Welcome to OPERATIONS MANAGEMENT

Operations Management is important, exciting, challenging, and everywhere your look!

Important, because it’s concerned with creating all of the products and services upon which we depend. Exciting, because it’s at the centre of so many of the changes affecting the world of business. Challenging, because the solutions that we find need to work globally and responsibly within society and the environment. And everywhere, because every service and product that you use – the cereal you eat at breakfast, the chair you sit on, and the radio station you listen to while you eat – is the result of an operation or process.

Our aim in writing Operations Management is to give you a comprehensive understanding of the issues and techniques of operations management, and to help you get a great final result in your course. Here’s how you might make the most of the text:

- Get ahead with the latest developments – from the up-to-the-minute Operations in practice features in every chapter to the focus on corporate social responsibility in the final chapter – these put you at the cutting edge.
- Use the Worked examples and Problems and applications to improve your use of key quantitative and qualitative techniques, and work your way to better grades in your assignments and exams.
- Follow up on the recommended readings at the end of each chapter. They’re specially selected to enhance your learning and give you an edge in your course work.

And in particular, look out for the references to MyOMLab in the text, and log on to www.myomlab.com* where you can

- check and reinforce your understanding of key concepts using self-assessment questions, audio summaries, animations video clips and more;
- practice your problem-solving with feedback, guided solutions and a limitless supply of questions!

We want Operations Management to give you what you need: a comprehensive view of the subject, an ambition to put that into practice, and – of course – success in your studies. So, read on and good luck!

Nigel Slack
Stuart Chambers
Robert Johnston

* P.S. In order to log in to MyOMLab, you’ll need to register with the access code included with all new copies of the book.
Further reading in Operations Management

Take your study and interest in operations management further with these leading textbooks written by the same team of expert authors.
Guide to ‘operations in practice’, examples, short cases and case studies xi
Making the most of this book and MyOMLab xiv
Preface xviii
To the Instructor xx
To the Student xxi
Ten steps to getting a better grade in operations management xxii
About the authors xxiii
Acknowledgements xxiv

Part One
INTRODUCTION 1
1 Operations management 2
2 Operations performance 32
3 Operations strategy 60

Part Two
DESIGN 85
4 Process design 86
5 The design of products and services 112
6 Supply network design 138
Supplement to Chapter 6 – Forecasting 168
7 Layout and flow 177
8 Process technology 206
9 People, jobs and organization 233
Supplement to Chapter 9 – Work study 259

Part Three
PLANNING AND CONTROL 267
10 The nature of planning and control 268
11 Capacity planning and control 297
Supplement to Chapter 11 – Analytical queuing models 333
12 Inventory planning and control 340
13 Supply chain planning and control 373
14 Enterprise resource planning (ERP) 406
Supplement to Chapter 14 – Materials requirements planning (MRP) 422
15 Lean synchronization 429
16 Project planning and control 457
17 Quality management 495
Supplement to Chapter 17 – Statistical process control (SPC) 520

Part Four
IMPROVEMENT 539
18 Operations improvement 540
19 Risk management 571
20 Organizing for improvement 601

Part Five
CORPORATE SOCIAL RESPONSIBILITY 631
21 Operations and corporate social responsibility (CSR) 632

Notes on chapters 652
Glossary 658
Index 670
## Contents

Guide to ‘operations in practice’, examples, short cases and case studies  xi  
Making the most of this book and MyOMLab xiv  
Preface xviii  
To the Instructor xx  
To the Student xxi  
Ten steps to getting a better grade in operations management xxii  
About the authors xxiii  
Acknowledgements xxiv  

### Part One

**INTRODUCTION**  1

**Chapter 1**  
**Operations management**  2  
*Introduction*  2  
What is operations management?  4  
Operations management is important in all types of organization  6  
The input–transformation–output process  11  
The process hierarchy  15  
Operations processes have different characteristics  19  
The activities of operations management  23  
*Summary answers to key questions*  25  
*Case study: Design house partnerships at Concept Design Services*  27  
Problems and applications  30  
Selected further reading  30  
*Useful web sites*  31  

**Chapter 2**  
**Operations performance**  32  
*Introduction*  32  
Operations performance is vital for any organization  34  
The quality objective  40  
The speed objective  42  
The dependability objective  44  
The flexibility objective  46  
The cost objective  48  
Trade-offs between performance objectives  54  
*Summary answers to key questions*  56  
*Case study: Operations objectives at the Penang Mutiara*  57  
Problems and applications  58  
Selected further reading  59  
*Useful web sites*  59  

