CRANFIELD UNIVERSITY

CRANFIELD UNIVERSITY LIBRARY

FRED LEMKE

Exploring the Link between Relationship Quality and Loyalty

Gaining Insights into Manufacturer-Supplier Relationships

SCHOOL OF MANAGEMENT

PhD THESIS

CRANFIELD UNIVERSITY

SCHOOL OF MANAGEMENT

Marketing Department

PhD THESIS

Academic Year 2002-2003

FRED LEMKE

Exploring the Link between Relationship Quality and Loyalty

Gaining Insights into Manufacturer-Supplier Relationships

Supervisor: Prof. Martin Christopher

February 2003

This thesis is submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy

Dedication Note

I would like to dedicate this thesis to two exceptional people who are very important to me:

To my mother, Edith, who gently introduced me to the concept of life-long learning and inspired me to explore the world. Whenever I found myself in a disturbing situation, she had something valuable to say (like "If you are down on your luck, things go from bad to worse"). Whatever the saying, it gave shape to my experience in a rhetorical way and with it, she was able to provide me with another perspective. She so badly wanted to see her son completing his studies. Now it is done, wherever you are.

And to my wife, Silvia, who gave me the motivation to complete the thesis and showed me the way home.

This is for both of you…

Acknowledgements

"Well, I guess this is it..."

... I have heard myself saying this morning. Today is the 24th December 2002. A nice day to write the acknowledgements, don't you think?

Typically writers start to acknowledge their close family members, extending their appreciation to people who contributed to the PhD through a professional association, and closing by listing people who in some way influenced the outcome positively. Still, quite often I wondered how people manage to write this section so well. I think I might struggle with this. Is it because I have mentioned my family on the previous page already? I don't know, but let me step away from this.... and... well, thinking about 'struggling' – the first 'Thank You' has to go to John Towriss. John and I used to go mountain biking at weekends. At times, these occasions turned out to be quite philosophical (no, it is not the debate about "to push or not to push" when facing a steep hill!). It typically started by John asking, "Fred, why is it more difficult to ride a mountain bike when having a pound of weight more on your bike than on your body?" Hmmmmmmm.

I am grateful for John asking questions like these. Believe it or not, they are able to keep a tired mind occupied for quite some time. They offered a tremendous amount of fun and tons of excitement when longing to be on the way home, I seem to remember. However, just before the creative imagination was able shake hands with hard physics, our 1½ hour biking session was over. Personally, I couldn't care less what the answer was. But, if somebody out there knows it, please get in touch with us (before I lose more sleep over this!!). John, I have heard you got a new and lighter bike. Now, I have learned that certain things have to be accepted as they are. Believe me, you are just fast, no matter what.

John helped me a great deal in designing Stages II and III of the research (more about that later). So, thank you at this point.

The second 'Thank You' goes to Keith Goffin. Keith offered me a job at Cranfield as a Research Assistant in the Operations and Project Management Group. He specifically facilitated designing Stages I and II. Furthermore, he taught me how to structure arguments in a logical way. If you find any inconsistencies in the structure of the argument, blame him! Well, joke apart: Thank you!

The next acknowledgement goes to Marek Szwejczewski, who helped in planning Stage I and as my boss for the last past year, covered my back when I was completing the PhD. It would have taken ages otherwise. His constructive criticism was and is always appreciated. We'll keep in touch and will conduct great research together!

Mike Sweeney, how could I exclude him from the acknowledgements? As Head of the Department he is certainly a man with rich real-life experience. Nothing can replace that and his understanding when losing my mother and 'putting first things first' is truly appreciated. Besides, he is the one who is able to put the humour of 'Dinner for One' into context. In Germany, we get to see the 30 mins. sketch on all national TV channels on New Year's Eve. (without any subtitles. Nevertheless, my mother still used to laugh!). The funny performance seems to have grown on me over time and today, I would like to believe that I am laughing louder than Mike when seeing it (with the aid of a bottle of red wine, I have to admit). Thank you for your understanding, Mike!

Yet another 'Thank You' goes to Colin Pilbeam and with him, the Research Office. Colin told me that the loss of a close relative, moving house, changing supervisors, getting married, and changing jobs are the five heart attacks one could imagine. Certainly, none of them would be helpful when conducting a PhD.

I have changed my supervisor six times (no, it wasn't my fault!), I have moved house four times (I liked all of them), got married once (and it will stay that way!), and changed jobs twice (life is so exciting). The kind enquiries about the Status Quo of the PhD are also appreciated; they certainly helped me to stay focussed! And yes Colin, I am on time for handing in my thesis! Puh...

The final 'Thank You' goes to Martin Christopher. As my supervisor, he knew when tied guidance was needed and 'when to let go to explore' was required (and boy, I needed lots of the latter). Questions like "Fred, how do you know? Wouldn't it be better to ask...?" are truly appreciated (not!). To cut a long story short, the PhD thesis would still be in pieces without him, so thank you very much!

Hmmmmm, I think we have reached the end of the acknowledgements, I'm afraid. Somebody clever told me that 'reading a PhD is one of the most boring things in the world.' This one won't be an exception, I fear. Why should it be different? I hope you will enjoy it anyway.

From now on it will be 'third person language' (Fred Lemke turns into "the researcher"), 'highly objective' ("this leaf is definitely green!") ... and .. hmmm... I think you know the drill.

Finally, in the third year of the PhD programme I quickly learned that the best answer to "how far are you into your studies?" is, "I am in my final year." I have hang on to this answer for two further years. However, I guess this is it... enjoy!

(Fred Lemke)

Kirchheim unter Teck, Germany, 24th December 2002

Abstract

Manufacturers across industry sectors are gradually reducing their supplier base. Consequently, suppliers need an appropriate strategy to ensure preferred supplier status. It is argued, that 'softer' – or more intangible – relationship factors potentially have the power to distinguish suppliers. But what are the intangible factors? How does a customer value them? Do they have an impact on the supplier selection process at all? Questions like these describe an area that has become a topic of considerable debate.

Surprisingly, the relationship quality idea, although recognised as an important concept, has hardly received any empirical attention. Therefore, the research question of the present PhD project is stated as follows: *In commercial customer-supplier relationships, what is relationship quality (RQ) from the customer's standpoint and how does it relate to the customer's loyalty?* The researcher explored the question in three German industry sectors: 1) Engineering, 2) Electronics, and 3) Process.

Studies concerned with softer aspects of business-to-business relationships as well as research dealing with supplier selection processes are typically based on preconceived views. Condensing the understanding of relationship quality to a narrow and ambiguous definition, however, would simplify a complex issue. This thesis represents the first study that has explored in-depth the relationship quality concept and its influence on the customer's loyalty.

The research comprised three stages. The first stage was a telephone survey of German managers involved in supplier management. The aim was to explore key issues of supplier management such as determining the way suppliers are selected and capturing views on supplier relationships.

The second stage was concerned with the exploration of the quality of supplier relationships in detail and the case study approach was the chosen research strategy. The researcher conducted plant visits that included analysis of company documents and in-depth interviews. These were guided by the repertory grid technique. It was found that manufacturers rely on three tangible measures alone when selecting suppliers – price, product quality, and delivery performance. Furthermore, manufacturers have a clear view as to what high-quality supplier relationships are made of.

The third stage determined the link between the quality of relationships and the manufacturer's loyalty. The researcher employed an experimental research strategy in the form of a conjoint analysis. Participants evaluated suppliers based on the three tangible and a selection of intangible relationship quality criteria. The study uncovered to what extent the softer relationship quality factors come (unconsciously) into play in the process of selecting long-term supplier relationships.

Table of Contents – Brief Overview

Page

1 INTRODUCTION 1
1.1 RESEARCH CONTEXT 2
1.2 RESEARCH RATIONALE AND OBJECTIVES 9
1.3 THE STRUCTURE OF THE THESIS 11
1.4 SUMMARY AND CONCLUSIONS 12

2 LITERATURE REVIEW 14
2.1 INTRODUCTION 14
2.2 RELATIONSHIP MARKETING AND SUPPLY CHAIN MANAGEMENT 15
2.3 BUSINESS RELATIONSHIPS 24
2.4 QUALITY MANAGEMENT: FROM PRODUCT TO RELATIONSHIP 37
2.5 PSYCHOLOGICAL CONSIDERATIONS 48
2.6 LOYALTY 59
2.7 EVALUATING ALTERNATIVES AND MAKING A CHOICE 62
2.8 RELATIONSHIP QUALITY-LOYALTY LINK 73
2.9 SUMMARY AND CONCLUSIONS 79

3 RESEARCH QUESTION AND PHILOSOPHICAL STANCE 83
3.1 INTRODUCTION 83
3.2 RESEARCH QUESTION 83
3.3 PHILOSOPHICAL STANCE 84
3.4 SUMMARY AND CONCLUSIONS 87

4 RESEARCH STRATEGY AND METHODOLOGY – OVERVIEW 88
4.1 INTRODUCTION 88
4.2 RESEARCH STRATEGY 88
4.3 METHODOLOGY 90
4.4 SUMMARY AND CONCLUSIONS 91

5 STAGE I: KEY ISSUES OF SUPPLIER MANAGEMENT AND THE APPROPRIATENESS OF THE RESEARCH QUESTION FROM A PRACTICAL VIEWPOINT 92
5.1 INTRODUCTION 93
5.2 RESEARCH STRATEGY: SURVEY 93
5.3 METHODOLOGY (QUALITATIVE) – TELEPHONE INTERVIEWING 94

5.4 SAMPLE AND UNIT OF ANALYSIS 96
5.5 DATA ANALYSIS 98
5.6 FINDINGS 106
5.7 DISCUSSION OF FINDINGS AGAINST THE BODY OF KNOWLEDGE 115
5.8 LIMITATIONS OF STAGE I 118
5.9 SUMMARY AND CONCLUSIONS 119

6 STAGE II: EXPLORING THE QUALITY OF SUPPLIER-MANUFACTURER RELATIONSHIPS 121

6.1 INTRODUCTION 122
6.2 RESEARCH STRATEGY: CASE STUDY 122
6.3 METHODOLOGY (QUALITATIVE) – IN-DEPTH INTERVIEWING, DOCUMENTS, PLANT VISIT 123
6.4 SAMPLE AND UNIT OF ANALYSIS 142
6.5 DATA ANALYSIS 150
6.6 FINDINGS 162
6.7 DISCUSSION OF FINDINGS AGAINST THE BODY OF KNOWLEDGE 184
6.8 LIMITATIONS OF STAGE II 189
6.9 SUMMARY AND CONCLUSIONS 192

7 STAGE III: DETERMINING THE LINK BETWEEN RELATIONSHIP QUALITY AND LOYALTY 195

7.1 INTRODUCTION 196
7.2 RESEARCH STRATEGY: EXPERIMENT 196
7.3 METHODOLOGY (QUANTITATIVE) – CONJOINT ANALYSIS 197
7.4 SAMPLE AND UNIT OF ANALYSIS 222
7.5 DATA ANALYSIS 237
7.6 FINDINGS 247
7.7 DISCUSSION OF FINDINGS AGAINST THE BODY OF KNOWLEDGE 299
7.8 LIMITATIONS OF STAGE III 302
7.9 SUMMARY AND CONCLUSIONS 306

8 SUMMARY AND CONCLUSIONS 308

8.1 INTRODUCTION 308
8.2 PHD PROJECT PROGRESS 308
8.3 CONTRIBUTION OF THE RESEARCH 313
8.4 LIMITATIONS OF THE STUDY 320
8.5 SUGGESTIONS FOR FUTURE RESEARCH 321

9 APPENDICES 324

10 REFERENCES 347

Table of Contents – Detailed

Page

1 INTRODUCTION 1

1.1 RESEARCH CONTEXT 2

1.1.1 Country Background: Germany 3

1.1.2 Selected Industry Sectors: Engineering; Electronics; Process 4

1.1.3 The Association with the International Best Factory Awards Deutschland 6

1.1.4 Selected Type of Organisation: Medium-Sized Companies (Plant Level) 7

1.2 RESEARCH RATIONALE AND OBJECTIVES 9

1.3 THE STRUCTURE OF THE THESIS 11

1.4 SUMMARY AND CONCLUSIONS 12

2 LITERATURE REVIEW 14

2.1 INTRODUCTION 14

2.2 RELATIONSHIP MARKETING AND SUPPLY CHAIN MANAGEMENT 15

2.2.1 Relationship Marketing 15

2.2.2 Supply Chain Management 21

2.3 BUSINESS RELATIONSHIPS 24

2.3.1 Relationship Structures 26

2.3.2 The Relationship Life Cycle 29

2.3.3 Special Form of Business Relationship: Partnerships 32

2.3.3.1 Partnership Definitions 33

2.3.3.2 The Nature of Partnerships 34

2.3.3.3 Partnerships as a Close Form of Relationship 35

2.4 QUALITY MANAGEMENT: FROM PRODUCT TO RELATIONSHIP 37

2.4.1 Product Quality 39

2.4.2 Service Quality 40

2.4.3 Relationship Quality 42

2.5 PSYCHOLOGICAL CONSIDERATIONS 48

2.5.1 Attitude 50

2.5.2 Behaviour 55

2.5.3 Synthesis of Attitude and Behaviour: An Integrated Discussion 56

2.6 LOYALTY 59

2.7 EVALUATING ALTERNATIVES AND MAKING A CHOICE 62

2.7.1 Problem Solving and Decision Making Processes 62

2.7.2 Selecting Suppliers 65

2.7.3 Buying Scenarios 69

2.8 RELATIONSHIP QUALITY-LOYALTY LINK 73

2.9 SUMMARY AND CONCLUSIONS 79

3 RESEARCH QUESTION AND PHILOSOPHICAL STANCE 83

3.1 INTRODUCTION 83

3.2 RESEARCH QUESTION 83

3.3 PHILOSOPHICAL STANCE 84

3.4 SUMMARY AND CONCLUSIONS 87

4 RESEARCH STRATEGY AND METHODOLOGY – OVERVIEW 88

4.1 INTRODUCTION 88

4.2 RESEARCH STRATEGY 88

4.3 METHODOLOGY 90

4.4 SUMMARY AND CONCLUSIONS 91

5 STAGE I: KEY ISSUES OF SUPPLIER MANAGEMENT AND THE APPROPRIATENESS OF THE RESEARCH QUESTION FROM A PRACTICAL VIEWPOINT 92

