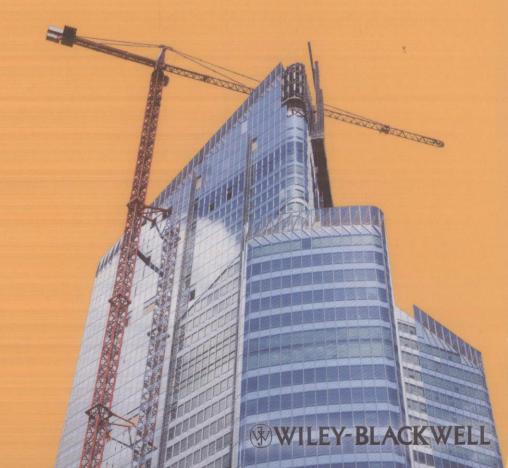
## CONSTRUCTION MANAGEMENT STRATEGIES

A THEORY OF CONSTRUCTION MANAGEMENT

MILAN RADOSAVLJEVIC JOHN BENNETT





## Contents

|      | Authors<br>nowledgements   | ix<br>xiii<br>xv |
|------|--|------------------|
| 1101 | ace a Second Assessment of States of the Second Assessment of the Secon | ***              |
| 1    | Introduction and Background  | 1                |
|      | Construction viewed from space   | 2                |
|      | What is construction?  | 9                |
|      | Why a theory of construction management is needed  | 11               |
|      | Who can manage construction?   | 12               |
|      | Construction managed by designers  | 13               |
|      | Construction managed by customers  | 15               |
|      | Construction managed by contractors  | 16               |
|      | Construction managed by facilities managers  | 17               |
|      | Construction managed by independent project managers   | 18               |
|      | Construction managed by independent construction managers  | 20               |
|      | How the construction industry works  | 21               |
|      | Designer-led practice  | 22               |
|      | Manager-led practice   | 23               |
|      | Contractor-led practice  | 25               |
|      | Conclusions  | 28               |
| 2    | The Built Environment  | 31               |
|      | Introduction   | 31               |
|      | Forces which shape the built environment   | 34               |
|      | Climate and geology  | 35               |
|      | Economy  | 35               |
|      | Government   | 36               |
|      | Culture and fashion  | 37               |
|      | Technology   | 39               |
|      | Customers  | 40               |
|      | Buildings and infrastructure   | 48               |
|      | Architecture   | 49               |
|      | Civil engineering  | 49               |
|      | Thinking about the forces which shape the built environment  | 50               |
| 3    | Construction Concepts  | 53               |
|      | Introduction   | 53               |
|      | Construction products  | 53               |
|      | Customers  | 53               |
|      | Construction actions   | 54               |

|   | Construction  | 59  |
|---|---|-----|
|   | Construction organizations                                    | 60  |
|   | Common characteristics of construction organizations          | 62  |
|   | Interactions and relationships                                | 64  |
|   | Double-loop learning in construction networks                 | 66  |
|   | Categories of relationship                                    | 67  |
|   | Factors influencing construction performance                  | 69  |
|   | Construction management                                       |     |
|   |   | 71  |
|   | Construction efficiency                                       | 71  |
| 4 | Theory of Construction Management                             | 75  |
|   | Introduction  | 75  |
|   | A worst case construction project                             | 77  |
|   |   | 80  |
|   | A straightforward and certain construction project            |     |
|   | Barriers to effective relationships                           | 82  |
|   | Inherent difficulty caused by design                          | 83  |
|   | Inherent difficulty caused by construction teams              | 84  |
|   | Inherent difficulty caused by construction environments       | 85  |
|   | Inherent difficulty   | 85  |
|   | Construction management                                       | 86  |
|   | Construction management strategies                            | 86  |
|   | Basic theorems  | 87  |
|   | Basic propositions about construction management decisions    | 88  |
|   | Construction teams efficiency conditions                      | 89  |
|   | Propositions about construction management decisions relating |     |
|   | to construction teams   | 90  |
|   | Construction team relationships efficiency conditions         | 90  |
|   | Propositions about construction management decisions relating |     |
|   | to construction team relationships                            | 91  |
|   | Construction companies' efficiency conditions                 | 91  |
|   | Propositions about construction management decisions relating | / 1 |
|   |   | 02  |
|   | to construction companies                                     | 92  |
|   | Common organizational characteristics efficiency conditions   | 92  |
|   | Propositions about construction management decisions relating | -   |
|   | to common characteristics of construction organizations       | 93  |
|   | Double-loop learning condition                                | 94  |
|   | Propositions about construction management decisions          |     |
|   | relating to double-loop learning                              | 94  |
|   | Construction efficiency                                       | 95  |
|   | Inherent difficulty indicators                                | 95  |
|   | IDIs in Practice  | 102 |
|   | Size of construction projects                                 | 106 |
|   | Using the theory of construction management                   | 107 |
|   |   |     |
| 5 | Traditional Construction                                      | 111 |
|   | Introduction  | 111 |
|   | Fundamental traditional construction                          | 111 |
|   | Project organization  | 112 |
|   | Strengths and weaknesses                                      | 112 |
|   | Construction management propositions and                      |     |
|   | fundamental traditional construction                          | 114 |

