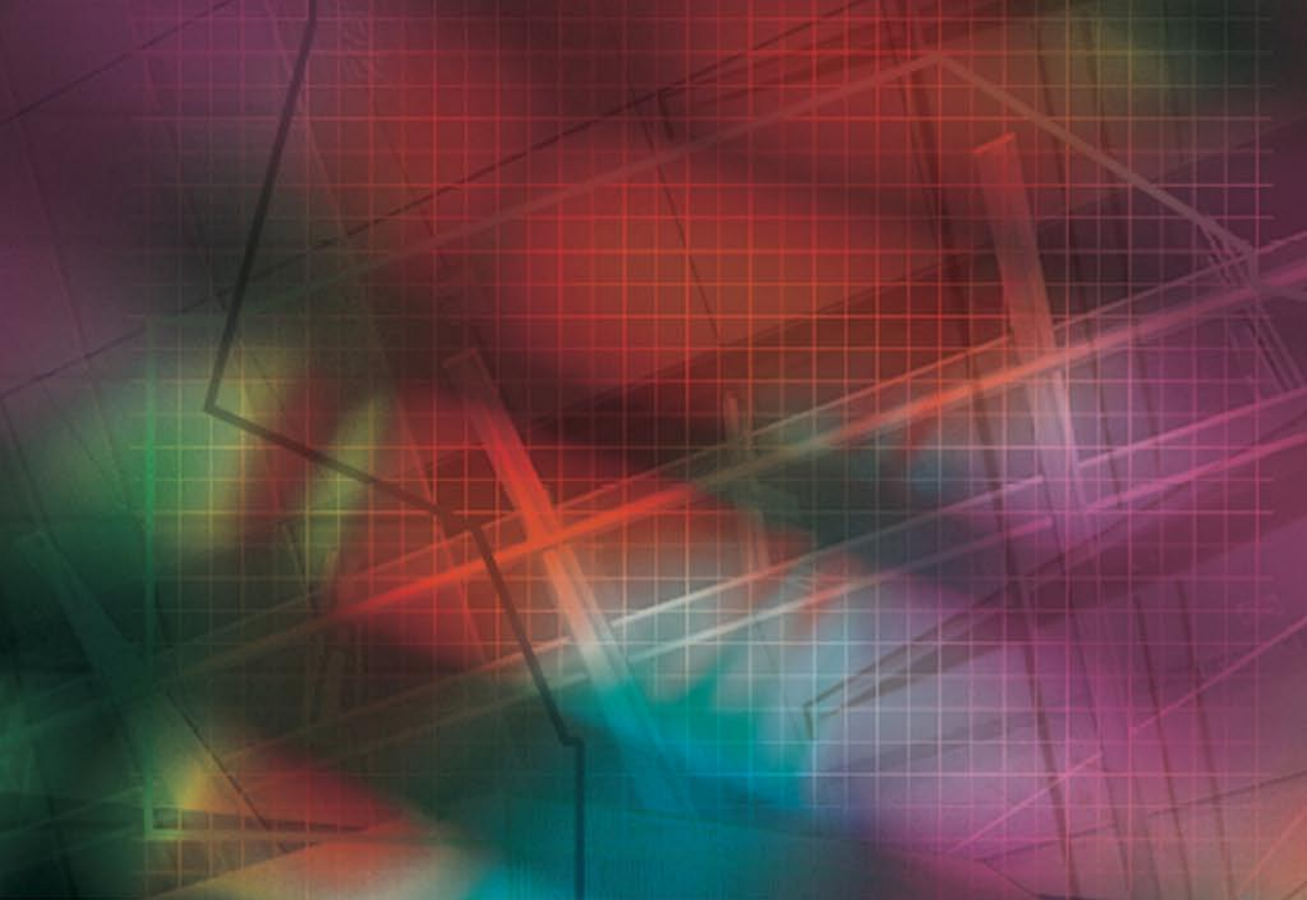




Case Study Methodology in Business Research

Jan Dul and Tony Hak



Case Study Methodology in Business Research

To our soul mates

Case Study Methodology in Business Research

Jan Dul and Tony Hak

 **Routledge**
Taylor & Francis Group
LONDON AND NEW YORK

First published 2008 by Butterworth-Heinemann

This edition published 2012 by Routledge
2 Park Square, Milton Park, Abingdon, Oxfordshire OX14 4RN
711 Third Avenue, New York, NY 10017

Routledge is an imprint of the Taylor and Francis Group, an informa business

First issued in hardback 2015

First edition 2008

Copyright © 2008, Jan Dul and Tony Hak.
All rights reserved.

The right of Jan Dul and Tony Hak to be identified as the authors of this work has been asserted in accordance with the Copyright, Designs and Patents Act 1988

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means electronic, mechanical, photocopying, recording or otherwise without the prior written permission of the publisher

Notice

No responsibility is assumed by the publisher for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions or ideas contained in the material herein.