5.1 INTRODUCTION 93
5.2 RESEARCH STRATEGY: SURVEY 93
5.3 METHODOLOGY (QUALITATIVE) – TELEPHONE INTERVIEWING 94
5.4 SAMPLE AND UNIT OF ANALYSIS 96
5.4.1 Sample 96
5.4.2 Unit of Analysis 98
5.5 DATA ANALYSIS 98
5.5.1 Transcribing 99
5.5.2 Analysis of Qualitative Data 100
5.5.2.1 Contact Summary Sheet 100
5.5.2.2 Codes and Coding 102
5.5.2.3 Pattern Coding 104
5.6 FINDINGS 106
5.6.1 The Importance of Supplier-Management Today and The Trend 106
5.6.2 Supplier Selection: Individuals Involved, Process and Criteria 107
5.6.3 The Nature of Supplier-Manufacturer Relationships 111
5.6.4 The Change of Supplier-Manufacturer Relationships 114
5.7 DISCUSSION OF FINDINGS AGAINST THE BODY OF KNOWLEDGE 115
5.8 LIMITATIONS OF STAGE I 118
5.9 SUMMARY AND CONCLUSIONS 119

6 STAGE II: EXPLORING THE QUALITY OF SUPPLIER-MANUFACTURER RELATIONSHIPS 121

6.1 INTRODUCTION 122
6.2 RESEARCH STRATEGY: CASE STUDY 122
6.3 METHODOLOGY (QUALITATIVE) – IN-DEPTH INTERVIEWING, DOCUMENTS, PLANT VISIT 123
6.3.1 In-depth Interviewing 125
6.3.1.1 Fully structured Interview 127
6.3.1.2 Unstructured/Informal Interview Technique Conducted in the Form of Repertory Grids 127
6.3.1.2.1 Elicitation of Elements 131
6.3.1.2.2 Elicitation of Constructs 133
6.3.1.2.3 Construction of the Matrix (Grid) 137
6.3.1.2.4 The Meaning of Constructs 138
6.3.1.3 Semi-structured Interview Technique 139
6.3.2 Document Analysis 140
6.3.3 Plant Visit 142
6.4 SAMPLE AND UNIT OF ANALYSIS 142
6.4.1 Sample 142
6.4.2 Unit of Analysis 149
6.5 DATA ANALYSIS 150
6.5.1 Transcribing 150
6.5.2 Analysis of Qualitative Data 151
6.5.2.1 Contact Summary Sheet 151
6.5.2.2 Codes and Coding and Pattern Coding 152
6.5.2.3 Memoing 152
6.5.2.4 Case Analysis Meeting 153
6.5.2.5 Prestructured Case 154
6.5.2.6 Repertory Grid Analysis 155
6.5.2.7 Document Analysis 162
6.5.2.8 Plant Tour 162

6.6 FINDINGS 162
6.6.1 Important Relationship Quality Constructs 162
6.6.2 The Meaning of the Most Important Relationship Quality Constructs 172
6.6.3 The Nature of Supplier-Manufacturer Relationships 175
6.6.4 The Change of Supplier-Manufacturer Relationships 178
6.6.5 Supplier Selection: Individuals Involved, Process, and Criteria 180
6.6.6 Defining the Modified Re-buy Scenario 183
6.7 DISCUSSION OF FINDINGS AGAINST THE BODY OF KNOWLEDGE 184
6.8 LIMITATIONS OF STAGE II 189
6.9 SUMMARY AND CONCLUSIONS 192

7 STAGE III: DETERMINING THE LINK BETWEEN RELATIONSHIP QUALITY AND LOYALTY 195

7.1 INTRODUCTION 196
7.2 RESEARCH STRATEGY: EXPERIMENT 196
7.3 METHODOLOGY (QUANTITATIVE) – CONJOINT ANALYSIS 197
7.3.1.1 Attributes 199
7.3.1.2 Levels 200
7.3.1.3 Attribute-Level Combinations 201
7.3.1.4 Presentation of Stimuli 201
7.3.1.4.1 Type of Presentation 201
7.3.1.4.2 Design Issues 205
7.3.2 ACA – Adaptive Conjoint Analysis 207
7.3.2.1 Background 207
7.3.2.2 Design Issues – The Different Sections of ACA 209
7.3.2.2.1 Introduction 209
7.3.2.2.2 Preference Ratings 213
7.3.2.2.3 Attribute Importance 214
7.3.2.2.4 Paired-Comparisons 215
7.3.2.2.5 Calibrating Concepts 217
7.3.2.2.6 Feedback 219
7.4 SAMPLE AND UNIT OF ANALYSIS 222
7.4.1 Sample 222
7.4.1.1 English Pre-Pilot Test 223
7.4.1.2 German Pre-Pilot Test 231
7.4.1.3 Pilot Focus Company 232
7.4.1.4 Actual Sample 234
7.4.2 Unit of Analysis 236
7.5 DATA ANALYSIS 237
7.5.1 Supplier Profiles in an Orthogonal Design 238
7.5.2 Supplier Selection Simulation 241
7.5.2.1 First Choice 241
7.5.2.2 Share of Preference 243
7.5.2.3 Randomised First Choice 244
7.5.2.4 Supplier Selection Likelihood 245
7.5.3 Average Utility Values of Supplier Attributes 245
7.5.4 Average Importance of Supplier Attributes 246
7.6 FINDINGS 247
7.6.1 Focus Company 248
7.6.1.1 Supplier Selection Simulation 248
7.6.1.1.1 First Choice Model 248
7.6.1.1.2 Share of Preference Model 252
7.6.1.1.3 Randomised First Choice Model 254
7.6.1.1.4 Supplier Selection Likelihood 256
7.6.1.1.5 Overview of the Four Analysis Models 258
7.6.1.2 Analysing Potential Links Between Respondents and Supplier Attributes 260

7.6.1.3 Performance-Relationship Quality Matrix 267
7.6.1.3.1 Average Utility Values of Supplier Attributes 267
7.6.1.3.2 Average Importance of Supplier Attributes 270
7.6.1.3.3 The Performance-Relationship Quality Matrix 271
7.6.1.4 Summary of Findings 277
7.6.2 Actual Study 278
7.6.2.1 Supplier Selection Simulation 278
7.6.2.1.1 First Choice Model 278
7.6.2.1.2 Share of Preference Model 279
7.6.2.1.3 Randomised First Choice 279
7.6.2.1.4 Supplier Selection Likelihood 280
7.6.2.1.5 Overview of the Four Analysis Models 281
7.6.2.2 Analysing Potential Links Between Respondents and Supplier Attributes ..281
7.6.2.3 Performance-Relationship Quality Matrix 282
7.6.2.3.1 Average Utility Values of Supplier Attributes 282
7.6.2.3.2 Average Importance of Supplier Attributes 285
7.6.2.3.3 The Matrix 286
7.6.3 An Integrated Overview (Focus Company and Actual Sample) 290
7.6.4 Reliability and Validity of the Conjoint Analysis 294
7.7 DISCUSSION OF FINDINGS AGAINST THE BODY OF KNOWLEDGE 299
7.8 LIMITATIONS OF STAGE III 302
7.9 SUMMARY AND CONCLUSIONS 306

8 SUMMARY AND CONCLUSIONS 308

8.1 INTRODUCTION 308
8.2 PHD PROJECT PROGRESS 308
8.3 CONTRIBUTION OF THE RESEARCH 313
8.3.1 Contribution – Methodology 313
8.3.2 Contribution – Theory 316
8.3.3 Contribution – Practice 318
8.4 LIMITATIONS OF THE STUDY 320
8.5 SUGGESTIONS FOR FUTURE RESEARCH 321

9 APPENDICES 324

10 REFERENCES 347

Table of Figures, Tables and Appendix

Figures

Page

FIGURE 1-1: STRUCTURE OF THESIS 11
FIGURE 2-1: MAPPING THE LITERATURE FIELDS 14
FIGURE 2-2: THE LITERATURE FOCUS OF SECTION 2.2 15
FIGURE 2-3: DIMENSIONS OF RELATIONSHIP MARKETING 16
FIGURE 2-4: THE RELATIONSHIP MARKETING LADDER OF LOYALTY. 18
FIGURE 2-5: THE SIX MARKETS MODEL – A BROADENED VIEW OF MARKETING 19
FIGURE 2-6: CUSTOMER SERVICE INPUTS 22
FIGURE 2-7: THE INTEGRATED SUPPLY CHAIN 23
FIGURE 2-9: THE MULTIPLE PATHS TO SUPPLY CHAIN INTEGRATION 25
FIGURE 2-10: THE SUPPLY/MARKETING CHANNEL 26
FIGURE 2-11: CONNECTED RELATIONS FOR FIRMS IN A DYADIC RELATIONSHIP 27
FIGURE 2-12: CHANGES IN THE RELATIONSHIP CENTRE OVER TIME 28
FIGURE 2-13: MAINTAINING THE RELATIONSHIP LIFE CYCLE 31
FIGURE 2-14: THE RANGE OF SUPPLIER RELATIONSHIPS 34
FIGURE 2-15: TYPES OF RELATIONSHIP 35
FIGURE 2-16: THE LITERATURE FOCUS OF SECTION 2.4 37
FIGURE 2-17: THE PRODUCT SURROUND 38
FIGURE 2-18: THE LITERATURE FOCUS OF SECTION 2.5 48
FIGURE 2-19: HIERARCHICAL MODEL OF ATTITUDE 50
FIGURE 2-20: A MODIFIED MODEL OF ATTITUDE 51
FIGURE 2-21: SCHEMATIC PRESENTATION OF CONCEPTUAL FRAMEWORK RELATING BELIEFS, ATTITUDES, INTENTIONS, AND BEHAVIOURS WITH RESPECT TO A GIVEN OBJECT 52
FIGURE 2-22: RELATIONSHIP QUALITY AND LOYALTY: ATTITUDE CONSIDERATIONS 53
FIGURE 2-23: THE SIMPLIFIED ATTITUDE DIMENSION: FOCUS ON INTENTION 54
FIGURE 2-24: THE SIMPLIFIED BEHAVIOUR DIMENSION 55
FIGURE 2-25: THE LITERATURE FOCUS OF SECTION 2.6 59
FIGURE 2-27: THE LITERATURE FOCUS OF SECTION 2.7 62
FIGURE 2-28: PROBLEM SOLVING AND DECISION MAKING 63
FIGURE 2-29: ORGANISATIONAL DECISION SITUATIONS 65
FIGURE 2-30: THE LITERATURE FOCUS OF SECTION 2.8 73
FIGURE 4-1: THE RESEARCH STRATEGIES AND THE UNDERLYING GOALS 89
FIGURE 5-1: STAGE I OF THE RESEARCH 92
FIGURE 5-2: CONTACT SUMMARY SHEET OF STAGE I 101
FIGURE 5-3: NVIVO DIAGRAM OF QUESTION 7 (DESCRIPTION OF RELATIONSHIP) – STAFF AND LOGISTICS EXECUTIVE IN THE ELECTRONICS INDUSTRY 103
FIGURE 5-4: NVIVO DIAGRAM OF QUESTION 7 (DESCRIPTION OF RELATIONSHIP) – PURCHASING MANAGER IN THE ENGINEERING INDUSTRY 105
FIGURE 5-5: PERCEPTION OF THE IMPORTANCE OF SUPPLIER MANAGEMENT 106
FIGURE 5-6: A FIVE-STEP SUPPLIER SELECTION PROCESS – STAGE I 109
FIGURE 5-7: THE NATURE OF SUPPLIER-MANUFACTURER RELATIONSHIPS 113
FIGURE 5-8: THE CHANGE OF SUPPLIER-MANUFACTURER RELATIONSHIPS 114
FIGURE 5-9: ROUGH POSITIONING OF DECISION METHODS IN SUPPLIER SELECTION 116
FIGURE 6-1: STAGE II OF THE RESEARCH 121
FIGURE 6-2: THE REPERTORY GRID MATRIX 129