### Part Two

**DESIGN**  85

**Chapter 3**  
**Operations strategy**  60  
*Introduction*  60  
What is strategy and what is operations strategy?  62  
The ‘top-down’ and ‘bottom-up’ perspectives  65  
The market requirements and operations resources perspectives  68  
The process of operations strategy  75  
*Summary answers to key questions*  79  
*Case study: Long Ridge Gliding Club*  80  
Problems and applications  81  
Selected further reading  82  
*Useful web sites*  82  

**Chapter 4**  
**Process design**  86  
*Introduction*  86  
What is process design?  87  
What effects should process design have?  88  
Process types – the volume–variety effect on process design  91  
Detailed process design  96  
*Summary answers to key questions*  108  
*Case study: The Central Evaluation Unit*  109  
Problems and applications  110  
Selected further reading  111  
*Useful web sites*  111  

**Chapter 5**  
**The design of products and services**  112  
*Introduction*  112  
Why is good design so important?  114  
The benefits of interactive design  129  
*Summary answers to key questions*  134  
*Case study: Chatsworth – the adventure playground decision*  135  
Problems and applications  136  
Selected further reading  137  
*Useful web sites*  137
## Chapter 12
### Inventory planning and control

- **Introduction**: 340
- **What is inventory?**: 342
- **Why is inventory necessary?**: 342
- **Some disadvantages of holding inventory**: 345
- **The volume decision – how much to order**: 346
- **The timing decision – when to place an order**: 357
- **Inventory analysis and control systems**: 362
- **Summary answers to key questions**: 368
- **Case study: Trans-European Plastics**: 369
- **Problems and applications**: 371
- **Selected further reading**: 371
- **Useful web sites**: 372

---

## Chapter 13
### Supply chain planning and control

- **Introduction**: 373
- **What is supply chain management?**: 375
- **The activities of supply chain management**: 377
- **Types of relationships in supply chains**: 386
- **Supply chain behaviour**: 391
- **Supply chain improvement**: 394
- **Summary answers to key questions**: 400
- **Case study: Supplying fast fashion**: 401
- **Problems and applications**: 404
- **Selected further reading**: 405
- **Useful web sites**: 405

---

## Chapter 14
### Enterprise resource planning (ERP)

- **Introduction**: 406
- **What is ERP?**: 408
- **How did ERP develop?**: 408
- **Implementation of ERP systems**: 415
- **Summary answers to key questions**: 417
- **Case study: Psycho Sports Ltd**: 418
- **Problems and applications**: 420
- **Selected further reading**: 421
- **Useful web sites**: 421

### Supplement to Chapter 14
### Materials requirements planning (MRP)

- **Introduction**: 422
- **Master production schedule**: 422
- **The bill of materials (BOM)**: 424
- **Inventory records**: 425
- **The MRP netting process**: 425
- **MRP capacity checks**: 428
- **Summary**: 428

---

## Chapter 15
### Lean synchronization

- **Introduction**: 429
- **What is lean synchronization?**: 431
- **Eliminate waste**: 435
- **Lean synchronization applied throughout the supply network**: 447
- **Lean synchronization and other approaches**: 449
- **Summary answers to key questions**: 452
- **Case study: Boys and Boden (B&B)**: 453
- **Problems and applications**: 455
- **Selected further reading**: 456
- **Useful web sites**: 456

---

## Chapter 16
### Project planning and control

- **Introduction**: 457
- **What is a project?**: 459
- **Successful project management**: 461
- **The project planning and control process**: 462
- **Network planning**: 475
- **Summary answers to key questions**: 487
- **Case study: United Photonics Malaysia Sdn Bhd**: 488
- **Problems and applications**: 493
- **Selected further reading**: 494
- **Useful web sites**: 494

---

## Chapter 17
### Quality management

- **Introduction**: 495
- **What is quality and why is it so important?**: 497
- **Diagnosing quality problems**: 501
- **Conformance to specification**: 502
- **Total quality management (TQM)**: 508
- **Summary answers to key questions**: 515
- **Case study: Turnround at the Preston plant**: 516
- **Problems and applications**: 518
- **Selected further reading**: 519
- **Useful web sites**: 519

### Supplement to Chapter 17
### Statistical process control (SPC)

- **Introduction**: 520
- **Control charts**: 520
- **Variation in process quality**: 521
- **Control charts for attributes**: 527
- **Control chart for variables**: 528
- **Process control, learning and knowledge**: 532
- **Acceptance sampling**: 533
- **Sampling plans**: 533
- **Summary**: 535
- **Selected further reading**: 536
- **Useful web sites**: 536
## Guide to ‘operations in practice’, examples, short cases and case studies