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

Library of Congress Control Number: 2007932103

ISBN 978-0-7506-8196-4 (pbk)

ISBN 978-1-138-17416-0 (hbk)

Typeset by Charon Tec Ltd (A Macmillan Company), Chennai, India
www.charontec.com

Contents

<i>Acknowledgements</i>	xv
<i>Foreword</i>	xvii
<i>List of boxes</i>	xix
<i>List of tables</i>	xx
<i>List of contributors</i>	xxii
<i>Preface: how to read this book</i>	xxv

Part I: Introduction **1**

<i>Chapter 1</i>	<i>Aims and overview of this book</i>	3
1.1	Our definition of a case study	3
1.2	Aims of the book	6
1.3	Overview of the book	8
1.3.1	Structure of the book	8
1.3.2	Chapter 2: Case studies in business research	8
1.3.3	Chapter 3: Principles of research	9
1.3.4	Chapter 4: Theory-testing research (general)	9
1.3.5	Chapters 5–7: Theory-testing case study research	10
1.3.6	Chapters 8–9: Theory-building research	10
1.3.7	Chapters 10–11: Practice-oriented research	10
1.4	How to read this book	11
1.4.1	Reading specific topics	11
1.4.2	Suggestions for students	11
1.4.3	Glossary and flowcharts	18
1.5	References	18

Chapter 2	<i>A review of case studies in business research</i>	19
	<i>Raf Jans and Koen Dittrich</i>	
2.1	Published case studies in business research	20
2.1.1	Search strategy and sample	20
2.1.2	Case studies in Strategy	21
2.1.3	Case studies in Finance	22
2.1.4	Case studies in Marketing	22
2.1.5	Case studies in HRM	22
2.1.6	Case studies in Operations	22
2.1.7	Types of case study research	23
2.2	Review of methodological discussions on case study research	24
2.2.1	Objectives of case study research	24
2.2.2	Guidelines for case study research	25
2.2.3	Evaluations of case study research	26
2.3	Conclusion	27
2.4	References	27
 Chapter 3	 <i>Principles of research</i>	 30
3.1	Theory-oriented and practice-oriented research	30
3.1.1	General research objectives of theory-oriented and practice-oriented research	30
3.1.2	Orientation: how to choose between theory-oriented or practice-oriented research	33
3.2	Principles of theory-oriented research	34
3.2.1	Theory	34
3.2.2	Theory-oriented research: contribution to theory development	38
3.2.3	Replication	40
3.2.4	Representativeness, external validity, and generalizability	45
3.2.5	Exploration of theory-oriented research	48
3.2.5.1	Exploration of theory	48
3.2.5.2	Exploration of practice for finding a proposition	49
3.2.5.3	Exploration of practice for confirming the relevance of a proposition	51
3.2.6	Contributions to theory development	51
3.3	Principles of practice-oriented research	52
3.3.1	Practice	52
3.3.2	Practice-oriented research: contribution to a practitioner's knowledge	53
3.3.3	Exploration for practice-oriented research	55
3.3.3.1	Exploration of practice	57

3.3.3.2 Exploration of theory for finding a hypothesis	58
3.3.3.3 Exploration of theory for confirming relevance of a hypothesis	58
3.3.4 Contributions to a practitioner's knowledge	59
3.4 References	59

Part II: Theory-testing research **61**

<i>Chapter 4</i>	<i>Theory-testing research (general)</i>	63
4.1	Research objectives in theory-testing research	64
4.2	Specifying propositions in theory-testing research	65
4.2.1	Propositions that express a sufficient condition	67
4.2.2	Propositions that express a necessary condition	68
4.2.3	Propositions that express a deterministic relation	69
4.2.4	Propositions that express a probabilistic relation	70
4.3	Business relevance of propositions	71
4.4	Research strategies in theory-testing research	76
4.4.1	Strategy for testing a proposition that expresses a sufficient condition	78
4.4.2	Strategy for testing a proposition that expresses a necessary condition	80
4.4.3	Strategy for testing a proposition that expresses a deterministic relation	81
4.4.4	Strategy for testing a proposition that expresses a probabilistic relation	82
4.4.5	Testing more complex conceptual models	84
4.5	Outcome and implications	87
4.6	Summary	88
4.7	References	89
<i>Chapter 5</i>	<i>Testing sufficient and necessary conditions with a case study</i>	90
5.1	How to test a sufficient or a necessary condition with a case study	91
5.1.1	Introduction	91
5.1.2	Candidate cases	92
5.1.3	Case selection	92
5.1.4	Hypothesis	93
5.1.5	Measurement	94
5.1.6	Data presentation	94
5.1.7	Data analysis	94

