                                                                              | 217 |
| <b>Fig. 5.12.</b> | The production types and their characteristics.....                                                             | 218 |
| <b>Fig. 5.13.</b> | Production type and degree of freedom with regard to organization design.....                                   | 219 |
| <b>Fig. 5.14.</b> | Change in the market situation and need for reorganization .....                                                | 220 |
| <b>Fig. 5.15.</b> | Virtual linkage between process and functional specialists .....                                                | 221 |
| <b>Fig. 5.16.</b> | The requirements of modular, process-oriented organizations in respect of ICT and potentials for solutions..... | 222 |
| <b>Fig. 6.1.</b>  | ICT support potential in cross-company cooperation .....                                                        | 242 |
| <b>Fig. 6.2.</b>  | Criteria for the evaluation of the degree of integration.....                                                   | 246 |
| <b>Fig. 6.3.</b>  | Important vertical forms of dominance .....                                                                     | 252 |
| <b>Fig. 6.4.</b>  | Selection matrix .....                                                                                          | 256 |
| <b>Fig. 6.5.</b>  | Electronic communication relationships.....                                                                     | 261 |
| <b>Fig. 7.1.</b>  | Internet support of market transaction phases.....                                                              | 275 |
| <b>Fig. 7.2.</b>  | Three-level model of electronic markets .....                                                                   | 279 |
| <b>Fig. 7.3.</b>  | Matching in the double auction .....                                                                            | 283 |
| <b>Fig. 7.4.</b>  | Information in a taxonomy of goods.....                                                                         | 287 |
| <b>Fig. 7.5.</b>  | Examples of the substitution of information services with information products.....                             | 288 |
| <b>Fig. 7.6.</b>  | US top ten 2006 retail businesses (in billions).....                                                            | 289 |
| <b>Fig. 7.7.</b>  | US online advertising spending by format .....                                                                  | 291 |
| <b>Fig. 7.8.</b>  | Ability of electronic markets to support transactions .....                                                     | 295 |
| <b>Fig. 7.9.</b>  | Winner-takes-all market .....                                                                                   | 298 |
| <b>Fig. 7.10.</b> | System of revenue forms .....                                                                                   | 301 |
| <b>Fig. 7.11.</b> | Examples of the versioning of digital products .....                                                            | 303 |
| <b>Fig. 7.12.</b> | Value chain in the shirt industry .....                                                                         | 310 |
| <b>Fig. 8.1.</b>  | Anytime / anyplace matrix .....                                                                                 | 324 |
| <b>Fig. 8.2.</b>  | Telecooperation dimensions .....                                                                                | 330 |
| <b>Fig. 8.3.</b>  | Four fundamental forms of the spatial flexibility of workplace design.....                                      | 333 |
| <b>Fig. 8.4.</b>  | Forms of telework.....                                                                                          | 334 |
| <b>Fig. 8.5.</b>  | Effects of electronic communication on management processes.....                                                | 337 |
| <b>Fig. 8.6.</b>  | The product range of teleservices .....                                                                         | 339 |
| <b>Fig. 8.7.</b>  | Capital and qualification intensity of the supply side .....                                                    | 340 |

|                    |                                                                                                               |     |
|--------------------|---------------------------------------------------------------------------------------------------------------|-----|
| <b>Fig. 8.8.</b>   | Depth of performance of service providers and specificity<br>of service recipients .....                      | 341 |
| <b>Fig. 8.9.</b>   | Characteristics and implementation principles of virtual<br>organizations.....                                | 346 |
| <b>Fig. 8.10.</b>  | Technical developments in work environments regarding<br>flexibility and productivity .....                   | 348 |
| <b>Fig. 8.11.</b>  | Information technology and organizational flexibility.....                                                    | 349 |
| <b>Fig. 8.12.</b>  | Generalization versus specialization .....                                                                    | 351 |
| <b>Fig. 8.13.</b>  | Basic types of broadband application deployment.....                                                          | 361 |
| <b>Fig. 8.14.</b>  | Schematic interpretation of the disintegrating value chain .....                                              | 363 |
| <b>Fig. 8.15.</b>  | Working model of an idealized “European enterprise” .....                                                     | 364 |
| <b>Fig. 9.1.</b>   | New roles of employees.....                                                                                   | 377 |
| <b>Fig. 9.2.</b>   | New roles for management .....                                                                                | 380 |
| <b>Fig. 9.3.</b>   | Images of individuals in business administration .....                                                        | 389 |
| <b>Fig. 9.4.</b>   | Communication to interpret rules – organization occurs in<br>people’s minds .....                             | 391 |
| <b>Fig. 9.5.</b>   | Hierarchy of needs.....                                                                                       | 396 |
| <b>Fig. 9.6.</b>   | Motivation model by Porter and Lawler .....                                                                   | 398 |
| <b>Fig. 9.7.</b>   | Authoritarian and cooperative leadership styles .....                                                         | 400 |
| <b>Fig. 9.8.</b>   | The managerial grid.....                                                                                      | 401 |
| <b>Fig. 9.9.</b>   | Methods for conveying social competence .....                                                                 | 405 |
| <b>Fig. 9.10.</b>  | Internal endorsement of creativity and primary components of<br>creativity development .....                  | 408 |
| <b>Fig. 9.11.</b>  | Types of learning .....                                                                                       | 412 |
| <b>Fig. 9.12.</b>  | Approaches for the nurturing of organizational learning .....                                                 | 413 |
| <b>Fig. 9.13.</b>  | The organization as a schematic network with positive and<br>negative feedback loops .....                    | 417 |
| <b>Fig. 9.14.</b>  | “Answer Garden” inquiry process .....                                                                         | 419 |
| <b>Fig. 10.1.</b>  | Controlling strategies of the principal-agent theory.....                                                     | 442 |
| <b>Fig. 10.2.</b>  | Controlling methods for the coordination of work processes .....                                              | 444 |
| <b>Fig. 10.3.</b>  | Valuation rate for internal transfer prices based on internal<br>transfer goals and valuation situation ..... | 452 |
| <b>Fig. 10.4.</b>  | Information and communication systems for virtual companies ....                                              | 460 |
| <b>Fig. 10.5.</b>  | The stage concept of knowledge management .....                                                               | 463 |
| <b>Fig. 10.6.</b>  | Three-stage procedure for the evaluation of work systems.....                                                 | 466 |
| <b>Fig. 10.7.</b>  | Multi-level model of expanded economic efficiency .....                                                       | 467 |
| <b>Fig. 10.8.</b>  | Sequence of phases in the expanded efficiency analysis .....                                                  | 468 |
| <b>Fig. 10.9.</b>  | The four perspectives of the balanced scorecard .....                                                         | 471 |
| <b>Fig. 10.10.</b> | A balanced scorecard implementation process .....                                                             | 472 |
| <b>Fig. 10.11.</b> | Example of a balanced scorecard and its cause-and-effect<br>relations .....                                   | 474 |