### Table of Information

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Location</th>
<th>Company/example</th>
<th>Region</th>
<th>Sector/activity</th>
<th>Company size</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chapter 1</strong>&lt;br&gt;Operations management</td>
<td>p. 3</td>
<td>IKEA</td>
<td>Global</td>
<td>Retail</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 8</td>
<td>Acme Whistles</td>
<td>UK</td>
<td>Manufacturing</td>
<td>Small</td>
</tr>
<tr>
<td></td>
<td>p. 9</td>
<td>Oxfam</td>
<td>Global</td>
<td>Charity</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 14</td>
<td>Prêt A Manger</td>
<td>Europe/USA</td>
<td>Retail</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 21</td>
<td>Formule 1</td>
<td>Europe</td>
<td>Hospitality</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 21</td>
<td>Mwagusi Safari Lodge</td>
<td>Tanzania</td>
<td>Hospitality</td>
<td>Small</td>
</tr>
<tr>
<td></td>
<td>p. 27</td>
<td>Concept Design Services</td>
<td>UK</td>
<td>Design/manufacturing/distribution</td>
<td>Medium</td>
</tr>
<tr>
<td><strong>Chapter 2</strong>&lt;br&gt;Operations performance</td>
<td>p. 33</td>
<td>A tale of two terminals</td>
<td>Dubai and UK</td>
<td>Transport</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 41</td>
<td>Lower Hurst Farm</td>
<td>UK</td>
<td>Agricultural</td>
<td>Small</td>
</tr>
<tr>
<td></td>
<td>p. 43</td>
<td>Accident recovery</td>
<td>India</td>
<td>General</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 44</td>
<td>Dabbawalas hit 99.9999% dependability</td>
<td>Global</td>
<td>Media</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 47</td>
<td>BBC</td>
<td>Europe</td>
<td>Retail</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 49</td>
<td>Aldi</td>
<td>Taiwan/China</td>
<td>Manufacturing</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 51</td>
<td>Hon Hai Precision Industry</td>
<td>Malaysia</td>
<td>Hospitality</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>p. 57</td>
<td>Mutiara Beach Resort, Penang</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Chapter 3</strong>&lt;br&gt;Operations strategy</td>
<td>p. 61</td>
<td>Two operations strategies: Flextronics and Ryanair</td>
<td>Global/Europe</td>
<td>Manufacturing service/transport</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 68</td>
<td>Giordano</td>
<td>Asia</td>
<td>Retail</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 74</td>
<td>Amazon what exactly is your core competence?</td>
<td>Global</td>
<td>Retail/business services</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 77</td>
<td>Sometimes any plan is better than no plan</td>
<td>Europe</td>
<td>Military</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 80</td>
<td>Long Ridge Gliding Club</td>
<td>UK</td>
<td>Sport</td>
<td>Small</td>
</tr>
<tr>
<td><strong>Chapter 4</strong>&lt;br&gt;Process design</td>
<td>p. 87</td>
<td>McDonalds</td>
<td>USA</td>
<td>Quick service</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 90</td>
<td>Daimler-Chrysler, Smart car</td>
<td>France</td>
<td>Auto manufacturing</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 107</td>
<td>Heathrow</td>
<td>UK</td>
<td>Transport</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 109</td>
<td>The Central Evaluation Unit (European Union Directorate)</td>
<td>Belgium</td>
<td>Non-governmental organization</td>
<td>Large</td>
</tr>
<tr>
<td><strong>Chapter 5</strong>&lt;br&gt;The design of products and services</td>
<td>p. 113</td>
<td>Airbus A380</td>
<td>Europe</td>
<td>Aerospace</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 116</td>
<td>Dyson</td>
<td>Global</td>
<td>Design/manufacturing</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 120</td>
<td>Square water melons</td>
<td>Japan</td>
<td>Retail/Agriculture</td>
<td>Various</td>
</tr>
<tr>
<td></td>
<td>p. 122</td>
<td>Daniel Hersheson</td>
<td>UK</td>
<td>Hairdressing</td>
<td>Small</td>
</tr>
<tr>
<td></td>
<td>p. 125</td>
<td>Art Attack!</td>
<td>UK</td>
<td>Media</td>
<td>Small</td>
</tr>
<tr>
<td></td>
<td>p. 135</td>
<td>Chatsworth House</td>
<td>UK</td>
<td>Tourism</td>
<td>Medium</td>
</tr>
<tr>
<td><strong>Chapter 6</strong>&lt;br&gt;Supply network design</td>
<td>p. 139</td>
<td>Dell</td>
<td>Global</td>
<td>Computer manufacturing</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 145</td>
<td>Hon Hai, Quanta and Compal</td>
<td>Taiwan</td>
<td>Computer manufacturing</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 147</td>
<td>Tata Nano</td>
<td>India</td>
<td>Manufacturing</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 149</td>
<td>Tesco</td>
<td>Thailand</td>
<td>Retail</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 151</td>
<td>High-tech subcontracting</td>
<td>India/China</td>
<td>Research and development</td>
<td>Medium/large</td>
</tr>
<tr>
<td></td>
<td>p. 162</td>
<td>Disneyland Paris</td>
<td>France</td>
<td>Entertainment</td>
<td>Large</td>
</tr>
<tr>
<td>Chapter</td>
<td>Location</td>
<td>Company/example</td>
<td>Region</td>
<td>Sector/activity</td>
<td>Company size</td>
</tr>
<tr>
<td>---------</td>
<td>----------</td>
<td>-----------------</td>
<td>--------</td>
<td>----------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Chapter 7</td>
<td>p. 178</td>
<td>Tesco</td>
<td>Global</td>
<td>Retail</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 180</td>
<td>Surgery</td>
<td>UK</td>
<td>Healthcare</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>p. 185</td>
<td>Yamaha</td>