5.1.8	Implications for the theory	95
5.1.9	Replication strategy	96
5.2	Case Study 1: Theory-testing research: testing a necessary condition. Testing a theory of collaboration characteristics of successful innovation projects	98
	<i>Koen Dittrich</i>	
5.2.1	Introduction	98
5.2.2	Theory	99
5.2.2.1	Object of study	99
5.2.2.2	Concepts	99
5.2.2.3	Propositions	100
5.2.2.4	Domain	101
5.2.2.5	Conceptual model	101
5.2.3	Research objective	102
5.2.4	Research strategy	102
5.2.5	Candidate cases	103
5.2.6	Case selection	103
5.2.7	Hypotheses	104
5.2.8	Measurement	105
5.2.9	Data presentation	105
5.2.9.1	Radical innovation projects	105
5.2.9.2	Incremental innovation projects	108
5.2.10	Data analysis	110
5.2.11	Implications for the theory	111
5.2.12	Replication strategy	112
5.3	Methodological reflection on Case Study 1	112
5.3.1	Theory	112
5.3.2	Research objective	113
5.3.3	Research strategy	113
5.3.4	Candidate cases	115
5.3.5	Case selection	115
5.3.6	Hypothesis	116
5.3.7	Measurement	116
5.3.8	Data presentation	117
5.3.9	Data analysis	117
5.3.10	Implications for the theory	117
5.3.11	Replication strategy	118
5.4	Case Study 2: Theory-testing research: testing a necessary condition. Testing a theory of ideal typical organizational configurations for successful product innovations	119
	<i>Ferdinand Jaspers and Jan Van den Ende</i>	
5.4.1	Introduction	119

5.4.2	Theory	119
5.4.2.1	Object of study	119
5.4.2.2	Concepts	120
5.4.2.3	Proposition	122
5.4.2.4	Domain	122
5.4.2.5	Conceptual model	123
5.4.3	Research objective	123
5.4.4	Research strategy	123
5.4.5	Candidate cases	124
5.4.6	Case selection	124
5.4.7	Hypothesis	124
5.4.8	Measurement	125
5.4.9	Data presentation	127
5.4.10	Data analysis	127
5.4.11	Implications for the theory	129
5.4.12	Replication strategy	130
5.5	Methodological reflection on Case Study 2	130
5.5.1	Theory	130
5.5.2	Research objective	131
5.5.3	Research strategy	131
5.5.4	Candidate cases	131
5.5.5	Case selection	132
5.5.6	Hypothesis	132
5.5.7	Measurement	132
5.5.8	Data presentation	133
5.5.9	Data analysis	133
5.5.10	Implications for the theory	134
5.5.11	Replication strategy	135
5.6	References	136

Chapter 6 Testing a deterministic relation with a case study 138

6.1	How to test a deterministic relation with a case study	138
6.1.1	Introduction	138
6.1.2	Candidate cases	139
6.1.3	Case selection	139
6.1.4	Hypothesis	140
6.1.5	Measurement	141
6.1.6	Data presentation	141
6.1.7	Data analysis	141
6.1.8	Implications for the theory	142
6.1.9	Replication strategy	142

6.2 Case Study 3: Theory-testing research: testing a deterministic relation. The influences of urban time access windows on retailers' distribution costs	142
<i>Hans Quak</i>	
6.2.1 Introduction	142
6.2.2 Theory	143
6.2.2.1 Object of study	143
6.2.2.2 Concepts	143
6.2.2.3 Proposition	144
6.2.2.4 Domain	144
6.2.2.5 Conceptual model	144
6.2.3 Research objective	145
6.2.4 Research strategy	145
6.2.5 Candidate cases	146
6.2.6 Case selection	146
6.2.7 Hypotheses	147
6.2.8 Measurement	148
6.2.9 Data presentation	149
6.2.10 Data analysis	149
6.2.11 Implications for the theory	151
6.3 Methodological reflection on Case Study 3	151
6.3.1 Theory	151
6.3.2 Research objective	152
6.3.3 Research strategy	152
6.3.4 Candidate cases	152
6.3.5 Case selection	153
6.3.6 Hypotheses	153
6.3.7 Measurement	153
6.3.8 Data presentation	153
6.3.9 Data analysis	154
6.3.10 Implications for the theory	154
6.3.11 Replication strategy	154
6.4 References	154
 <i>Chapter 7 Testing a probabilistic relation with a case study</i>	 156
7.1 How to test a probabilistic relation with a case study	156
7.1.1 Introduction	156
7.1.2 Candidate cases	157
7.1.3 Case selection	157
7.1.4 Hypothesis	158
7.1.5 Measurement	158
7.1.6 Data presentation	158
7.1.7 Data analysis	158

7.1.8 Implications for the theory	159
7.1.9 Replication strategy	159
7.2 Case Study 4: Theory-testing research: testing a probabilistic relation. The influence of a retailer's distribution strategy on a retailer's sensitivity to urban time access windows	159
<i>Hans Quak</i>	
7.2.1 Introduction	159
7.2.2 Theory	160
7.2.2.1 Object of study	160
7.2.2.2 Concepts	160
7.2.2.3 Propositions	160
7.2.2.4 Domain	161
7.2.2.5 Conceptual model	162
7.2.3 Research objective	162
7.2.4 Research strategy	162
7.2.5 Candidate cases	162
7.2.6 Case selection	162
7.2.7 Hypotheses	163
7.2.8 Measurement	163
7.2.9 Data presentation	165
7.2.10 Data analysis	166
7.2.11 Implications for the theory	168
7.2.12 Replication strategy	169
7.3 Methodological reflection on Case Study 4	169
7.3.1 Theory	169
7.3.2 Research objective	170
7.3.3 Research strategy	170
7.3.4 Candidate cases	170
7.3.5 Case selection	170
7.3.6 Hypotheses	171
7.3.7 Measurement	171
7.3.8 Data presentation	171
7.3.9 Data analysis	171
7.3.10 Implications for the theory	172
7.3.11 Replication strategy	172
7.4 References	172