FIGURE 6-3: CONSTRUCTS, CONCEPTS, CONSTRUING AND EVENTS IN THEORY AND APPLIED TO THE RESEARCH CONTEXT 130
FIGURE 6-4: ORDER OF TRIADS 136
FIGURE 6-5: EXPLICIT AND TACIT KNOWLEDGE AND THE REPERTORY GRID TECHNIQUE 137
FIGURE 6-6: THE DOCUMENT SUMMARY FORM 141
FIGURE 6-7: REPERTORY GRID INSTRUMENT - TOP VIEW 145
FIGURE 6-8: REPERTORY GRID INSTRUMENT - SIDE VIEW 145
FIGURE 6-9: CONTACT SUMMARY SHEET OF STAGE II 151
FIGURE 6-10: TRADITIONAL ANALYSIS SEQUENCE COMPARED WITH PRESTRUCTURED CASE 154
FIGURE 6-11: 5-POINT SCALES – THE SCALE USED FOR DATA COLLECTION AND THE SCALE USED FOR DATA ANALYSIS 155
FIGURE 6-12: FLEXIGRID PRINCIPLE COMPONENT ANALYSIS OF A MANAGING DIRECTOR IN ELECTRONICS 156
FIGURE 6-13: WEBGRID II PRINCIPLE COMPONENT ANALYSIS OF A PURCHASING MANAGER IN ELECTRONICS 158
FIGURE 6-14: WEBGRID II FOCUS ANALYSIS OF A REPERTORY GRID (MATERIALS MANAGER IN ENGINEERING IN GERMAN) 160
FIGURE 6-15: THE NATURE OF SUPPLIER-MANUFACTURER RELATIONSHIPS – DISCUSSION IN STAGE II 175
FIGURE 6-16: THE CHANGE OF SUPPLIER-MANUFACTURER RELATIONSHIPS – DISCUSSION IN STAGE II 178
FIGURE 6-17: A FIVE-STEP SUPPLIER SELECTION PROCESS – STAGE II 180
FIGURE 6-18: VENN DIAGRAM OF THE CONSTRUCTS OF THE QUALITY OF SUPPLIER RELATIONSHIPS 185
FIGURE 7-1: STAGE III OF THE RESEARCH 195
FIGURE 7-2: KEY DECISIONS WHEN CONDUCTING A CONJOINT ANALYSIS 198
FIGURE 7-3: EXAMPLES OF THE TRADE-OFF AND FULL-PROFILE METHODS OF PRESENTING STIMULI 202
FIGURE 7-4: FULL PROFILE CONJOINT ANALYSIS 203
FIGURE 7-5: CENTRAL ROLE OF VALUE SYSTEM IN CONJOINT ANALYSIS 206
FIGURE 7-6: INITIAL ENTRY SCREEN OF THE ON-LINE SURVEY 210
FIGURE 7-7: FUNCTION AND INDUSTRY SECTOR QUESTIONS OF THE ON-LINE SURVEY 211
FIGURE 7-8: DESCRIPTION OF THE BACKGROUND OF THE ON-LINE SURVEY 212
FIGURE 7-9: INITIAL PREFERENCE RATING QUESTION OF THE ON-LINE SURVEY 213
FIGURE 7-10: ATTRIBUTE IMPORTANCE QUESTION OF THE ON-LINE SURVEY 215
FIGURE 7-11: PAIRED COMPARISON QUESTION OF THE ON-LINE SURVEY 216
FIGURE 7-12: INITIAL CALIBRATING CONCEPT QUESTION OF THE ON-LINE SURVEY 218
FIGURE 7-13: INSTANT RESULT SCREEN OF THE ON-LINE SURVEY 219
FIGURE 7-14: FEEDBACK QUESTION OF THE ON-LINE SURVEY 220
FIGURE 7-15: COMMENT QUESTION OF THE ON-LINE SURVEY 221
FIGURE 7-16: 'THANK YOU NOTE' FOR THE RESPONDENT AND FINAL INFORMATION THAT THE SURVEY HAS BEEN COMPLETED SUCCESSFULLY 222
FIGURE 7-17: ENTRY SCREEN - THE CHOICE OF TWO DIFFERENT DISPLAY RESOLUTIONS 225
FIGURE 7-18: AMENDED PREFERENCE RATING QUESTION OF THE ON-LINE SURVEY 226
FIGURE 7-19: AMENDED CALIBRATING CONCEPT QUESTION OF THE ON-LINE SURVEY 227
FIGURE 7-20: THE MENU-BAR OF THE ONLINE SURVEY (EXAMPLE OF THE PREFERENCE RATING QUESTION) 228
FIGURE 7-21: THE ANATOMY OF A CONFIDENCE INTERVAL 250
FIGURE 7-22: PERFORMANCE-RELATIONSHIP QUALITY MATRIX (FOCUS COMPANY) 275
FIGURE 7-23: PERFORMANCE-RELATIONSHIP QUALITY MATRIX (ACTUAL SAMPLE) 289
FIGURE 7-24: COMPARING SELECTION AREAS OF FOCUS COMPANY AND ACTUAL SAMPLE 290

Tables

Page

TABLE 1-1: REDUCTION IN THE NUMBER OF SUPPLIERS BY COMPANIES AND INDUSTRY SECTORS ... 1
TABLE 1-2: GERMAN IMPORTS AND EXPORTS LISTED BY THE INTERNATIONAL GOODS REGISTER FOR 1997 ... 4
TABLE 1-3: TURNOVER MANUFACTURING INDUSTRY FOR 1997 ... 5
TABLE 1-4: SAMPLING POOL OF THE STUDY – 1997 IBFA-D DATA ... 7
TABLE 2-1: TRANSACTION FOCUS AND RELATIONSHIP FOCUS ... 17
TABLE 2-2: SUPPLY CHAIN MANAGEMENT COMPONENTS ... 21
TABLE 2-3: THE PHASES OF THE RELATIONSHIP LIFE CYCLE ... 30
TABLE 2-4: DIFFERENT VIEWS ON THE PARTNERSHIP CONCEPT ... 33
TABLE 2-5: PERCEPTIONS OF VALUES – THE CHANGING NATURE OF PRODUCTS ... 37
TABLE 2-6: PRODUCT QUALITY DIMENSIONS ... 39
TABLE 2-7: SERVICE QUALITY DIMENSIONS ... 40
TABLE 2-8: DIFFERENT VIEWS ON RELATIONSHIP QUALITY ... 42
TABLE 2-9: COMPARING THE BEHAVIOURIST POSTION WITH THE COGNITIVE POSITION ... 49
TABLE 2-10: DIFFERENT TYPES OF EVALUATIVE RESPONSE ... 52
TABLE 2-11: FOUR ENTITIES COMPARED ACROSS ATTITUDE AND BEHAVIOUR ... 57
TABLE 2-12: THE DIVERSITY OF LOYALTY DEFINITIONS ... 60
TABLE 2-13: TRADITIONAL PURCHASING VS. SUPPLIER MANAGEMENT ... 67
TABLE 2-14: PURCHASE TYPES ... 71
TABLE 2-15: MEASURES FOR TRACKING SUPPLIER PERFORMANCE ... 76
TABLE 4-1: DIFFERENTIATING CHARACTERISTICS OF QUANTITATIVE AND QUALITATIVE APPROACHES ... 90
TABLE 5-1: INTERVIEW QUESTIONS CONCERNING (A) THE IMPORTANCE OF SUPPLIER MANAGEMENT, (B) SELECTING SUPPLIERS, AND (C) SUPPLIER RELATIONSHIPS ... 95
TABLE 5-2: STRUCTURE OF SAMPLE BY INTERVIEWEE FUNCTION ... 97
TABLE 5-3: STRUCTURE OF SAMPLE BY INDUSTRY SECTOR ... 98
TABLE 5-4: TYPICAL FUNCTIONS INVOLVED IN SELECTION PROCESS ... 107
TABLE 5-5: TYPICAL STEPS TAKEN IN THE SUPPLIER SELECTION PROCESS ... 108
TABLE 5-6: SELECTION CRITERIA ... 110
TABLE 5-7: RELATIONSHIP CHARACTERISTICS ... 111
TABLE 6-1: DATA COLLECTION ACTIVITIES AND THE CASE STUDY RESEARCH STRATEGY ... 123
TABLE 6-2: POTENTIAL QUALITATIVE RESEARCH METHODS FOR EXPLORING PERSONAL CONSTRUCTS ... 124
TABLE 6-3: TRIAD COMBINATIONS BY NUMBER OF ELEMENTS ... 135
TABLE 6-4: SAMPLE STRUCTURE OF PRE-PILOTS (CONVENIENCE SAMPLE) ... 143
TABLE 6-5: STRUCTURE OF SAMPLE BY INTERVIEWEE FUNCTION ... 147
TABLE 6-6: EXPERIENCE IN MANAGING AND SELECTING SUPPLIERS ... 147
TABLE 6-7: STRUCTURE OF SAMPLE BY INDUSTRY SECTOR ... 147
TABLE 6-8: RELATIONSHIP QUALITY CONSTRUCTS IN FREQUENCY ORDER (ENGLISH AND GERMAN) ... 166
TABLE 6-9: RELATIONSHIP QUALITY CONSTRUCTS IN VARIABILITY ORDER ... 168
TABLE 6-10: THE AGGREGATE MEAN VALUES OF THE RELATIONSHIP QUALITY CONSTRUCTS WITH REGARD TO THE HIGH AND LOW RQ CLASSES ... 170
TABLE 6-11: THE ORIGINAL 21 RQ CONSTRUCTS - OVERVIEW ... 171
TABLE 7-1: SAMPLE STRUCTURE OF THE ENGLISH STAGE III PRE-PILOTS ... 223
TABLE 7-2: UNREALISTIC/PROBLEMATIC ATTRIBUTE-LEVEL COMBINATIONS ... 229
TABLE 7-3: SAMPLE STRUCTURE OF THE GERMAN PRE-PILOTS (CONVENIENCE SAMPLE OF STAGE III) ... 231
TABLE 7-4: STRUCTURE OF SAMPLE BY RESPONDENT FUNCTION ... 235
TABLE 7-5: STRUCTURE OF SAMPLE BY INDUSTRY SECTOR ... 235
TABLE 7-6: ORTHOGONAL DESIGN OF HYPOTHETICAL SUPPLIERS ... 239
TABLE 7-7: FIRST CHOICE MODEL - EXAMPLE OF A PRODUCT BASED ON TWO ATTRIBUTES AND THREE ATTRIBUTE LEVELS ... 241

TABLE 7-8: ATTRIBUTE IMPORTANCE – AN EXAMPLE 246
TABLE 7-9: FIRST CHOICE MODEL – SUPPLIER SHARES OF PREFERENCE (FOCUS COMPANY) 249
TABLE 7-10: SUPPLIER SHARES OF PREFERENCE (PILOT SAMPLE) 252
TABLE 7-11: ABOVE-AVERAGE SUPPLIER SHARES OF PREFERENCE IN THE ORDER OF SHARES (PILOT SAMPLE) 253
TABLE 7-12: RANDOMISED FIRST CHOICE (PILOT SAMPLE) 254
TABLE 7-13: ABOVE-AVERAGE RANDOMISED FIRST CHOICE (PILOT SAMPLE) 255
TABLE 7-14: SUPPLIER SELECTION LIKELIHOOD (PILOT SAMPLE) 256
TABLE 7-15: ABOVE-AVERAGE SUPPLIER SELECTION LIKELIHOOD (PILOT SAMPLE) 257
TABLE 7-16: OVERVIEW OF THE FOUR ANALYSIS MODELS (FOCUS COMPANY) 258
TABLE 7-17: THE TOP-4 SUPPLIER PROFILES SELECTED BY THE FOCUS COMPANY 259
TABLE 7-18: CORRELATIONS OF RESPONDENTS (FOCUS COMPANY) 261
TABLE 7-19: CORRELATIONS OF ATTRIBUTE LEVELS (FOCUS COMPANY) 263
TABLE 7-20: AVERAGE UTILITY VALUES OF SUPPLIER ATTRIBUTES (FOCUS COMPANY) 268
TABLE 7-21: AVERAGE IMPORTANCE OF SUPPLIER ATTRIBUTES (FOCUS COMPANY) 270
TABLE 7-22: AVERAGE UTILITY VALUES OF ALL SUPPLIERS (ORTHOGONAL DESIGN OF FOCUS COMPANY) 272
TABLE 7-23: THE PERFORMANCE UTILITY INDEX AND THE RELATIONSHIP QUALITY UTILITY INDEX OF ALL SUPPLIERS (FOCUS COMPANY) 274
TABLE 7-24: FIRST CHOICE MODEL – IN ORDER OF SUPPLIER SHARES OF PREFERENCE (ACTUAL SAMPLE) 278
TABLE 7-25: ABOVE-AVERAGE SUPPLIER SHARES OF PREFERENCE (ACTUAL SAMPLE) 279
TABLE 7-26: ABOVE-AVERAGE RANDOMISED FIRST CHOICE (ACTUAL SAMPLE) 279
TABLE 7-27: ABOVE-AVERAGE SUPPLIER SELECTION LIKELIHOOD (ACTUAL SAMPLE) 280
TABLE 7-28: OVERVIEW OF THE FOUR ANALYSIS MODELS (ACTUAL SAMPLE) 281
TABLE 7-29: AVERAGE UTILITY VALUES OF SUPPLIER ATTRIBUTES (ACTUAL SAMPLE) 283
TABLE 7-30: AVERAGE IMPORTANCE OF SUPPLIER ATTRIBUTES (ACTUAL SAMPLE) 285
TABLE 7-31: AVERAGE UTILITY VALUES OF ALL SUPPLIERS (ORTHOGONAL DESIGN OF ACTUAL SAMPLE) 287
TABLE 7-32: THE PERFORMANCE UTILITY INDEX AND THE RELATIONSHIP QUALITY UTILITY INDEX OF ALL SUPPLIERS (ACTUAL SAMPLE) 289
TABLE 7-33: AVERAGE IMPORTANCE OF SUPPLIER ATTRIBUTES OF ALL FUNCTIONS 292
TABLE 7-34: RELATIONSHIP QUALITY-PERFORMANCE INFLUENCE IN SUPPLIER SELECTION 293
TABLE 7-35: MEASURE OF FIT OF FOCUS COMPANY AND ACTUAL SAMPLE RESPONDENTS 295
TABLE 7-36: A PRIORI EXPECTATIONS OF PATH-WORTH UTILITIES 296
TABLE 7-37: EVALUATION OF CA SURVEY RESULTS 297

Appendices

APPENDIX 1: VALUE ADDED BY MEMBER STATE IN MANUFACTURING (ENGINEERING, AND ELECTRICS AND ELECTRICAL PARTS), 1994 324
APPENDIX 2: SELECTED INDUSTRY SECTORS 325
APPENDIX 3: THREE HIERARCHIES OF EFFECTS ON ATTITUDE 325
APPENDIX 4: REJECTED RESEARCH TECHNIQUES OF STAGE II 326
APPENDIX 5: IN-DEPTH INTERVIEWING – SCHEDULE AND ADDITIONAL INFORMATION OF REPERTORY GRID TECHNIQUE 331
APPENDIX 6: IN-DEPTH INTERVIEWING – SCHEDULE OF SEMI-STRUCTURED QUESTIONS 334
APPENDIX 7: INITIAL REPERTORY GRID RESEARCH INSTRUMENT (MATRIX AND MEASUREMENT SCALES) 337
APPENDIX 8: FIRST CHOICE – SUPPLIER SHARES OF PREFERENCE (ACTUAL SAMPLE) 339
APPENDIX 9: SUPPLIER SHARES OF PREFERENCE (ACTUAL SAMPLE) 340
APPENDIX 10: RANDOMISED FIRST CHOICE (ACTUAL SAMPLE) 341
APPENDIX 11: SUPPLIER SELECTION LIKELIHOOD (ACTUAL SAMPLE) 342
APPENDIX 12: THE TOP-7 SUPPLIERS (ACTUAL SAMPLE) 343
APPENDIX 13: CORRELATIONS OF ACTUAL SAMPLE RESPONDENTS 345
APPENDIX 14: CORRELATION OF ATTRIBUTE LEVELS (ACTUAL SAMPLE) 346

CHAPTER ONE

1 INTRODUCTION 1

1.1 RESEARCH CONTEXT 2

1.2 RESEARCH RATIONALE AND OBJECTIVES 9

1.3 THE STRUCTURE OF THE THESIS 11

1.4 SUMMARY AND CONCLUSIONS 12

1 Introduction

The focus of this research is on gaining an understanding of how the quality of customer-supplier relationships influences the customer's loyalty when selecting certain suppliers rather than others in business-to-business markets. More and more, manufacturers view suppliers as virtual extensions of their firm and, in doing so, they have significantly increased their reliance on suppliers. Lau et al. (1999: 573) argued recently, "understanding industrial buying behaviour is increasingly important to industrial marketers and researchers." Their notion holds particularly true in manufacturing, as the supplier bases become gradually reduced (see e.g., Leverick and Cooper, 1998; Christopher and Jüttner, 1998). The following tables highlight this tendency:

1-1a: Examples at Individual Companies

Company	Number of Suppliers		
	Previous	Current	%-Change
Xerox	5,000	500	90.00
Motorola	10,000	3,000	70.00
Digital Equipment	9,000	3,000	66.66
General Motors	10,000	5,500	45.00
Ford Motor	1,800	1,000	44.44
Texas Instruments	22,000	14,000	36.36
Rainbird	520	380	26.92
Allied Signal Aerospace	7,500	6,000	20.00

Source: Adapted from Emshwiller (1991), as cited in Sheth and Sharma (1997: 95).