<td>Japan</td>
<td>Piano manufacturing</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 186</td>
<td>Cadbury</td>
<td>UK</td>
<td>Entertainment and manufacturing</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 203</td>
<td>Weldon Hand Tools</td>
<td>UK</td>
<td>Manufacturing</td>
<td>Large</td>
</tr>
<tr>
<td>Chapter 8</td>
<td>p. 207</td>
<td>Airlines</td>
<td>All</td>
<td>Airlines</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 210</td>
<td>Robots</td>
<td>All</td>
<td>Security</td>
<td>Various</td>
</tr>
<tr>
<td></td>
<td>p. 211</td>
<td>Yo! Sushi</td>
<td>UK</td>
<td>Restaurants</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 213</td>
<td>IBM</td>
<td>USA</td>
<td>Disaster recovery</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>p. 218</td>
<td>Farming</td>
<td>Asia</td>
<td>Agriculture</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>p. 220</td>
<td>QB House</td>
<td>Sweden</td>
<td>Hairdressing</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>p. 224</td>
<td>SVT (Sveriges Television)</td>
<td>UK</td>
<td>Media</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 230</td>
<td>Rochem Ltd</td>
<td>UK</td>
<td>Food processing</td>
<td>Medium</td>
</tr>
<tr>
<td>Chapter 9</td>
<td>p. 234</td>
<td>W.L. Gore and Associates</td>
<td>Global</td>
<td>Manufacturing and research</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 237</td>
<td>Google</td>
<td>Global</td>
<td>e-services</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 247</td>
<td>McDonalds</td>
<td>UK</td>
<td>Restaurants</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 250</td>
<td>Lloyds TSB</td>
<td>Europe</td>
<td>Banking</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 256</td>
<td>Service Adhesives</td>
<td>Europe</td>
<td>Manufacturing</td>
<td>Large</td>
</tr>
<tr>
<td>Chapter 10</td>
<td>p. 269</td>
<td>BMW dealership</td>
<td>UK</td>
<td>Service and repair</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>p. 273</td>
<td>Air France</td>
<td>Global</td>
<td>Airline</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 281</td>
<td>Accident and Emergency</td>
<td>All</td>
<td>Healthcare</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 286</td>
<td>Chicken salad sandwich (Part 1)</td>
<td>All</td>
<td>Food processing</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 292</td>
<td>Robert Wiseman Dairies</td>
<td>UK</td>
<td>Milk distribution</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 294</td>
<td>Air traffic control</td>
<td>All</td>
<td>Air travel</td>
<td>Medium</td>
</tr>
<tr>
<td>Chapter 11</td>
<td>p. 298</td>
<td>Britvic</td>
<td>Europe</td>
<td>Distribution</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 301</td>
<td>Seasonal products and services</td>
<td>All</td>
<td>Various</td>
<td>Various</td>
</tr>
<tr>
<td></td>
<td>p. 304</td>
<td>British Airways London Eye</td>
<td>UK</td>
<td>Tourism</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>p. 309</td>
<td>Lettuce growing</td>
<td>Europe</td>
<td>Agriculture</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 310</td>
<td>Seasonal products and services</td>
<td>UK</td>
<td>Food processing/media design</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 315</td>
<td>Greetings cards</td>
<td>All</td>
<td>Tourism</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>p. 317</td>
<td>Madame Tussauds, Amsterdam</td>
<td>Netherlands</td>
<td>Agriculture/entertainment</td>
<td>Small</td>
</tr>
<tr>
<td></td>
<td>p. 326</td>
<td>Holly Farm</td>
<td>UK</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>p. 328</td>
<td>Air traffic control</td>
<td>All</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chapter 12</td>
<td>p. 341</td>
<td>UK National Blood Service</td>
<td>UK</td>
<td>Healthcare</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 344</td>
<td>Croft Port</td>
<td>Europe</td>
<td>Beverages</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 356</td>
<td>The Howard Smith Paper Group</td>
<td>UK</td>
<td>Distribution service</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 369</td>
<td>Trans-European Plastic</td>
<td>France</td>
<td>Manufacturing</td>
<td>Large</td>
</tr>
<tr>
<td>Chapter 13</td>
<td>p. 374</td>
<td>Siemens</td>
<td>Europe</td>
<td>Service and manufacturing</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>p. 379</td>
<td>Ford Motor Company</td>
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<tr>
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<tr>
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<tr>
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<td>p. 475</td>
<td>Geneva Construction and Risk (GCR)</td>
<td>Europe</td>
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<td>Large</td>
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<tr>
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<tr>
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<tr>
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<tr>
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<td></td>
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<tr>
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<td>p. 572</td>
<td>Taxing Quality</td>
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<td></td>
<td>p. 638</td>
<td>and intention</td>
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<td>p. 639</td>
<td>CSR as it is presented</td>
<td>Various</td>
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Making the most of this book and MyOMLab