|   | New technologies   | 114 |
|---|--|-----|
|   | Demanding customers  | 116 |
|   | Developed traditional construction   | 117 |
|   | Internal and boundary relationships  | 118 |
|   | Strengths of developed traditional construction  | 120 |
|   | Weaknesses of developed traditional construction   | 120 |
|   | Construction management propositions and developed   |     |
|   | traditional construction   | 122 |
|   | Scenarios to rescue developed traditional construction   | 127 |
|   | Projects led by design consultants   | 127 |
|   | Specialist contractor design   | 130 |
|   | Architects and engineers design  | 132 |
|   | Conclusions  | 133 |
|   |  |     |
| 6 | Design Build   | 137 |
|   | Introduction   | 137 |
|   | Design build customers   | 138 |
|   | Design build companies   | 140 |
|   | Design build process   | 143 |
|   | Design build performance   | 145 |
|   | Design build efficiency  | 148 |
|   | Construction management propositions   | 149 |
|   | The theory of construction management  | 150 |
| 7 | Management Approaches  | 157 |
| - | Introduction   | 157 |
|   | Customers  | 159 |
|   | Designers  | 159 |
|   | Construction managers  | 161 |
|   | Works contractors  | 162 |
|   | Construction management process  | 162 |
|   | Construction management process  Construction management propositions  | 165 |
|   | Construction management performance  | 166 |
|   | Other management approaches  | 169 |
|   | The theory of construction management  | 170 |
|   | The state of the s | 177 |
| 8 | 3  | 177 |
|   | Introduction   | 178 |
|   | Project partnering   | 182 |
|   | Strategic partnering   | 189 |
|   | Strategic collaborative working  | 191 |
|   | Partnering efficiency  |     |
|   | Construction management propositions   | 193 |
|   | Partnering performance   | 194 |
|   | The theory of construction management  | 195 |
| 9 |  | 201 |
|   | Introduction   | 201 |
|   | Total construction service providers   | 201 |
|   | Industrialised housing   | 203 |
|   | General construction   | 206 |

|    | Other total construction service companies Total construction service efficiency Construction management propositions   | 212<br>215<br>220  |
|----|---|--|
|    | Total construction service performance The theory of construction management  | 221<br>222   |
| 10 | Implications for Industry Introduction Implications for customers Implications for construction companies Construction company strategies Implications for construction companies providing a total construction service Implications for project management companies Implications for construction management companies Implications for design companies Implications for specialist contractors Implications for other construction companies | 229<br>229<br>239<br>241<br>241<br>248<br>248<br>252<br>253<br>255 |
| 11 | The Future for Construction Management Introduction The theory of construction management and practice The theory of construction management and research Testing the theory of construction management Research data Research proposals A basis for future practice and research   | 257<br>257<br>259<br>262<br>267<br>267<br>268<br>275               |
|    | pendix: Theory of Construction Management Propositions  | 277<br>279   |



The book's companion website at www.wiley.com/go/constructionmanagementstrategies offers invaluable resources for students and lecturers as well as for practising construction managers:

- end-of-chapter exercises + outline answers
- · Gantt charts to accompany examples in the book
- PowerPoint slides for each chapter
- ideas for discussion topics
- links to useful websites