1-1b: Examples in Industrial Sectors (UK)

Average Reduction	
Industrial Sector (UK)	Reduction in % (1991-95)
Process	36
Engineering	36
Electronics	35
Household	9

Source: Goffin et al. (1997: 429).

Table 1-1: Reduction in the Number of Suppliers by Companies and Industry Sectors

On the left-hand side, Table 1-1 shows that certain multinational companies reduced their supply bases significantly by 20%-90%. On the right-hand side, the table illustrates a reduction in supplier numbers in four UK sectors: process, engineering, electronics and household. Whereas three sectors reduced their supplier base by about 35% between 1991-95, the household products sector experienced a smaller reduction of 9% over the same period.

Evidence seems to suggest that single or dual sourcing – and the closer relationships that this enables – is the trend in manufacturing (e.g., Sheth and Sharma, 1997; Goffin et al., 1997). Yet, how to maintain relationships is insufficiently known. A deeply rooted psychological position might be appropriate to explore the intangible side of customer-supplier relationships.

The first chapter will introduce the *research context* and the *research rationale and objectives*. It will then move on to outline the *structure of the thesis* that will lead on to the subsequent chapter dealing with the relevant literature to the research project.

1.1 Research Context

The wider research context of this study is the industrial market. In this market, organisations acquire goods and services to use in the production of other products or services that are sold, rented or supplied to others. As the research focuses on industrial markets, a *customer* is seen as synonymous with a manufacturer, assembler, or any other industrial buyer purchasing the products and services of a supplier. The term *supplier* refers to a provider of goods and services as well as those providing materials and components (cf., Evans and Lindsay, 1996; Evans, 1997).

For the purposes of model development, the researcher reduced the impact of unmeasured sources of variation (e.g., cultural bias; industry sector variation) by concentrating on specific industries in Germany. The reasons why Germany has been selected as well as a debate on the industry sectors and the company sizes will be introduced in the remainder of this section.

1.1.1 Country Background: Germany

The researcher had two alternatives for conducting the study; on the one hand, it would have been possible to carry out the research in the UK; on the other, focussing on German industry was an option. The manufacturing industries of both nations have been described as the 'extremes of world-class practices and performance' by Voss and Blackmon (1996). The authors (ibid.: 112-113) conclude, "German manufacturing sites have adopted higher levels of manufacturing practices than British manufacturing sites at a statistically significant level." In short, both nations are adequate for exploring the relationships between suppliers and manufacturers. However, Germany appears as the more attractive option, as there is a very strong debate about the international competitiveness of German manufacturing industry (e.g., Kinkel and Wengel, 1997; Spur and Schröder, 1997). This topic became generally known as the *Standort Deutschland* discussion (see, e.g., Brinkler et al., 1997; Henkel, 1997), which debates Germany as a global location for manufacturing industry.

The degree to which Standort Deutschland has been debated in the press is demonstrated by the fact that in the past three years well over 1,000 articles on this issue were published in the *Frankfurter Allgemeine Zeitung* and the *Süddeutsche Zeitung*.[1] Overall, Germany has a substantial manufacturing industry, accounting for 25% of Gross Domestic Product (GDP) as well as employing an equally high percentage of the workforce in this sector (Anonymous, 1999a). For these reasons, the study focuses on Germany.

[1] As determined by a search of the Financial Times *FTProfile* database.

1.1.2 Selected Industry Sectors: Engineering; Electronics; Process

In terms of overall turnover in manufacturing, two industry sectors have a major impact on the export surplus in Germany – *Engineering* and *Electronics and Electrical Parts* (see Table 1-2).

Industry sector	Import (Billion DM)	Export (Billion DM)	Export Surplus (%)
Whole Industry	755,865	886,776	8.52
Engineering and electronics and electrical parts (share of total industry)	258,388 (34.18 %)	439,954 (49.61 %)	58.73

Table 1-2: German Imports and Exports Listed by the International Goods Register for 1997

Source: Federal Statistic Office (1998: 195).

German industry achieved an overall export surplus of 8.52% in 1997. An export surplus illustrates that more products have been exported than imported and is therefore a measure which takes the global market into account. Interestingly, 'engineering' as well as the manufacturing sector 'electronics and electrical parts' together count for more than half of the total export surplus (i.e., 58.73%). This might suggest that both sectors are highly competitive in the international arena. Support for such a belief comes from an international comparison of 'value added' between member states of the European Union. Value added focuses attention on the value that an industry adds to its bought-in materials and services through its own production and marketing efforts within the industry. In this respect, German industry has a strong position when compared to other nations. In Appendix 1, four manufacturing areas within 'engineering' and 'electrics and electrical parts' serve as examples to illustrate Germany's leading position in manufacturing (refer to page 324).

The high level of importance for Germany can also be visualised by the turnover breakdown displayed below:

Industry sector	Turnover (Billion DM)	Total Turnover (Billion DM)	Percentage (%)
All manufacturing industry		*2,186,204*	
Engineering			
Rubber and plastic parts	89,649		4.1
Metal processing	99,860		4.6
Manufactures of metal goods	128,158		5.9
Mechanical Engineering	268,326		12.3
Motor vehicles	315,485		14.4
Total Turnover of Engineering		*939,735*	*41.3*
Electrics and Electronic Parts (E&E)			
Office equipment and processing goods	27,388		1.3
Equipment for electricity producers	118,035		5.4
Television and radio	57,773		2.6
Measuring and steering instruments, medicine, optical	52,425		2.4
Total Turnover of E&E		*255,621*	*11.7*

Table 1-3: Turnover Manufacturing Industry for 1997

Source: Federal Statistic Office (1998).

As Table 1-3 shows, the engineering sector represents 41.3% of the overall turnover of Germany's manufacturing industries; also, the electronics and electrical parts (E&E) sector gained an 11.7% proportion of the total turnover. Together, both sectors count for 53% of the manufacturing turnover, which underlines the significance of the two manufacturing industries.

In this PhD research, the German engineering industry as well as E&E have been selected, as both are very important within the European Community and, in particular, for the German economy. Traditionally, the majority of manufacturers in these sectors is small or medium sized Enterprises (SME) and the performance of these companies was subject to much foreign admiration (Simon, 1992; Wever and Allen, 1992). Focussing on medium-sized manufacturers is particularly interesting, as supplier-manufacturer relationships are usually explored from the vantage point of a large manufacturing corporation (cf. Valsamakis and Sprague, 2001). For exploring the quality of business relationships, German small and

medium-sized companies in the manufacturing sectors 'engineering' and 'electronic and electrical parts' seem particularly suited and have thus been selected.

For gaining a preliminary understanding of supplier management in the first stage of the investigation, the researcher had the opportunity to conduct interviews with medium-sized companies in the process sector besides the two selected sectors (i.e., Stage I). In the two stages that followed (i.e., Stage II and III), the process sector was excluded.

The use of mainly two sectors for exploring the research question was deliberate – different markets might have very different characteristics. It is essential to focus on a sample where results can be duplicated and therefore verified without the influence of other factors relating to different countries and/or a wide range of industries.

1.1.3 The Association with the International Best Factory Awards Deutschland

The present research is part of a larger study within the *Best Factory Awards* (BFA) programme. Management Today (a leading UK manufacturing magazine) and Cranfield School of Management have run the BFA programme since 1992. The detailed information collected from more than 200 organisations each year in various industries is the basis for benchmarking and research (for detailed information about the programme refer to New and Szwejczewski, 1995). Each plant completed a detailed 23-page, confidential questionnaire and more than 200 questions addressed descriptive data (e.g., cost structure), performance data (e.g., delivery reliability), the products manufactured as well as the management policies (e.g., market positioning), besides other issues. Currently, the UK-database contains high-quality data on the performance of over 1,000 manufacturing plants and includes details of supplier management. In the database, randomised code numbers stand for companies and only the researcher is able to trace the identity of each company. The database is therefore anonymous, which ensures confidentiality. Previous Best Factory Award winners

and finalists have been widely published, e.g., Wheatley et al. (1995, 1996a, 1996b, 1997, 1998).

In order to arrive at comparable findings, Cranfield School of Management and its German partner, the Export-Akademie Baden-Württemberg, launched the *International Best Factory Awards Deutschland* (IBFA-D) database in 1996. This database contains information on comparable German manufacturing organisations in terms of industry sector, product range, size, employee numbers etc. (New et al., 1998a; 1998b).

Although the researcher is involved in cross-cultural supplier research in British and German manufacturing plants, the present PhD study exclusively takes a representative sample of the 110 German plants of IBFA-D into account, which entered the database in 1997 (refer to Appendix 2 for a definition of the selected industry sectors on page 325). The sampling pool of the engineering and the electronics industries will stay the same throughout the three research stages.

1.1.4 Selected Type of Organisation: Medium-Sized Companies (Plant Level)

In the confidential IBFA-D questionnaire, German manufacturers were asked about their company background. The following table provides an overview of the sampling pool:

Industry Sector	Number of Companies	Number of Suppliers	Total Number of Employees (incl. temporary and contract employees)
Engineering	78	222	430
Electronics	20	537	464
Process	12	120	103
Total	**110**		

Table 1-4: Sampling Pool of the Study – 1997 IBFA-D Data

The sampling pool of 110 German manufacturing companies is biased towards the engineering sector (n=78), followed by electronics (n=20), and process (n=12). The electronics companies work together with about 500 suppliers, given the large number of technical components required in the production process. By contrast, engineering and process companies typically team up with far fewer suppliers

(222 and 120 respectively). Companies in the process sector (for instance, breweries) are smaller compared to the other two sectors, explaining the small number of employees (n=103). Engineering and electronics companies share an equal level of employees with more than 400.

The IBFA-D programme is an application process that is tedious, costly and time consuming. Some organisations find it difficult to obtain all the numbers needed to complete the survey. This process may take up to a week, providing that the organisational system is sophisticated and detailed enough to deliver the measures. However, it carries prestige for the winner because the questionnaire was linked to an official award contest. The participating organisations felt they had a reasonable chance of emerging as a winner when compared to similar organisations in their sectors. For instance, two firms emphasised "we would not only like to take part in the contest, but we want to win it!" In other words, participating companies are most likely to perform above the industry average and are thus suited to learn about key issues in supplier management.

In previous research that included the same German sampling pool as well as the British counterpart of the BFA database, a range of variables from other parts of the questionnaire was checked to verify whether the plants are comparable. The variables included product complexity and types of product etc. No significant differences between the UK and German plants were found on any of these variables (New et al., 1998a). For the present research, this means that the selected companies are comparable in terms of the requirements of supplier management and they are suitable to investigate key issues in this area. This was important, because, first, it was necessary to minimise the differences between firms in order to observe some general patterns of behaviour across similar purchasing situations. And second, it was necessary to minimise the impact of the external environment on the variables developed in Stage II (i.e., identification of relationship quality attributes) that were tested afterwards in Stage III (i.e., supplier selection experiments). Verma and Pullman (1998: 748) argue "it is possible that the supplier selection process varies from industry to industry and/or within different geographical regions around the globe." In this research, each

manufacturer is subject to the same set of industrial and organisational constraints within Germany.

Finally, it should be noted that the organisations in the sample pool operate in their particular industrial environment and aim at working together with similar suppliers. This is the vital basis in this study, as the researcher does not directly compare key indicators of the organisations. In other words, a company is not the unit of analysis in this personal psychology study, but the individual managers that operate in a comparable company-industry-country context.

1.2 Research Rationale and Objectives

The management of supplier relationships is a vital task for manufacturers as it can contribute to both the competitiveness and profitability of a company. Interestingly, many companies have found that it is advantageous to have a smaller supplier base (Christopher and Jüttner, 1998; Dorsch et al., 1998; Higginson and Ashraful, 1997), because fewer suppliers enable manufacturers to achieve volume discounts, reduce administration costs, improve quality, and co-operate on product development. Effective supplier management starts with the selection of the most appropriate suppliers, using criteria such as 'providing high quality parts,' 'aggressive pricing' and 'reliable delivery.' These measures represent the traditional selection criteria. However, this approach has recently been challenged and a small group of authors has seriously considered the quality of relationship as a potential selection criterion (Wehrli and Wirtz, 1996; Wehrli and Jüttner, 1996). Unfortunately, the concept *quality of relationship* or *Relationship Quality (RQ)* has not been clearly defined, although it may well often be more important than price (e.g., Godefroid, 1995).