Check your understanding

Each chapter opens with a set of **Key questions** to identify major topics. **Summary answers** conclude the chapter. You can check your understanding of each chapter by taking the **Sample tests of self-assessment questions** on MyOMLab at [www.myomlab.com](http://www.myomlab.com).

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**Chapter 2**

**Operations performance**

**Key questions**

➤ Why is operations performance important in any organization?

➤ How does the operations function incorporate all stakeholders’ objectives?

➤ What does top management expect from the operations function?

➤ What are the performance objectives of operations and what are the internal and external benefits which derive from excelling in each of them?

➤ How do operations performance objectives trade off against each other?

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**Introduction**

Questions are judged by the way they perform. There are many individuals and groups doing the judging and there are many different aspects of performance on which the assessment is being made. The people doing the judging are called ‘stakeholders’ and the aspects of performance they are using are called ‘performance objectives’. And if we want to understand the strategic contribution of the operations function, it is important to understand how we can measure its performance. So this chapter starts by illustrating how operations performance can impact on the success of the whole organization. Second, we look at various perspectives on, and aspects of performance. Finally, we examine how performance objectives trade off against each other. On our general model of operations management the topics covered in this chapter are represented by the area marked on Figure 2.1.

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**Summary answers to key questions**

**Why is operations performance important in any organization?**

- Operations management can either make or break any business. It is large and, in most businesses, represents the bulk of its assets, but also because the operations function gives the ability to compete by providing the ability to respond to customers and by developing the capabilities that will keep it ahead of its competitors in the future.

**How does the operations function incorporate all stakeholders’ objectives?**

- At a strategic level, performance objectives relate to the interests of the operation’s stakeholders. They relate to the company’s responsibility to customers, suppliers, shareholders, employees, and society in general.

**What does top management expect from the operations function?**

- Operations can contribute to the organization as a whole by:
  - reducing costs
  - achieving customer satisfaction
  - reducing the risk of operational failure
  - reducing the amount of investment
  - providing the basis for future innovation.

**What are the performance objectives of operations and what are the internal and external benefits which derive from excelling in each of them?**

- By ‘doing things right’, operations seek to influence the quality of the company’s goods and services. Externally, quality is an important aspect of customer satisfaction or dissatisfaction. Internally, quality operations both reduce costs and increase dependability.

- By ‘doing things fast’, operations seek to influence the speed with which goods and services are delivered. Externally, speed is an important aspect of customer service. Internally, speed both reduces inventories by decreasing internal throughput time and reduces risks by delaying the commitment of resources.

- By ‘doing things on time’, operations seek to influence the dependability of the delivery of goods and services. Externally, dependability is an important aspect of customer service. Internally, dependability within operations increases operational reliability, thus saving the time and money that would otherwise be taken up in solving reliability problems and also giving stability to the operation.