Part III: Theory-building research **173**

Chapter 8 Theory-building research (general) **175**

8.1 Research objectives in theory-building research	176
8.1.1 Specifying the relation between known concepts	177

8.1.2	Discovering a not yet known concept	178
8.1.3	Discovering concepts and their relation	179
8.1.4	Discovering concepts	180
8.2	Principles of theory-building research	180
8.3	Research strategies in theory-building research	181
8.4	Outcome and implications	183
8.5	Summary	183
Chapter 9	<i>The theory-building case study</i>	184
9.1	How to design and conduct a theory-building case study	184
9.1.1	Introduction	184
9.1.2	Candidate cases	185
9.1.3	Case selection	185
9.1.4	Extracting relevant evidence	187
9.1.5	Coding	188
9.1.6	Data presentation	188
9.1.7	Data analysis	189
9.1.7.1	Sufficient condition	189
9.1.7.2	Necessary condition	190
9.1.7.3	Deterministic relation	190
9.1.7.4	Probabilistic relation	191
9.1.8	An example of data analysis	191
9.1.8.1	Sufficient condition	191
9.1.8.2	Necessary condition	193
9.1.8.3	Deterministic relation	194
9.1.8.4	Probabilistic relation	194
9.1.9	Outcome	195
9.2	Case Study 5: Theory-building research. Building propositions about the kind of company representatives involved in communication with providers of business services	197
	<i>Wendy Van der Valk and Finn Wynstra</i>	
9.2.1	Introduction	197
9.2.2	Candidate cases	199
9.2.3	Case selection	200
9.2.4	Extracting relevant evidence	200
9.2.5	Coding	202
9.2.6	Data presentation	204
9.2.7	Data analysis	204
9.2.8	Outcome	206
9.3	Methodological reflection on Case Study 5	207
9.3.1	Justification of a theory-building case study	207
9.3.2	Candidate cases	208

9.3.3 Case selection	209
9.3.4 Extracting relevant evidence	209
9.3.5 Coding	210
9.3.6 Data presentation	210
9.3.7 Data analysis	210
9.3.8 Outcome	212
9.4 References	213

Part IV: Practice-oriented research **215**

Chapter 10 Practice-oriented research (general) **217**

10.1 Hypothesis-testing research	218
10.1.1 Research objective in hypothesis-testing research	219
10.1.2 Research strategy in hypothesis-testing research	220
10.2 Hypothesis-building research	222
10.2.1 Research objective in hypothesis-building research	222
10.2.2 Research strategy in hypothesis-building research	224
10.3 Descriptive research	224
10.3.1 Research objective of descriptive practice-oriented research	225
10.3.2 Research strategy of practice-oriented descriptive research	226
10.4 Summary	227

Chapter 11 The practice-oriented case study **229**

11.1 How to design and conduct a practice-oriented case study	229
11.1.1 Introduction	229
11.1.2 Case selection	230
11.1.3 Implications of the research results	230
11.2 Case Study 6: Hypothesis-testing practice-oriented research. Assessing whether a company has sufficient flexibility to develop successfully a new product <i>Murthy Halemane and Felix Janszen</i>	233
11.2.1 Introduction	233
11.2.2 Hypothesis	234
11.2.3 Measurement	235
11.2.4 Data analysis	236
11.2.5 Results and implications	237
11.3 Methodological reflection on Case Study 6	237
11.3.1 Practice	237
11.3.2 Research objective	237

11.3.3 Research strategy	238
11.3.4 Candidate cases	238
11.3.5 Case selection	238
11.3.6 Measurement	239
11.3.7 Data presentation	239
11.3.8 Data analysis	239
11.3.9 Implications for practice	239
11.4 Case Study 7: Descriptive practice-oriented research. Building a model of best practice of company standardization <i>Henk J. De Vries and Florens Slob</i>	240
11.4.1 Introduction	240
11.4.2 Absence of guidelines or criteria	241
11.4.3 Measurement	244
11.4.4 Data presentation	245
11.4.5 Concept definition	245
11.4.6 Implications	248
11.5 Methodological reflection on Case Study 7	249
11.5.1 Practice	249
11.5.2 Research objective	249
11.5.3 Research strategy	250
11.5.4 Candidate cases	250
11.5.5 Case selection	250
11.5.6 Measurement	250
11.5.7 Data presentation	251
11.5.8 Data analysis	251
11.5.9 Implications for practice	251
11.6 References	252
<i>Appendices</i>	253
1: <i>Measurement</i>	253
2: <i>Business journals that publish case studies</i>	265
3: <i>Flowcharts</i>	267
4: <i>Writing a case study research report</i>	276
5: <i>Glossary</i>	278
<i>Index</i>	293

Acknowledgements

Case studies deserve a prominent role in business research. The case study research strategy can be used for analysing and solving practical business problems, as well as for building and testing business theories. However, in order to acquire that prominent role, case studies must be designed and conducted with scientific rigour. We wrote this book with the ambition of giving a methodological framework that supports such high quality case study research.