Definitions and distinctions of this concept are still equivocal and established measures cannot be found in practice. This is particularly true in supply chain environments (see Levy et al., 1995). However, it is generally argued that RQ is more than merely the quality of the product and the augmented service.

In service markets, Crosby et al. (1990) identified the impact of RQ on sales effectiveness and re-patronage behaviour. Indeed, this prompts the question of

whether a similar effect does exist in pure industrial markets also, since here the service content in the supplier's offer is increasing. Current research is encouraging for exploring this notion: for instance, an investigation of the link between RQ and organisational performance (Oliver, C., 1997); between RQ and supplier's share of business (Leuthesser and Kohli, 1995; Leuthesser, 1997); as well as between RQ and supplier stratification from 'best' to 'worst' (Dorsch et al., 1998).

What is relationship quality and *how does it relate to the customer's loyalty?* These are the two questions, which are so important in industrial markets – the proposed research strives to explore them empirically.

The importance of supplier management to German companies has long been recognised (Becker, 1997). Yet, very little empirical research has been conducted in Germany. This is somewhat surprising, and therefore, this thesis addresses this omission and presents an empirical investigation of supplier management in German manufacturing companies.

Research in business-to-business settings is dominated by single-informant research designs[2] and neglecting data from multi-informants is frequently stated as being the limitation of these studies. The current study pays particular attention to this common drawback in industrial research and more than one manager involved in the buying decision process has been considered. The study governs three research stages:

- Stage I: Exploring the views of German managers on supplier management and identifying whether the research question is of managerial topicality and relevance.
- Stage II: Identifying key attributes of Relationship Quality and examining the selection process in place.
- Stage III: Exploring the link between Relationship Quality and the customers' loyalty and contrasting the influence with the established traditional criteria in the selection process.

[2] See e.g., Gensch, Winter 1984; Graham et al., Fall 1994; Swift, February 1995; Pearson and Ellram, October 1995; Sharland, 1997; Daugherty and Dröge, 1997; Stuart, 1997; Krause and Ellram, 1997; Leverick and Cooper, February 1998; Dorsch et al., Spring 1998; Harland, April 1998.

1.3 The Structure of the Thesis

This thesis consists of eight chapters; starting with Chapter 1, the introduction. In Chapter 2, the literature will be reviewed (starting on page 13), leading up to the research question and the philosophical stance that can be found in Chapter 3 (on page 83). The philosophical background of the study has an influence on the research strategy and the adopted methodology described in Chapter 4 (on page 88).

Chapters 5-7 explain the three research stages in detail, including methodological and analytical issues, and the findings discovered (starting on pages 92, 121, and 195 respectively). Chapter 8 will conclude the thesis with a summary and the limitations of the study; in addition, recommendations can be found for practitioners and academics (on page 308). Figure 1-1 on the right-hand side describes the structure of the thesis visually.

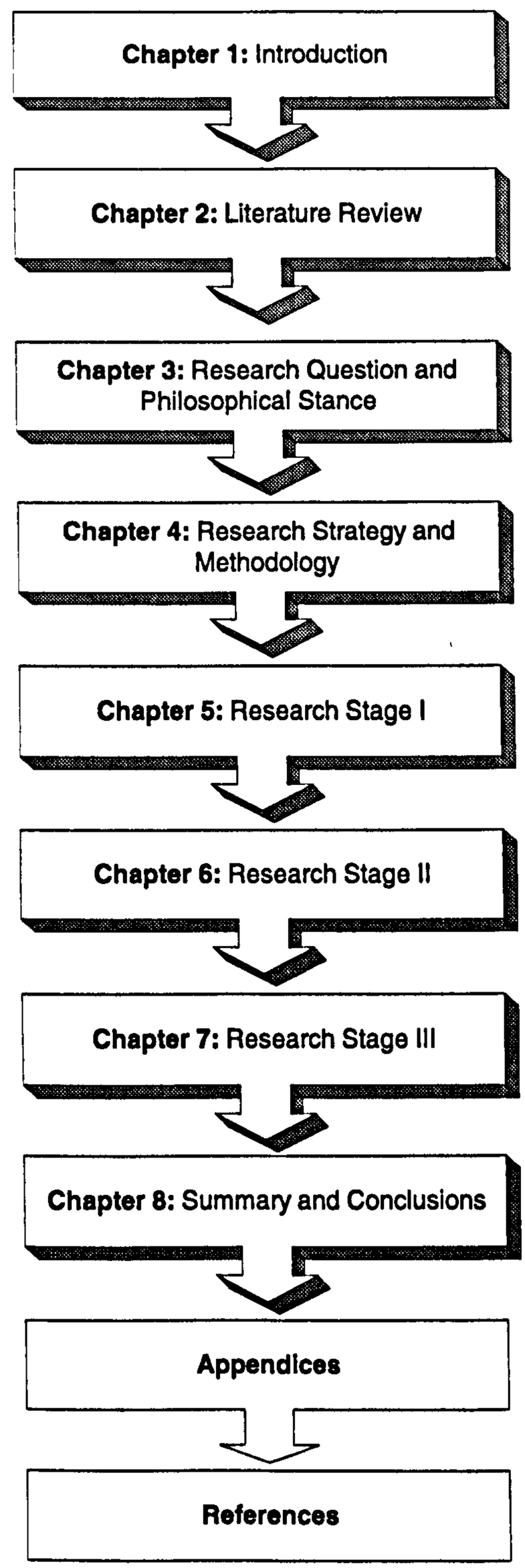


Figure 1-1: Structure of Thesis

1.4 Summary and Conclusions

Chapter 1 highlights the fact that manufacturing companies are reducing their supplier numbers dramatically. This trend suggests that manufacturers increasingly employ single- and dual-sourcing strategies. However, how to maintain relationships with key suppliers is insufficiently understood in industrial markets. The research will address this problem in the following way: 'what is relationship quality and how does it relate to the customer's loyalty?'

The research will focus on supplier-manufacturer relationships in the German electronics and engineering industries and will consist of three stages. The sampling pool is taken from the International Best Factory Awards Deutschland (IBFA-D) Programme and will stay the same throughout the research stages. Traditionally, manufacturing companies are medium-sized in Germany and the anonymous database reflects this tendency. As the data pool consists of a *self-selected sample*, the companies do not fully represent the wide spectrum of the two industry sectors. However, the participating companies are likely to be highly advanced in supplier management.

In addition, the researcher has the opportunity to discuss key issues of supplier management with a comparable sample from the German process sector in Stage I. Stage II will explore the concept of Relationship Quality and Stage III will determine the link between Relationship Quality and loyalty. Finally, the structure of the thesis is outlined and Chapter 2 will continue with reviewing the literature.

CHAPTER TWO

2 LITERATURE REVIEW 14

2.1 INTRODUCTION 14

2.2 RELATIONSHIP MARKETING AND SUPPLY CHAIN MANAGEMENT 15

2.3 BUSINESS RELATIONSHIPS 24

2.4 QUALITY MANAGEMENT: FROM PRODUCT TO RELATIONSHIP 37

2.5 PSYCHOLOGICAL CONSIDERATIONS 48

2.6 LOYALTY 59

2.7 EVALUATING ALTERNATIVES AND MAKING A CHOICE 62

2.8 RELATIONSHIP QUALITY-LOYALTY LINK 73

2.9 SUMMARY AND CONCLUSIONS 79

2 Literature Review

2.1 Introduction

The PhD-research topic – exploring the RQ-Loyalty-link – is embedded in three major literature areas: *Marketing*, *Quality Issues*, and the *Supply Chain*; refer to the Venn diagram on the left-hand side of Figure 2-1. The three fields as such are too general to come to terms with the proposed research objective. Hence, blending the three inner-circles (QM = Quality Management, RM/SCM = Relationship Marketing / Supply Chain Management and Loyalty) focuses on the most relevant literature for the current purposes, as outlined on the right-hand side.

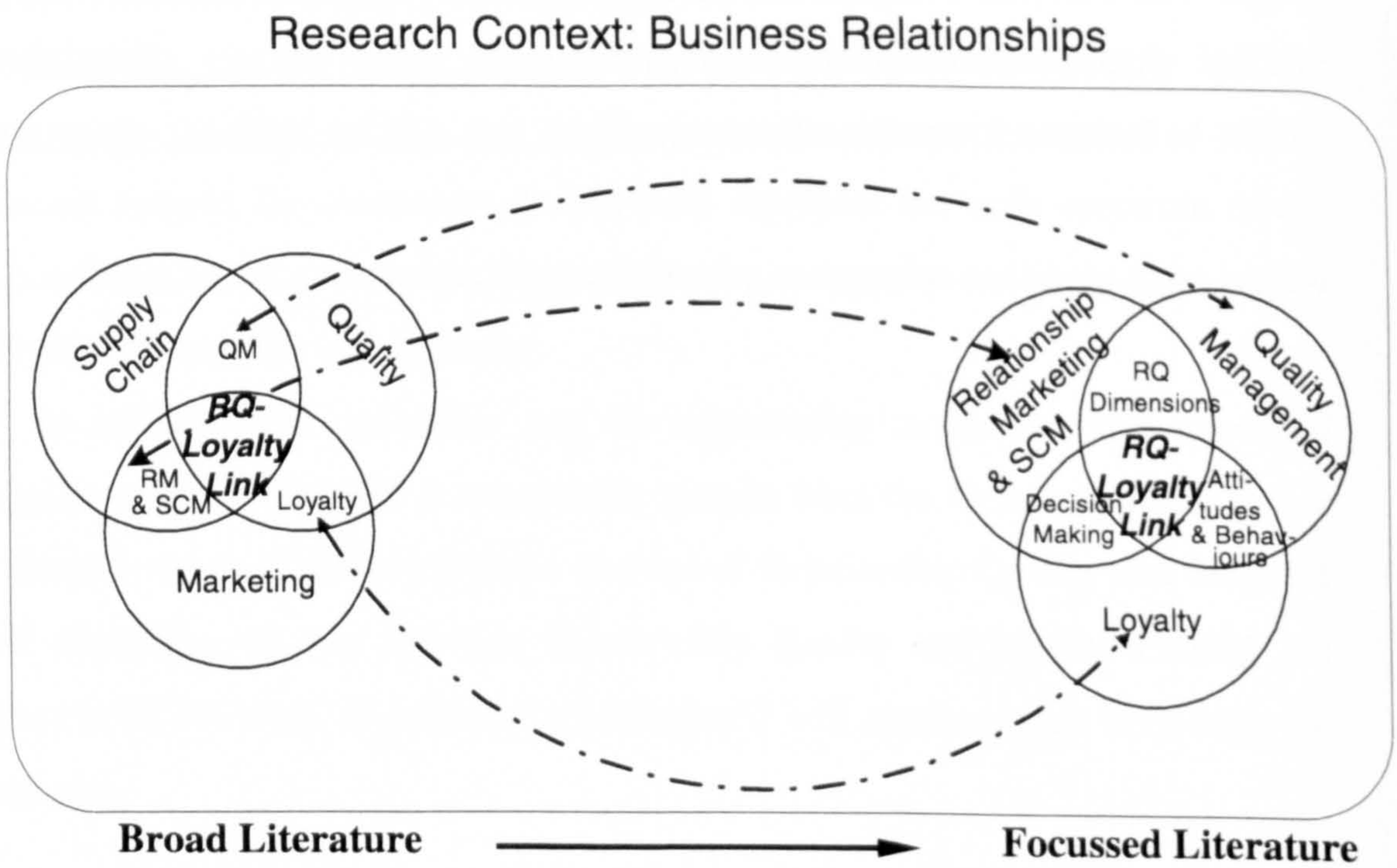


Figure 2-1: Mapping the Literature Fields

The research is directed towards 1) Relationship Marketing and Supply Chain Management, 2) Quality Management, and 3) Loyalty. Business Relationships describe the research context, as the research takes place in industrial markets. The literature review will cover the focussed literature in the figure above. For now, it is the management of relationships and supply chains to which attention turns.

2.2 Relationship Marketing and Supply Chain Management

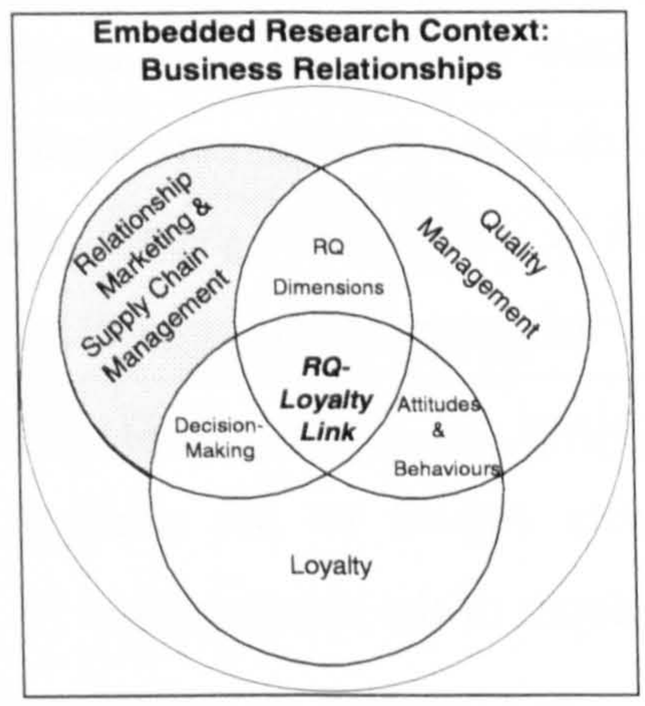


Figure 2-2: The Literature Focus of Section 2.2

In this section the literature on Relationship Marketing and Supply Chain Management will be discussed.