- By ‘changing what they do’, operations seek to influence the flexibility with which the company produces goods and services. Flexibility includes the ability to:
  - produce a wide range or mix of products and services (mix flexibility);
  - produce different quantities or volumes of products and services (volume flexibility);
  - produce products and services at different times (delivery flexibility).
Practice makes perfect

Worked examples show how quantitative and qualitative techniques can be used in operations management. Problems and applications at the end of the chapter allow you to apply these techniques, and you can get more practice as well as guided solutions from the Study plan on MyOMLab at www.myomlab.com.
Making the most of this book and MyOMLab (continued)

Analyse operations in action

The Operations in practice and Case study features in each chapter illustrate and encourage you to analyse operations management in action. You can see and hear more about how theory is applied in practice in the animations and video clips in the Multimedia library in MyOMLab at www.myomlab.com.
Critical commentaries, together with Further reading and Useful websites at the end of each chapter, show a diversity of viewpoint and encourage you to think critically about operations management. You can find the Useful websites in the Multimedia library of MyOMLab at www.myomlab.com.
Preface

Introduction

Operations management is important. It is concerned with creating the services and products upon which we all depend. And all organizations produce some mixture of services and products, whether that organization is large or small, manufacturing or service, for profit or not for profit, public or private. Thankfully, most companies have now come to understand the importance of operations. This is because they have realized that effective operations management gives the potential to improve both efficiency and customer service simultaneously. But more than this, operations management is everywhere, it is not confined to the operations function. All managers, whether they are called Operations or Marketing or Human Resources or Finance, or whatever, manage processes and serve customers (internal or external). This makes, at least part of their activities ‘operations’.

Operations management is also exciting. It is at the centre of so many of the changes affecting the business world – changes in customer preference, changes in supply networks brought about by internet-based technologies, changes in what we want to do at work, how we want to work, where we want to work, and so on. There has rarely been a time when operations management was more topical or more at the heart of business and cultural shifts.

Operations management is also challenging. Promoting the creativity which will allow organizations to respond to so many changes is becoming the prime task of operations managers. It is they who must find the solutions to technological and environmental challenges, the pressures to be socially responsible, the increasing globalization of markets and the difficult-to-define areas of knowledge management.

The aim of this book

This book provides a clear, authoritative, well structured and interesting treatment of operations management as it applies to a variety of businesses and organizations. The text provides both a logical path through the activities of operations management and an understanding of their strategic context.

More specifically, this text is:

- Strategic in its perspective. It is unambiguous in treating the operations function as being central to competitiveness.
- Conceptual in the way it explains the reasons why operations managers need to take decisions.
- Comprehensive in its coverage of the significant ideas and issues which are relevant to most types of operation.
- Practical in that the issues and challenges of making operations management decisions in practice are discussed. The ‘Operations in practice’ feature, which starts every chapter, the short cases that appear through the chapters, and the case studies at the end of each chapter, all explore the approaches taken by operations managers in practice.
- International in the examples which are used. There are over 120 descriptions of operations practice from all over the world.
- Balanced in its treatment. This means we reflect the balance of economic activity between service and manufacturing operations. Around seventy-five per cent of examples are from service organizations and twenty-five percent from manufacturing.

Who should use this book?

Anyone who is interested in how services and products are created.

- Undergraduates on business studies, technical or joint degrees should find it sufficiently structured to provide an understandable route through the subject (no prior knowledge of the area is assumed).
- MBA students should find that its practical discussions of operations management activities enhance their own experience.
- Postgraduate students on other specialist masters degrees should find that it provides them with a well-grounded and, at times, critical approach to the subject.

Distinctive features

Clear structure

The structure of the book uses a model of operations management which distinguishes between design, planning and control, and improvement.
Illustrations-based
Operations management is a practical subject and cannot be taught satisfactorily in a purely theoretical manner. Because of this we have used examples and ‘boxed’ short cases which explain some issues faced by real operations.

Worked examples
Operations management is a subject that blends qualitative and quantitative perspectives; ‘worked examples’ are used to demonstrate how both types of technique can be used.

Critical commentaries
Not everyone agrees about what is the best approach to the various topics and issues with operations management. This is why we have included ‘critical commentaries’ that pose alternative views to the one being expressed in the main flow of the text.

Summary answers to key questions
Each chapter is summarized in the form of a list of bullet points. These extract the essential points which answer the key question posed at the beginning of each chapter.

Case studies
Every chapter includes a case study suitable for class discussion. The cases are usually short enough to serve as illustrations, but have sufficient content also to serve as the basis of case sessions.

Problems and applications
Every chapter includes a set of problem type exercises. These can be used to check out your understanding of the concepts illustrated in the worked examples. There are also activities that support the learning objectives of the chapter that can be done individually or in groups.