We think that our approach to case study research is useful in all (social) sciences, but we have explicitly written this book with an audience of students and novice case study researchers in business and management in mind. For several years now, we have taught research methods, including case study methodology, to undergraduate, graduate, and doctoral students in business administration, using various textbooks. This book is based on that experience and uses examples from this discipline. The limitation to research in business and management also enabled us to make good use of examples of case study research in our research school.

We realize that our thinking on case study methodology in business research was shaped not only by our own experience as researcher and teacher, but also by the uncountable interactions that we had with researchers, methodologists, teachers, and students who liked (or disliked) the use of case studies. We thank them for stimulating discussions. Although we cannot name them all here, we would like to mention a few persons who influenced the content of the book.

First of all we acknowledge the contributions of our colleagues and co-authors from RSM Erasmus University: Koen Dittrich, Jan Van den Ende, Murthy Halemane, Raf Jans, Felix Janszen, Ferdinand Jaspers, Hans Quak, Florens Slob (alumnus), Wendy Van der Valk, Henk De Vries,

and Finn Wynstra. They provided the data and draft versions for the example chapters in this book (5.2, 5.4, 6.2, 7.2, 9.2, 11.2, and 11.4) and accepted the considerable cuts and changes that we proposed in their texts because of our aim to fit the presentation of these studies to our methodological framework. The full richness of the original studies can be read in other research publications referred to in the respective chapters.

We are grateful to Bert Balk, Harrie Jansen, Ruud Smit, Peter Swanborn, Piet Verschuren, and Fred Wester for their valuable comments based on their extensive methodological knowledge and experience.

We also express thanks to several researchers for their comments on draft versions of our book: Floortje Blindenbach, Paul van Fenema, Helleke Hendriks, Dianne Heijink, Wim Hulsink, Jos van Iwaarden, Katariina Kempainen, and Allen S. Lee.

Our Master students Mirjam van Dijk, Michiel Elshof, Fieke Göritzlehner, Eveline Hogenes, Hubert van de Vecht, and Martijn Put provided us with helpful feedback after applying our case study methodology in their Master's thesis research.

We learned from comments from Bachelor students that our book might be somewhat concise. In an attempt to serve both students and experienced researchers, we decided that virtually each sentence of our book must be precise and informative. This choice might require some additional effort from students, as well as guidance from seniors. We thank our Bachelor students Patricia van Beek, Shakti Kapoerchan, and Merel Piekaar for giving us specific feedback on the book.

Finally we are grateful to our soul mates who were a necessary (though not sufficient) condition for finalizing our book.

Dear reader, we hope that our book will contribute to the quality of your research. We would welcome any comment, for which we thank you in advance.

*Jan Dul and Tony Hak
September 2007*

Foreword

The role of case studies in research is a paradox. On the one hand, case studies are widely used by many communities in business research; for example case study research has consistently been one of the most powerful methods in operations management, particularly in the building of new theory. It is clearly accepted that case study research in management can be rigorous, as is evidenced by case-based papers in both top European and US journals. On the other hand there is strong resistance to case study research in some communities and its use has been rather narrow, often restricted just to exploratory research. In addition there is confusion in the minds of many as to what exactly is case study research: is it about practice or theory, and is it about theory-building or testing?

The contribution of exploratory case study research to theory-building is well documented. Despite challenges (it is time consuming, it needs skilled interviewers, and care is needed in drawing generalizable conclusions from a limited set of cases and in ensuring rigorous research) the results of case study research can have very high impact. Unconstrained by the rigid limits of questionnaires and models, it can lead to new and creative insights, building of new theory, and have high validity with practitioners – the ultimate user of research. Through triangulation with multiple means of data collection, the validity can be increased further. Many of the breakthrough concepts and theories in my field – Operations Management – from lean production to manufacturing strategy have been developed through exploratory case study research. Finally, case study research enriches not only theory, but also the researchers themselves. Through conducting research in the field and being exposed to real problems, the creative insights of people at all levels of organizations, and the varied contexts of cases, the individual researcher will personally benefit from the process of conducting the

research. Increasingly, new ideas are being developed, not by distant academics, but by those working in close contact with multiple case studies – management consultants! Exploratory case study research is not only good at investigating how and why questions, but it is also particularly suitable for developing new theory and ideas.

Although there has been a number of important articles and books on case study research in business, their focus has been primarily on theory-building through exploratory case study research. In this book, Jan Dul and Tony Hak have set out to provide a structured and broader view of the use of case study research. They make clear the differences between the varying uses of case studies including the difference between practice-oriented and theory-oriented research. In particular, in addition to theory-building, they pay attention to two areas: first, theory-testing and, second, replication, with its consequent impact on generalizability. They have produced a valuable addition to the armoury of the business researcher. It is important that case study research is conducted well, so that the results are both rigorous and relevant. Case study research is not an excuse for “industrial tourism” – visiting lots of organizations without any preconceived ideas as to what is being researched. For the achievement of the potential of case study research it is important that it is done with rigour. This book sets out structures and guidelines that will assist researchers from a wide range of disciplines to develop rigorous use of case studies in research.