2.2.1 Relationship Marketing

Relationship Marketing (RM) is a philosophy within the wider domain of marketing. The American Marketing Association (1948: 210, as cited in Webster, 1992: 2) defined marketing as follows: "The performance of business activities directed towards, and incident to, the flow of goods and services from producer to consumer or user." The attention was predominantly on sales activities for attracting new customers, rather than strengthening relationships with existing ones (cf. Aijo, 1996; Donaldson and O'Toole, 1997). Traditionally, the domain centred on the classical *4P Marketing Mix* – product, place, price and promotion (Kotler et al., 1999). The 4P-approch, as it is often referred to, describes an inside-out orientation, where sending and persuading dominates, rather than listening and dialogue, according to Sutrich (1994).

Today, establishing lasting relationships has been recognised as being a key issue in many industry sectors. Existing customers are more likely to bring business to the seller, are more predictable and less effort is needed to service them. Hence, an outside-in orientation is required, which RM is able to deliver. It

therefore is maybe not surprising that RM has been a well visited philosophy of marketing that has been described as a paradigm shift (e.g., Gummesson, 1997a; Brodie et al., 1997, Payne et al., 1994). Christopher et al. (1991: 11) conclude that the transaction approach fails to manage the "broader complexity inherent in relationship marketing." This is so, because relationships are very interactive and two factors play a key role in this respect: people and process (Halliday, 1997). The complexity also has its influence on the organisations within the relationship, as more functions are involved (cf. Payne, 1995). The following figure locates Relationship Marketing with regard to the number of participants/extent of processes and the duration/depth of the relationship:

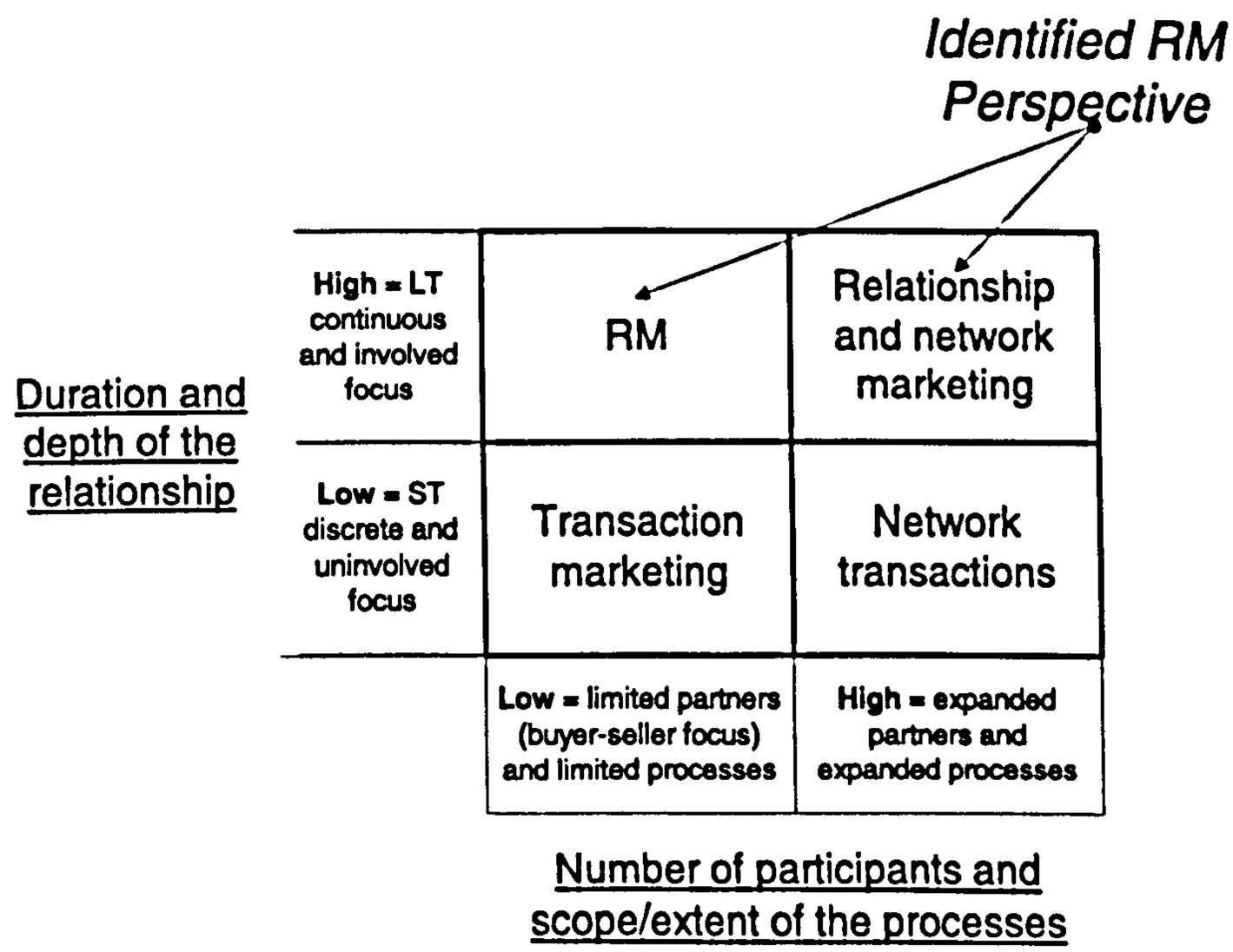


Figure 2-3: Dimensions of Relationship Marketing

Source: Based on Aijo (1996: 16).

Figure 2-3 points to the differences between RM and the transaction-orientated marketing approaches. It again illustrates the goal of this philosophy of marketing: establishing continuous, lasting relationships with business partners. Therefore, a move from transactional marketing to relationship marketing is needed (Payne and Frow, 1997).

The characteristics of the transaction and the relationship focuses differ significantly and Peck et al. (1999) contrast them as follows:

Characteristics	Transactions Focus	Relationships Focus
Focus	*Obtaining new customers*	*Customer retention*
Orientation	*Service features*	*Customer value*
Timescale	*Short*	*Long*
Customer Service	*Little emphasis*	*High emphasis*
Customer Commitment	*Limited*	*High*
Customer Contact	*Limited*	*High*
Quality	*An operations concern*	*The concern of all*

Table 2-1: Transaction Focus and Relationship Focus

Source: Peck et al. (1999: 44).

The relationship focus on the right-hand side of Table 2-1 shows that customer retention (to be discussed later, refer to 2.6 on page 59) and the long timescale of the relationship are key characteristics. In addition, high customer commitment and a well-developed customer contact with the emphasis on customer service (where the concern rests with every employee) are elementary assets too. By contrast, the transaction focus aims at obtaining new customers in the short-term, where customer service enjoys little emphasis and the customer contact and customer commitment are both limited features. Today, the management of relationships is of heightened importance, as the goal is to establish lasting and mutually beneficial partnerships with customers (Christopher, 1997).

From Table 2-1 one might get the first impression that customer retention is the only goal of RM. However, the aim is not only to keep existing customers, but also to attract new prospects. Berry (1983) – one of the first writers on the subject – saw RM as a way to *keep customers* as well as an attempt to *attract new ones*. In this vein, Zeithaml and Bitner (1996: 40) define RM in the service arena as "strengthening the bonds with existing customers." Similarly, Jackson (1985: 2) describes it from the industrial perspective as "marketing oriented toward strong, lasting relationships with individual accounts." Viewing RM from the consumer marketing angle, Bennett (1996: 420) defines it as "the organizational development and maintenance of mutually rewarding relationships with consumers achieved via the total integration of information and quality management systems, service support, business strategy and organizational

mission in order to delight the customer and secure profitable lasting business." Finally, from a more general marketing position, Morgan and Hunt (1994: 22) state, "relationship marketing refers to all marketing activities directed toward establishing, developing, and maintaining successful relational exchanges."

It has been recognised that a balance between both customer segments (i.e., new and existing) is needed. Therefore, Peck et al. (1999: 44) explain, "attention needs to be directed at customer acquisition and customer retention strategies." The figure below shows the development of a prospective customer into a partner:

Figure 2-4: The Relationship Marketing Ladder of Loyalty.

Source: Peck et al. (1999: 45).

Capturing new customers – or prospects, as described by Peck et al. (ibid.) – and motivating a prospect to buy one time (i.e., purchaser) is the traditional view of marketing. Unfortunately, so Payne (1993) reports, companies still focus on winning customers; little emphasis is placed on retaining them. Relationship Marketing, however, aims to promote a segment of suitable purchasers into clients and to develop them further into partners. The thesis will look at some of the partnership details later (refer to 2.3.3 on page 32); a description of this especially close form of relationship may serve for the moment: Establishing partners "represents a situation where a very close and long-term relationship is developed between a supplier and customer, based on satisfaction of mutual needs" (Payne,

1994: 30). In other words, RM 'works up' the loyalty ladder, whereas traditional marketing approaches target the bottom two rungs of the ladder only.

In order to establish long-lasting relationships, manufacturers try to leverage the skills of the suppliers and are also keen to build a stable relationship with them. In this way, well-established relationship structures are in place, which show that RM widened the view of manufacturers to establish links with other external markets rather than with customers only. Figure 2-5 sketches out the broadened view of markets:

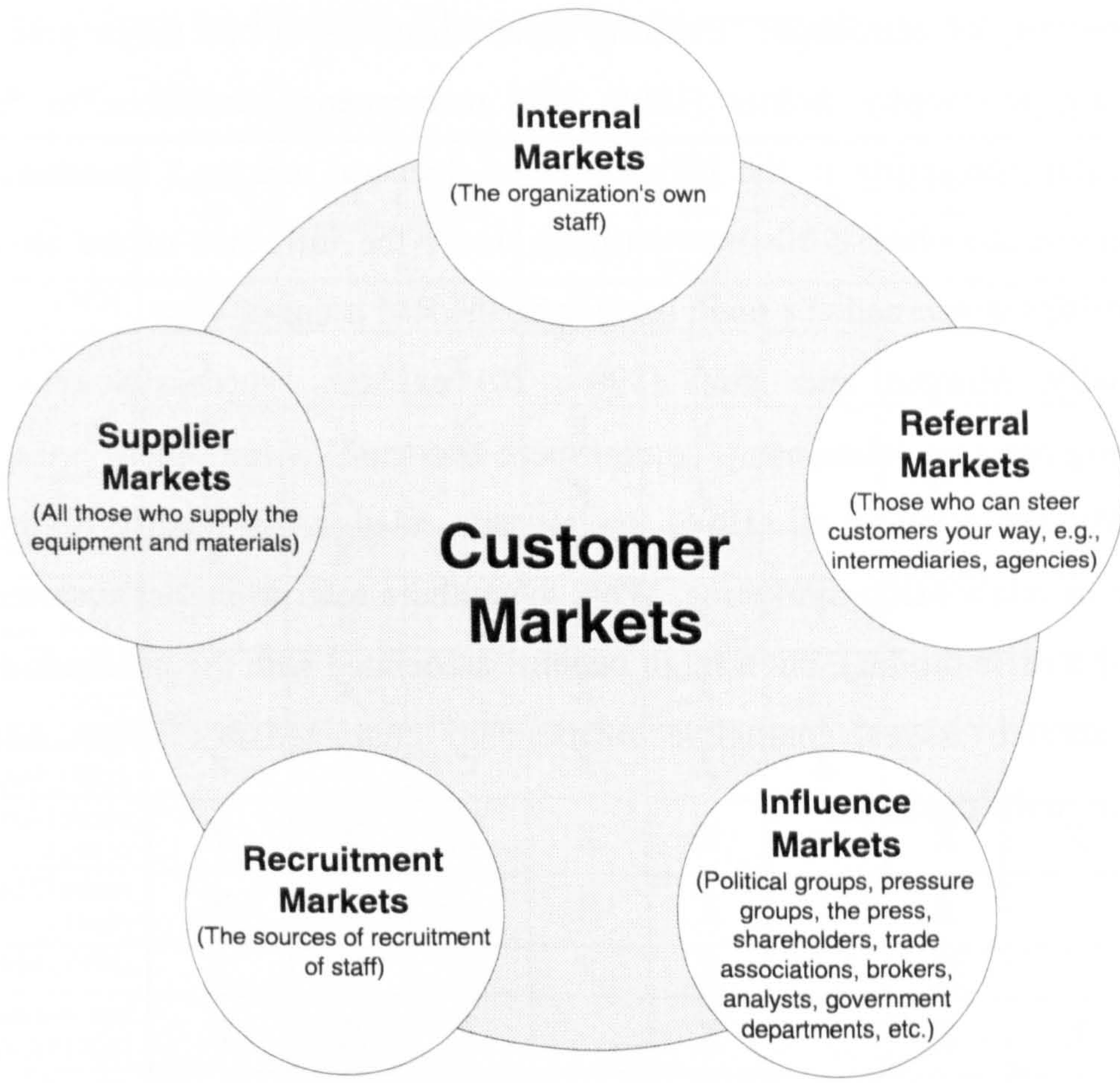


Figure 2-5: The Six Markets Model – A Broadened View of Marketing

Source: Christopher et al. (1991: 21).

Christopher et al. (1991) propose six markets: internal markets, referral markets, influence markets, recruitment markets, supplier markets, and customer markets. McDonald and Payne (1996: 24) argue that "it is the customer market which is the central focus of the organization's goal." The customer and the supplier markets are of particular interest to the present research topic (i.e., manufacturers ordering

parts from their suppliers; highlighted in grey in the figure), whereas a debate on the remaining four markets will be excluded from this thesis.

Relationships involve social contacts and are characterised by the individuals involved. Therefore, a research project in this area has to include the preferences of the customer and unique attributes of suppliers. Interestingly, Sheth and Parvatiyar (1995: 256) explain "the fundamental axiom [i.e., critical assumption] of relationship marketing is, or should be, that consumers like to reduce choices by engaging in an ongoing loyalty relationship with marketers. This is reflected in the continuity of patronage." Creating loyal customers is one major goal of this marketing philosophy. Selnes (1998: 318) recommends, therefore, to "explore relationship marketing in the perspective of decision making." In other words, how individuals choose business partners under the influence of the alternative relationships concerned is a main issue from the RM point of view.