Selected further reading
Every chapter ends with a short list of further reading which takes the topics covered in the chapter further, or treats some important related issues. The nature of each further reading is also explained.

Useful websites
A short list of web addresses is included in each chapter for those who wish to take their studies further.
To the Instructor …
Teaching and learning resources for the 6th edition

New for the sixth edition

We have a regular opportunity to listen to the views of users of the book and are always keen to receive feedback. Our research for the 6th edition resulted in maintaining the successful structure of previous editions and incorporating the following key changes:

● An even greater emphasis has been placed on the idea of ‘process management’, making the subject more relevant to every functional area of the organization.
● A whole new chapter on Corporate Social Responsibility (CSR) has been added, and reflects a greater emphasis on this issue throughout the book.
● The ‘Operations in Practice’ sections that are used to introduce the topic at the beginning of each chapter have been refreshed.
● The Worked examples have been extended to provide a better balance between qualitative and quantitative-based techniques.
● Many of the cases at the end of the chapter and short cases are new (but the old ones are still available on the web site), and provide an up-to-date selection of operations issues.
● The ‘Problems’ and ‘Study activities’ sections have been merged. This makes each chapter more compact.
● The book has been visually redesigned to aid learning.

Instructor’s resources

A completely new instructor’s manual is available to lecturers adopting this textbook, together with PowerPoint presentations for each chapter and a Testbank of assessment questions. Visit www.pearsoned.co.uk/slack to access these.

In addition a new Operations in Practice DVD is now available. Please contact your local Pearson Education Sales Consultant (www.pearsoned.co.uk/replocator) for further details and to request a copy.

Finally, and most importantly, a new set of online resources to enable students to check their understanding, practice key techniques and improve their problem-solving skills now accompanies the book. Please see below for details of MyOMLab.

The key to greater understanding and better grades in Operations Management!

MyOMLab for instructors

MyOMLab is designed to save you time in preparing and delivering assignments and assessments for your course, and to enable your students to study independently and at their own pace. Using MyOMLab, you can take advantage of:

● A wide range of engaging resources, including video, powerpoint slides and animated models with audio commentary.
● Hundreds of self-assessment questions, including algorithmically-generated quantitative values which make for a different problem every time.
● A Homework feature, allowing you to assign work for your students to prepare for your next class or seminar.
● A Gradebook which tracks students’ performance on sample tests as well as assessments of your own design.

If you’d like to learn more or find out how MyOMLab could help you, please contact your local Pearson sales consultant at www.pearsoned.co.uk/replocator or visit www.myomlab.com.
To the Student . . .
Making the most of this book

All academic textbooks in business management are, to some extent, simplifications of the messy reality which is actual organizational life. Any book has to separate topics, in order to study them, which in reality are closely related. For example, technology choice impacts on job design which in turn impacts on quality control; yet we have treated these topics individually. The first hint therefore in using this book effectively is to look out for all the links between the individual topics. Similarly with the sequence of topics, although the chapters follow a logical structure, they need not be studied in this order. Every chapter is, more or less, self-contained. Therefore study the chapters in whatever sequence is appropriate to your course or your individual interests. But because each part has an introductory chapter, those students who wish to start with a brief ‘overview’ of the subject may wish first to study Chapters 1, 4, 10 and 18 and the chapter summaries of selected chapters. The same applies to revision – study the introductory chapters and summary answers to key questions.

The book makes full use of the many practical examples and illustrations which can be found in all operations. Many of these were provided by our contacts in companies, but many also come from journals, magazines and newspapers. So if you want to understand the importance of operations management in everyday business life look for examples and illustrations of operations management decisions and activities in newspapers and magazines. There are also examples which you can observe every day. Whenever you use a shop, eat a meal in a restaurant, borrow a book from the library or ride on public transport, consider the operations management issues of all the operations for which you are a customer.

The case exercises and study activities are there to provide an opportunity for you to think further about the ideas discussed in the chapters. Study activities can be used to test out your understanding of the specific points and issues discussed in the chapter and discuss them as a group, if you choose. If you cannot answer these you should revisit the relevant parts of the chapter. The case exercises at the end of each chapter will require some more thought. Use the questions at the end of each case exercise to guide you through the logic of analysing the issue treated in the case. When you have done this individually try to discuss your analysis with other course members. Most important of all, every time you analyse one of the case exercises (or any other case or example in operations management) start off your analysis with the two fundamental questions:

- How is this organization trying to compete (or satisfy its strategic objectives if a not-for-profit organization)?
- What can the operation do to help the organization compete more effectively?