Chris Voss
Professor of Operations and Technology Management
London Business School

List of boxes

- 1 The difference between practice-oriented and theory-oriented research [31](#)
- 2 What is a theory, and when is it “true”? [37](#)
- 3 Scientific realism [41](#)
- 4 Replication of survey results [44](#)
- 5 Multiple case study [45](#)
- 6 Domain, instance, case, population, sample, and replication [46](#)
- 7 The term hypothesis in practice-oriented research [57](#)
- 8 Is business reality deterministic or probabilistic? A note on “pragmatic determinism” [72](#)
- 9 How the survey can become a case study [83](#)
- 10 More complex conceptual models [85](#)
- 11 An example of a theory-testing single case study [97](#)
- 12 Michael Porter’s case selection [186](#)
- 13 Building a theory on successfully helping city government [196](#)
- 14 Other propositions that can be derived from [Table 9.9](#) [212](#)
- 15 A practice-oriented “flash case study” [231](#)

List of tables

- 1.1 Main difference between the case study and the experiment 5
- 1.2 Main differences between the case study and the survey 6
- 1.3 Suggestions for reading specific topics 11
- 1.4 Suggestions for students to design and conduct a research project 12
- 1.5 A stepwise approach for research: activities, results, quality criteria, and references to relevant chapters in this book 14
- 2.1 Number of publications with case study research in all scholarly journals in Proquest and in ISI journals in the period 2000–2005 21
- 2.2 Three types of case studies in five fields of business research (2000–2005) 23
- 4.1 Correspondence between theoretical terms and theory-oriented research terms 66
- 4.2 Preferred research strategies for testing different types of propositions 77
- 5.1 Radical innovation projects 108
- 5.2 Incremental innovation projects 110
- 5.3 Six types of innovation that change a product's components and interfaces 120
- 5.4 Typology of ideal organizational configurations for product innovation success 122
- 5.5 Data for 15 successful product innovation projects 128
- 5.6 Number of selected cases by product innovation type 132
- 6.1 Main case characteristics 147
- 6.2 Scenarios of time access window pressure 148
- 7.1 Vehicle types sorted on capacity 164
- 7.2 Distribution strategy dimensions per case 166

9.1	Data matrix regarding “success” factors of innovation projects	192
9.2	Data matrix regarding successful innovation projects	193
9.3	Data matrix regarding unsuccessful innovation projects	193
9.4	Data matrix regarding team size	194
9.5	Data matrix regarding management commitment	195
9.6A	Selected cases, descriptions, and informants KPN	201
9.6B	Selected cases, descriptions, and informants UWV	201
9.7A	Representatives involved in interaction with the service provider	203
9.7B	Level of perceived risk	203
9.8	Type of buying company representatives involved	205
9.9	Type of buying company representatives involved	211
10.1	Preferred research strategies for testing different types of hypotheses	220
A.2.1	Scholarly business journals that have published five or more case studies from 2002–2005	265

List of contributors

Koen Dittrich ([Chapters 2 and 5.2](#))

Koen Dittrich received an MSc degree in Economics from the University of Maastricht, the Netherlands, an MA degree in Science and Technology Studies from the University of Maastricht and the University of Oslo, Norway, and a PhD degree in Technology, Policy and Management of Delft University of Technology, Delft, the Netherlands. He is Assistant Professor in Management of Innovation at RSM Erasmus University. His research interests include the organization and management of innovation processes, R&D networks and collaboration for innovation (<http://www.rsm.nl/kdittrich>).

Jan Dul

Jan Dul obtained an MSc degree in Mechanical Engineering from Twente University of Technology, the Netherlands, and a PhD degree in Biomedical Engineering from Vanderbilt University, USA. He is Professor of Technology and Human Factors at RSM Erasmus University. His research interests include human centred design of products and processes, in particular human factors in operations systems, and employee creativity for innovation (<http://www.rsm.nl/jdul>).

Jan Van den Ende ([Chapter 5.4](#))

Jan Van den Ende obtained a PhD degree from Delft University of Technology, the Netherlands. He is Associate Professor of Management of Technology and Innovation at RSM Erasmus University. His research focuses on the organization and management of product and service development processes. He leads a research programme on systemic innovation in ICT. Van den Ende has (co-)authored books and numerous articles in, amongst others, *Research Policy*, *Journal of Management*

Studies, IEEE Transactions on Engineering Management, Business History, R&D Management, and Group and Organization Management (<http://www.rsm.nl/jende>).

Tony Hak

Tony Hak received an MSc degree in Medical Sociology from Erasmus University Medical Centre, Rotterdam, the Netherlands, and a PhD degree in Social Sciences from the University of Amsterdam, the Netherlands. He is Associate Professor of Research Methodology at RSM Erasmus University. His research interests include the response process in business surveys, questionnaire pre-testing, and qualitative methods (<http://www.rsm.nl/thak>).

Murthy Halemane (Chapter 11.2)

Murthy Halemane has a doctorate in engineering from the University of Technology in Delft, the Netherlands. He is currently Assistant Professor of Management of Technology and Innovation at RSM Erasmus University. Capability analysis of firms and synergy development of their technologies with business strategies are his research themes. His current research extends these themes to business process outsourcing (<http://www.rsm.nl/mhalemane>).