Finally, Morgan and Hunt (1994: 20) explain, "successful relationship marketing requires relationship commitment and trust." Along these lines, Jap et al. (1999) and Bjou et al. (1996) explain that relationship quality captures the essence of relationship marketing. What the authors refer to is that customers not only buy a mere product, but a set of benefits associated with the purchase. Hence, beside service issues, intangible relationship characteristics might have an influence in the decision.

2.2.2 Supply Chain Management

As RM emerged in the marketing discipline, Supply Chain Management (SCM) developed within logistics. This might be the reason why some authors equated logistics with SCM (New, 1996). The distinction between both fields became blurred, but Cooper et al. (1997) argue that 'SCM is more than just logistics.' SCM is an evolutionary approach and over time, they identified ten basic SCM components from the literature. The components are tangible as well as intangible in nature (see Table 2-2).

Components / Authors	Planning and Control	Work structure	Organi-sation structure	Product flow facility structure	Infor-mation flow facility structure	Product structure	Risk and reward structure	Manage-ment methods	Power and leadership structure	Culture and attitude
Houlihan (1985)	X	X	X	X	X	X		X		X
Jones and Riley (1985)	X	X	X	X	X			X		X
Stevens (1989)	X	X	X	X	X					X
Ellram and Cooper (1990)	X	X		X	X		X			
Hammer (1990)	X	X	X	X	X		X	X		X
Scott and Westbrook (1991)		X		X	X	X				
Lee and Billington (1992)		X		X	X					
Towill, Naim and Wikner (1992)	X	X		X	X	X				
Cooper and Ellram (1993)	X	X	X	X	X		X	X	X	X
Cooper and Gardner (1993)	X	X		X	X		X			X
Hewitt (1994)	X	X	X	X	X		X			
Andrews and Stalick (1994)	X	X	X		X		X	X	X	X
Lambert, Emmelhainz and Gardner (1996)	X				X		X	X		X

Tangible ⟵⟶ *Intangible*

Table 2-2: Supply Chain Management Components

Source: Based on Cooper et al. (1997: 8).

The table shows that the information flow facility structure, the product flow facility structure and the work structure are now key SCM factors that have been recognised by a number of authors. In the past, as Ross (1998) explains, companies attributed less importance to the production and distribution of

products and information through the marketplace than to marketing, sales and finance. Therefore, the management of the supply chain, which may be understood as an interorganisational system (see Figure 2-7 overleaf), has almost been neglected. Today, however, the competitive environment requires that companies work more closely together in the whole supply chain so that the increasing demands of the marketplace can be satisfied. When discussing 'effective supply chain management,' for instance, Gattorna and Walters (1996: 293) argue "the acknowledgement of the role of customer satisfaction should be reflected in the structure of the customer service role and in the specification of customer service functions." As responsiveness and customer satisfaction levels can be improved by SCM, the importance of the topic has risen over time. Nowadays, the coordination between various stages in the supply chain is a central task that includes many processes (Chopra and Meindl, 2001). Hence, the SCM's area of responsibility widened from transferring goods and raw materials through different stages of the supply chain to managing complex relationships. The greater management task has not only turned attention to all the relationships in the system, but particularly to supplier relationships. Any manufacturer who strives to satisfy his customers and to provide top customer service is dependent on his suppliers (see Figure 2-6).

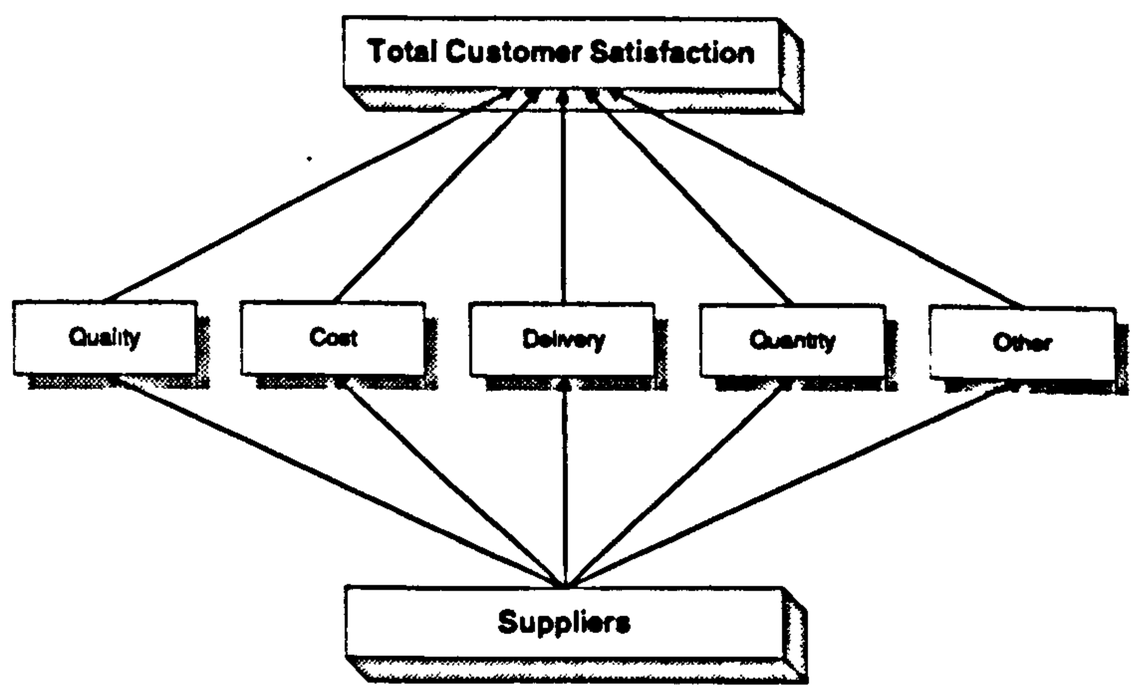


Figure 2-6: Customer Service Inputs

Source: Leenders and Fearon (1997: 262).

In the figure above, the connection between total customer satisfaction, a mutual goal of SCM and RM, and suppliers is illustrated. Although Stock (1997) argues that the RM philosophy has not been applied within the field of SCM, when

customer satisfaction is considered, one is able to see how both disciplines begin to join hands: Managing business relationships in order to achieve customer satisfaction as well as to gain profits unifies RM and SCM. In this vein, Christopher (1998: 18) defines supply chain management as "the management of upstream and downstream relationships with suppliers and customers to deliver superior customer value at less cost to the supply chain as a whole."

At present, the management of supplier relationships is a major concern of SCM. For example, Monczka et al. (2002) conceptualise an integrated supply chain as follows:

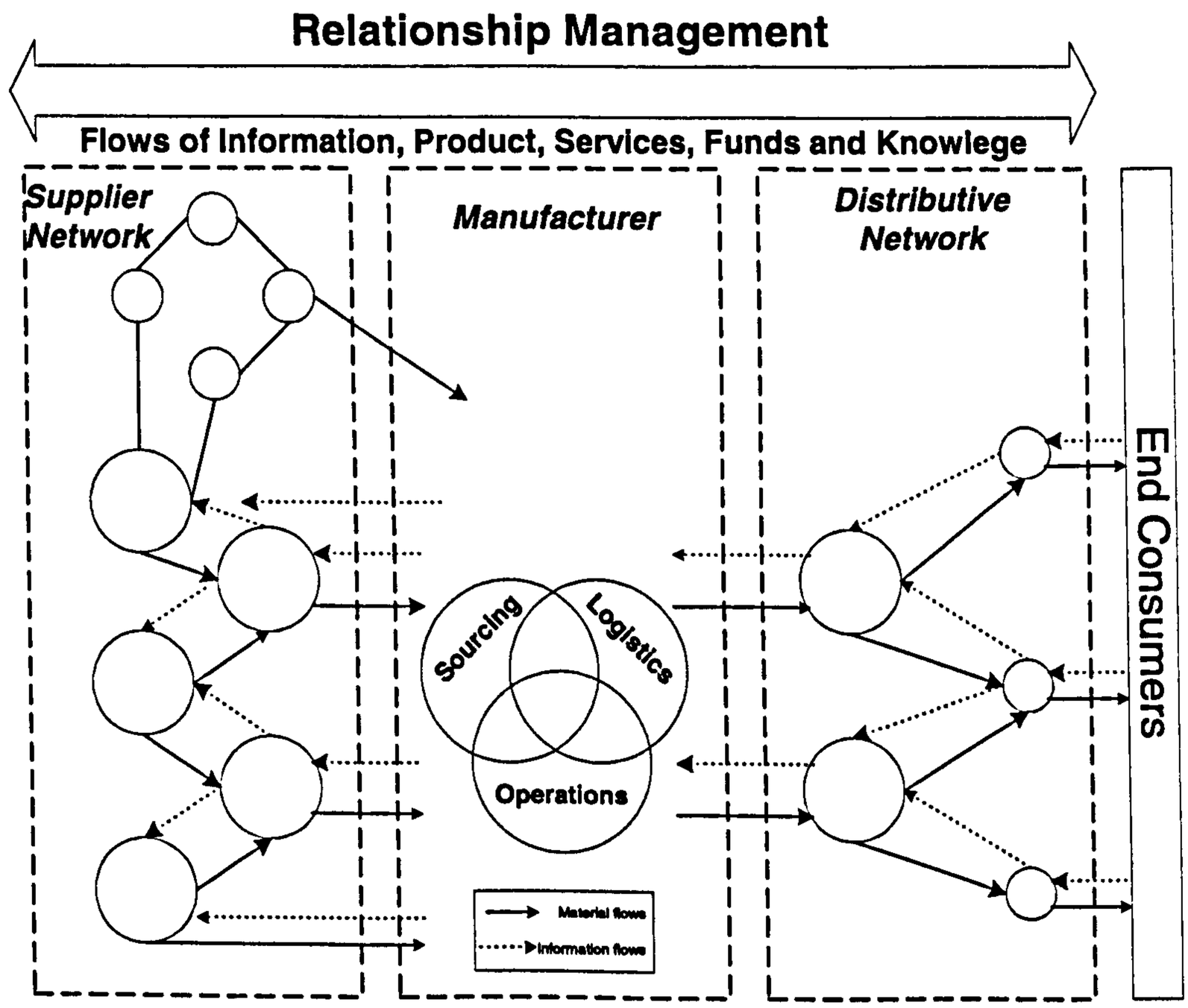


Figure 2-7: The Integrated Supply Chain

Source: Based on Monczka et al. (2002: 5).

Monczka et al. (2002) see a supplier network and a distributive network connected with a manufacturer in the centre. Managing all the relationships in order to coordinate the material and information flows is the keystone on which SCM is based. Leenders and Fearon (1997: 261) explain "it has been long-standing wisdom in the procurement field that the key strategic decision in supply

management centres on which supplier to pursue and what kinds of relations to maintain with suppliers." Therefore, the discussion on SCM and RM may be extended to business relationships where maintaining supplier relationships plays a part.

2.3 Business Relationships

Business relationships are the context of this PhD research (see the figure on the right). A single definition of a relationship does not exist and different situations where two or more parties stay in some sort of relation to each other have been described as 'relationships' by the literature. Gummesson (1994, 1997a; 1997b), for example, defines 30 relationships alone, entitled 'The 30RS.'

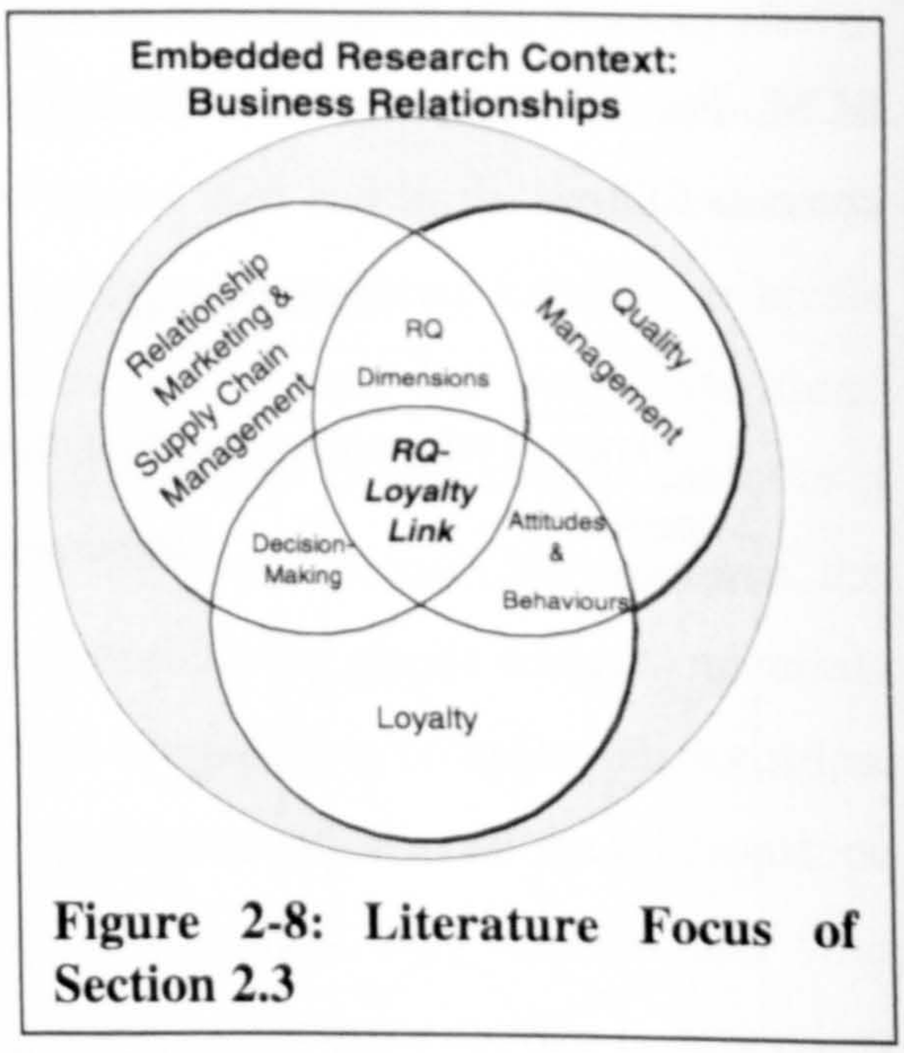


Figure 2-8: Literature Focus of Section 2.3

When discussing a business relationship, a 'vendor' and a 'partner' perspective can be employed. A vendor perspective is based on a transactional point of view, whereas a partner perspective is grounded in a relational standpoint. Many authors treat the terms business relationship and alliance synonymously. Thus, both perspectives – vendor and partner – seem to be valid also for alliances (cf. Ring, 2000). A transactional vendor approach represents a loose alliance; a partnership perspective is common in a strategic alliance where the alliance is embedded in the strategies of each of the partners (e.g., Koza and Lewin, 2000). So, the form of the alliance can be anything from a loose and informal coalition to a highly sophisticated network of formal business partners.