MyOMLab for students

MyOMLab has been developed to help students make the most of their studies in operations management. Visit the MyOMLab at [www.myomlab.com](http://www.myomlab.com) to find valuable teaching and learning material including:

- Self-assessment questions and a personalized Study Plan to diagnose areas of strength and weakness, direct students’ learning, and improve results.
- Unlimited practice on quantitative techniques and solving problems.
- Audio downloads, animated models and electronic flashcards to aid exam revision.
- Video clips and short cases to illustrate operations management in action.
Ten steps to getting a better grade in operations management

I could say that the best rule for getting a better grade is to be good. I mean really, really good! But, there are plenty of us who, while fairly good, don’t get as good a grade as we really deserve. So, if you are studying operations management, and you want a really good grade, try following these simple steps:

**Step 1 Practice, practice, practice.** Use the Key questions and the Problems and applications to check your understanding. Use the Study plan feature in MyOMLab and practice to master the topics which you find difficult.

**Step 2 Remember a few key models, and apply them wherever you can.** Use the diagrams and models to describe some of the examples that are contained within the chapter. You can also use the revision podcasts on MyOMLab.

**Step 3 Remember to use both quantitative and qualitative analysis.** You’ll get more credit for appropriately mixing your methods: use a quantitative model to answer a quantitative question and vice versa, but qualify this with a few well chosen sentences. Both the chapters of the book, and the exercises on MyOMLab, incorporate qualitative and quantitative material.

**Step 4 There’s always a strategic objective** behind any operational issue. Ask yourself, ‘Would a similar operation with a different strategy do things differently?’ Look at the Short cases, Case studies, and Operations in practice pieces in the book.

**Step 5 Research** widely around the topic. Use websites that you trust – we’ve listed some good websites at the end of each chapter and on MyOMLab. You’ll get more credit for using references that come from genuine academic sources.

**Step 6 Use your own experience.** Every day, you’re experiencing an opportunity to apply the principles of operations management. Why is the queue at the airport check-in desk so long? What goes on behind the ‘hole in the wall’ of your bank’s ATM machines?

Use the videos on MyOMLab to look further at operations in practice.

**Step 7 Always answer the question.** Think ‘What is really being asked here? What topic or topics does this question cover?’ Find the relevant chapter or chapters, and search the Key questions at the beginning of each chapter and the Summary at the end of each chapter to get you started.

**Step 8 Take account of the three tiers of accumulating marks for your answers.**

(a) First, demonstrate your knowledge and understanding. Make full use of the text and MyOMLab to find out where you need to improve.

(b) Second, show that you know how to illustrate and apply the topic. The Short cases, Case studies and ‘Operations in practice’ sections, combined with those on MyOMLab, give you hundreds of different examples.

(c) Third, show that you can discuss and analyse the issues critically. Use the Critical commentaries within the text to understand some of the alternative viewpoints.

Generally, if you can do (a) you will pass; if you can do (a) and (b) you will pass well, and if you can do all three, you will pass with flying colours!

**Step 9 Remember not only what the issue is about, but also understand why!** Read the text and apply your knowledge on MyOMLab until you really understand why the concepts and techniques of operations management are important, and what they contribute to an organisation’s success. Your new-found knowledge will stick in your memory, allow you to develop ideas, and enable you to get better grades.

**Step 10 Start now!** Don’t wait until two weeks before an assignment is due. Log on (www.myomlab.com), read on, and GOOD LUCK!

Nigel Slack
**About the authors**

**Nigel Slack** is the Professor of Operations Management and Strategy at Warwick University. Previously he has been Professor of Service Engineering at Cambridge University, Professor of Manufacturing Strategy at Brunel University, a University Lecturer in Management Studies at Oxford University and Fellow in Operations Management at Templeton College, Oxford.


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**Robert Johnston** is Professor of Operations Management at Warwick Business School and its Deputy Dean. He is the founding editor of the *International Journal of Service Industry Management* and he also serves on the editorial board of the *Journal of Operations Management* and the *International Journal of Tourism and Hospitality Research*. He is the author of the market leading text, *Service Operations Management* (with Graham Clark), now in its 3rd edition (2008), published by Financial Times Prentice Hall. Before moving to academia Dr Johnston held several line management and senior management posts in a number of service organizations in both the public and private sectors. He continues to maintain close and active links with many large and small organizations through his research, management training and consultancy activities. As a specialist in service operations, his research interests include service design, service recovery, performance measurement and service quality. He is the author or co-author of many books, as well as chapters in other texts, numerous papers and case studies.
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**Tables**


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