Raf Jans (Chapter 2)

Raf Jans holds a PhD degree in Applied Economics with a specialization in Operations Research from the Katholieke Universiteit Leuven in Belgium. He is an Assistant Professor of Operations Management at RSM Erasmus University. His research interests are in decision and risk analysis, optimization modelling and their application to industrial problems, mainly in the area of operations management. His current research focuses on production planning problems (<http://www.rsm.nl/rjans>).

Felix Janszen (Chapter 11.2)

Felix Janszen has a PhD degree in Biochemistry from Erasmus University. He is Professor of Management of Technology at RSM Erasmus University. His research areas are technology management, innovation, complexity theory, and computer modelling (<http://www.rsm.nl/fjanszen>).

Ferdinand Jaspers (Chapter 5.4)

Ferdinand Jaspers received an MSc degree in Business Administration from RSM Erasmus University. He is a PhD student at RSM Erasmus University. His research interests include typological theories

and strategy and innovation in complex product settings (<http://www.rsm.nl/fjaspers>).

Hans Quak (Chapters 6.2 and 7.2)

Hans Quak obtained an MSc degree in Business Administration from RSM Erasmus University. Currently, he is a PhD student at RSM Erasmus University. His research interests include urban goods movements, city logistics, retail distribution, and sustainability (<http://www.rsm.nl/hquak>).

Florens Slob (Chapter 11.4)

Florens Slob received an MSc degree in Business Administration from RSM Erasmus University. His Master thesis project dealt with company standardization. Currently he is project manager at Van Gansewinkel Groep BV, specialists in waste management services, Eindhoven, the Netherlands.

Wendy Van der Valk (Chapter 9.2)

Wendy Van der Valk obtained an MSc degree in Industrial Engineering and Management Science from Eindhoven University of Technology, the Netherlands. She is a PhD candidate at RSM Erasmus University. Her research deals with buyer–supplier interaction in purchasing and developing business services (<http://www.rsm.nl/wvalk>).

Henk J. De Vries (Chapter 11.4)

Henk J. De Vries obtained an MSc degree in Geodesy at Delft University of Technology, the Netherlands, and a PhD degree in Business Administration at Erasmus University. He is an Associate Professor of Standardization at RSM Erasmus University. His research and teaching concern standardization from a business point of view. His books include *Standardization – A Business Approach to the Role of National Standardization Organizations* (Kluwer Academic Publishers, 1999) (<http://www.rsm.nl/hdevries>).

Finn Wynstra (Chapter 9.2)

Finn Wynstra received a Licentiate-degree from Uppsala University, Sweden, and a PhD degree from Eindhoven University of Technology in the Netherlands. He is a Professor of Purchasing and Supply Management at RSM Erasmus University. His research focuses on the integration of supply and innovation processes, combining qualitative research methods with (experiment-based) survey studies. He is the co-author of two books; *Buying Business Services* (Wiley, 2002) and *Developing Sourcing Capabilities* (Wiley, 2005) (<http://www.rsm.nl/fwynstra>).

Preface: How to read this book

One way of reading and using this book is linear. This is recommended particularly if the book is used as a textbook. The reader could start with [Chapter 3](#) and then follow the development of the narrative through [Chapters 4](#), etc. If this book is used as a companion guide for students in the process of designing and conducting their own research project, we strongly recommend using the flowcharts which specify each separate stage of the project (see 1.4.2 “Suggestions for students” and [Appendix 3](#)). The contents of the boxes and the flowcharts are discussed and explained in the corresponding chapters of the book.

Some readers might be interested in reading about specific topics only. [Tables 1.3](#) and [1.5](#) map the contents of this book in such a way that these readers will be able to locate the text parts that are relevant to them.

Our approach to research in general and the case study in particular is characterized by a consistent conceptual structure which is only partly visible in the linear structure of the text. This conceptual structure is made explicit in the Glossary (see [Appendix 5](#)) which contains definitions of all important terms. **Bold print** in the text refers to this glossary. Because some of our definitions differ considerably from definitions in the literature, we recommend the reader who encounters a term in **bold**, to *always* read the relevant entry in the glossary, and to follow the references to other terms in the glossary.



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

Part I

Introduction



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

Aims and overview of this book

1.1 Our definition of a case study

It is an understatement that there is confusion among students, teachers, researchers, and methodologists about the definition and the main characteristics of **case study research**. Case study research is presented by some as a strictly exploratory research strategy in which nothing can be proven, most often by referring to the alleged impossibility to “generalize”. Others, such as Yin (1984, 1994, 2003), have claimed that the problem of “generalization” can be solved and that, therefore, theories can also be tested in (preferably) “multiple case studies”. A major difficulty for students and novice case study researchers is that proponents of these different perspectives give different meanings to similar methodological terms without clearly defining these meanings, making it almost impossible to grasp the nature of the debate and to infer solutions to problems in designing their own research. Ragin (1992) has argued that the work of any given case study researcher often is characterized by some hybrid of various approaches, which are usually difficult to disentangle.

Most definitions of case study research, as found in the literature, are statements about the most frequently used measurement techniques (such as using “multiple sources of evidence”, or “qualitative methods”) and research objectives (such as “exploration”). Such definitions are attempts to capture in one statement the most important practical characteristics of a diverse array of studies that present themselves

as case studies. Yin's (2003: 13–14) definition is an example of such an all-inclusive descriptive definition: "A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between object of study and context are not clearly evident. It copes with the technically distinctive situation in which there will be many more variables of interest than data points, and as one result relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as another result benefits from the prior development of theoretical propositions to guide data collection and analysis".

But one methodological characteristic by which a case study is distinct from other research strategies such as the survey is not captured in Yin's work, or most other definitions found in the literature, namely the fact that a **case study** basically is an inquiry of only *one single instance* (the case), or sometimes a small number of instances, of the object of study. Yin's and others' definitions only highlight another distinctive characteristic of the case study, namely that in a case study the object of study or its environment are not manipulated ("**real life context**"). Our definition wants to capture both, and the two really distinctive features of the case study in comparison to the survey and the experiment create our definition of the case study:

A case study is a study in which (a) one case (single case study) or a small number of cases (comparative case study) in their real life context are selected, and (b) scores obtained from these cases are analysed in a qualitative manner.

With "study" we mean a research project in which a practice-oriented or theory-oriented research objective is formulated and achieved. With a **case** we mean an instance of an object of study. (We will explain our concept of "object of study" in [Chapter 3](#).) With "real life context" we mean the object of study as it occurs (or has occurred) in reality, without manipulation. With "analysis in a qualitative manner" we mean an analysis based on visual inspection of the scores of the case (in contrast to a statistical analysis).

We distinguish two main types of case study: the **single case study**, a case study in which data from one instance is enough to achieve the research objective, and the **comparative case study**, a case study that requires data from two or more instances to achieve the research objective.

Table 1.1

Main difference between the case study and the experiment

Case study	Experiment
Real life context	Manipulated

The difference between the **experiment** and the case study is that the experiment *manipulates* instances, whereas the case study does not. An experiment is a study in which one or more variable characteristics of an object of study are manipulated in one or multiple (“experimental”) instances of an object of study and in which scores obtained in the experimental instance or instances are analysed.

The **survey** also studies instances in their real life context. A survey is a study in which (a) a single population in the real life context is selected, and (b) scores obtained from this population are analysed in a quantitative (statistical) manner.

Our definition of the case study reflects our idea that the survey and the case study are different in two aspects; (a) the number of instances from which data are collected for the analysis, and, consequently, (b) the method of **data analysis**. The instances and data can be available from earlier studies (allowing for a secondary analysis) or it may be necessary to select new instances and collect new data. The case study draws conclusions on the basis of a “**qualitative**” **analysis** (“**visual inspection**”) of scores from one single instance (single case study) or from a small number of instances (comparative case study), whereas the survey draws conclusions on the basis of a **quantitative (statistical) analysis** of data from a population with a large number of instances. These main differences between the case study and the survey are summarized in [Table 1.2](#).

Our definition of the case study does *not* include statements on **data collection** or **measurement** techniques. In our view research strategies do not differ, in principle, in terms of methods of measurement. For all three research strategies discussed here, the data analysed can be quantitative or qualitative! Measurement methods that are usually associated with case studies, such as the “qualitative” interview and using “multiple sources of evidence”, could also be used in the other research strategies. Similarly, measurement methods that are usually associated with other research strategies, such as standardized questionnaires in surveys and quantitative measurements in experiments, could also be used in case studies. Principles of measurement and the quality criteria that apply to it, such as reliability and validity,

Table 1.2
Main differences between the case study and the survey

Case study	Survey
Small N	Large N
Qualitative data analysis ("visual inspection")	Quantitative data analysis (statistical)

apply to any measurement in any research strategy (see [Appendix 1](#): "Measurement"). Although in a case study quantitative data can be used to generate the scores to be analysed, the interpretation of scores of the (small number of) cases in order to generate the outcome of the study is done qualitatively (by visual inspection) and not statistically.

We do *not* limit case studies to the study of *contemporary* events, as suggested in, among others, Yin's definition of the case study. Our definition of the case study is applicable also to the study of instances (cases) of objects of study that existed or occurred in the past. Therefore, the study of instances of an object of study as occurring "in its real-life context" (as formulated in our definition) includes both the study of contemporary instances and of past instances.

In this book, thus, we discuss the case study as a **research strategy** defined by the number of instances ($N = 1$ or $N = \text{small}$) that is studied as well as the "qualitative" or non-statistical method of analysis of all kinds of (quantitative and qualitative) data.

1.2 Aims of the book

Our book has four main aims. One aim is to present to students and novice case study researchers a broad spectrum of types of case study research (including practice-oriented case studies, theory-building case studies and theory-testing case studies) in one consistent methodological framework. We define methodological notions (such as "theory", "theory-building", "theory-testing", "concept", "variable", "proposition", "hypothesis", "generalizability", "replication") and use our definition of these technical terms in a consistent way (see the glossary in [Appendix 5](#)). We describe in detail how to design and conduct different types of case study research. In that sense this book is a *textbook* from which readers can learn how to conduct a case study (see section 1.4.2 "Suggestions for students" on how to use this book as a textbook).

A second aim of this book is to contribute to the methodological debate about the appropriateness of the case study as a research