Although strategic alliances are an interesting research field when debating partnerships, the discussion of this thesis will be restricted to business relationships between manufacturers and suppliers in the supply chain. These

relationships are typically called 'buyer-supplier relationships,' which will be referred to throughout this thesis as 'supplier relationships' for short.

Supplier relationships, as a particular type of business relationship, involve at least two parties (Fournier et al., 1998) that attach a business-like character to them (Stuart, 1997), in order to create value for each other (Walter et al., 2001). This means that one party exchanges some value-package (e.g., consisting of products, services, expertise), which the other side finds worthwhile to compensate in the form of some other value-package (e.g., monetary compensation, share of business).

This type of exchange can adopt various forms. For instance, when discussing relationships in the supply chain, Cooper et al. (1997) introduce an overview that spans from dyadic (two organisations) to vertical integration of several companies with shareholding connections (i.e., *Keiretsu*):

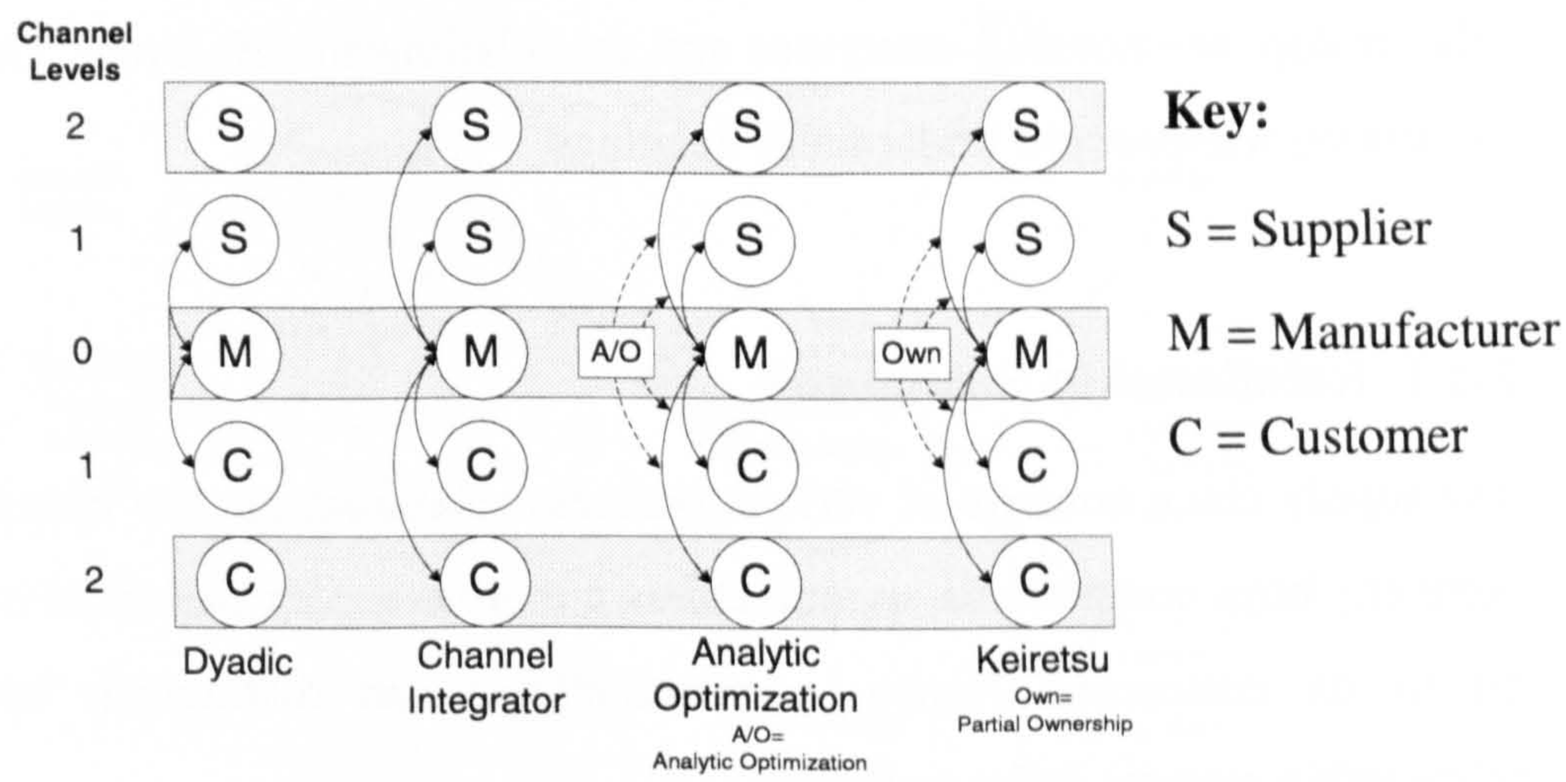


Figure 2-9: The Multiple Paths to Supply Chain Integration

Source: Based on Cooper et al. (1997: 71).

In Figure 2-9, the complexity of the relationships in the supply chain increases from left to right. The most sophisticated relationship is Japanese-style *Keiretsu* (i.e., family-like relationships), which is based on partnerships (Akinc, 1993). Gentry (1996) argues that long-term, true buyer-supplier partnerships are the foundation on which an effective supply chain can be built. In order to arrive at a fuller understanding of high-quality supplier-manufacturer relationships, the link between the two parties needs to be studied. Hence, the dyadic perspective is a sound viewpoint to adopt.

Interestingly, Weitz and Jap (1995) report some studies that show that 'personal relationships have shaped economic outcomes.' Thus, it would be interesting to determine whether the personal relationship influences the way manufacturers select their suppliers. This perspective has not been taken in previous research.

In this respect, focusing on the dyad is relatively new (cf. Robicheaux and Coleman, 1994) and Wilson (1995: 343) concludes: "Our knowledge about relationships is at an early stage. We need to improve our concept definitions and how we operationalise the concepts." The narrow perspective can be expanded to more complex relationship constellations later on. However, the standpoint serves as a solid basis to discuss the quality of supplier relationships.

Before proceeding to look at partnerships as a special form of supplier relationship, it is necessary to highlight two other aspects of the supplier relationship: relationship structures and the relationship life cycle. The following discussion will proceed under these headings.

2.3.1 Relationship Structures

The supply chain consists of various business relationships. For instance, a given company buys components, manufactures a more complex part from it and sells it on to its customers. Hence, a manufacturer can distinguish between two relationship streams (refer to Figure 2-10).

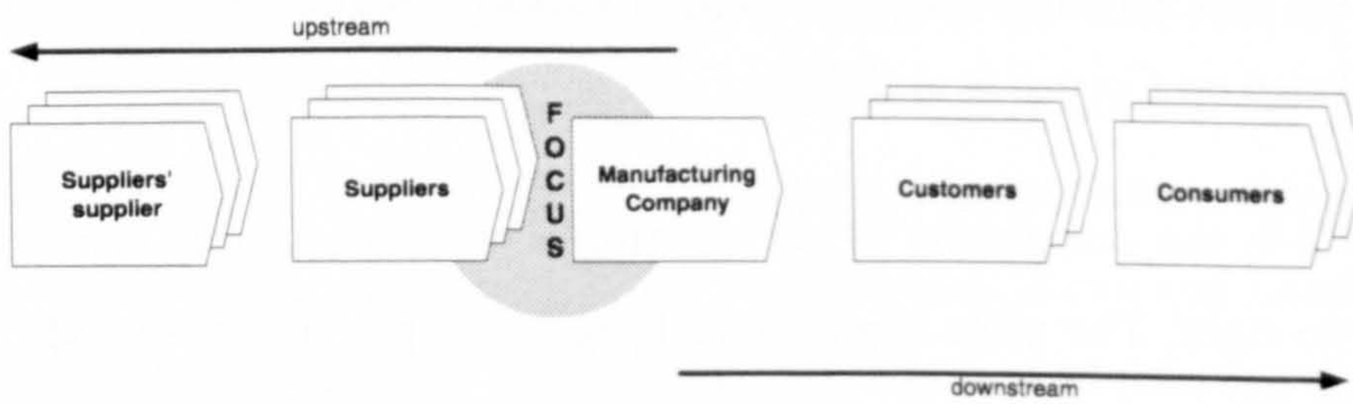


Figure 2-10: The Supply/Marketing Channel

Source: Christopher et al. (1991: 15).

From a manufacturer's vantage point (i.e., the centre of the figure above), customers can be found downstream whereas the upstream view captures

suppliers. In the light of the current research, an upstream view of the manufacturing company will be taken and a grey shaded circle in Figure 2-10 highlights this focus.

In supplier relationships, more than one manager on each side remains in contact. Cyert et al. (1956) explained earlier that an organisational buying decision usually involves different personnel of different functions. Blois (1996: 172) echoes this point by stating, "where relationship marketing exists, several departments within the supplier's and the customer's organisations usually interact with each other." These departments are interrelated not only to each other, but also to other units within the organisation as well as to the external environment. The following figure gives a snapshot:

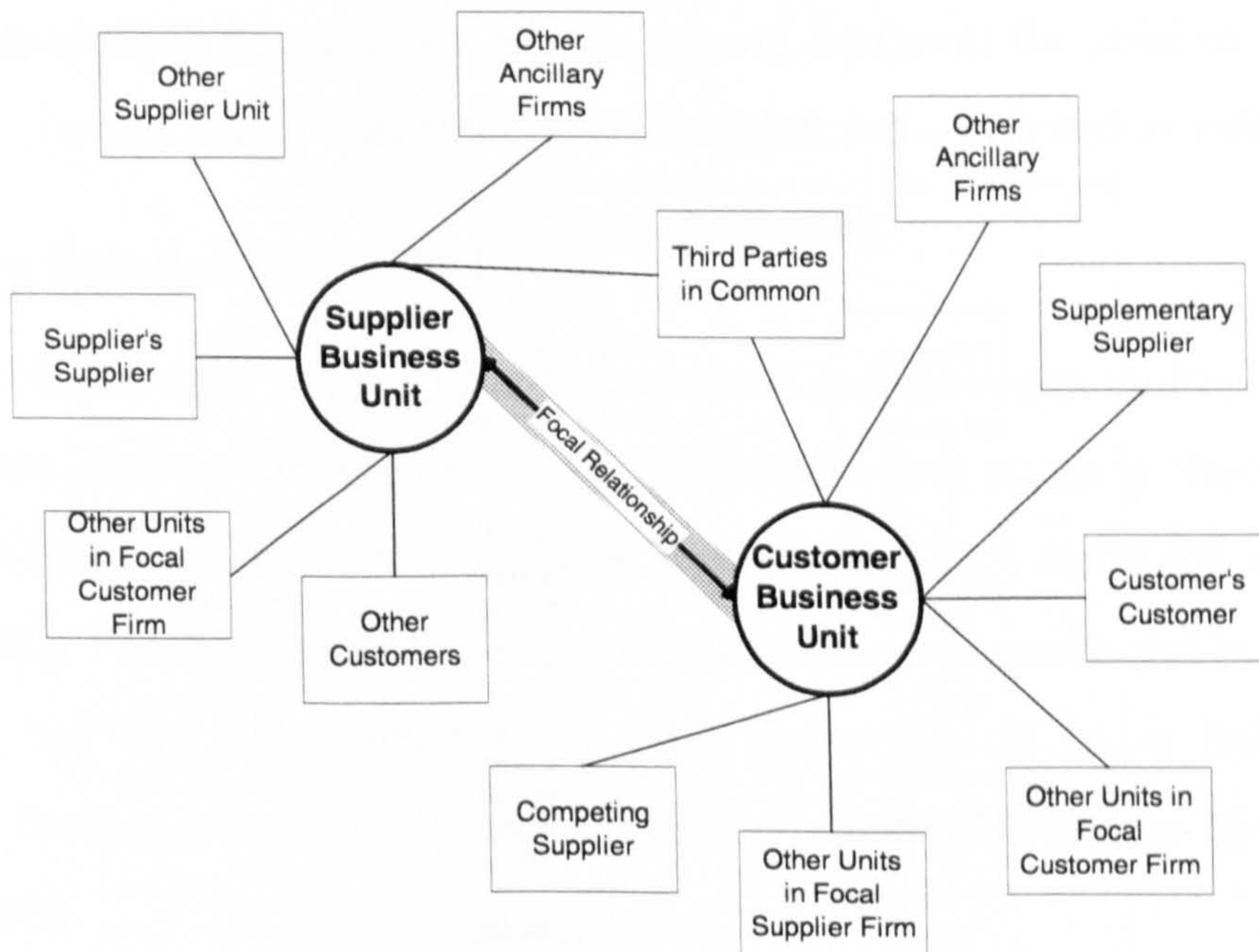


Figure 2-11: Connected Relations for Firms in a Dyadic Relationship

Source: Anderson et al. (1994: 3).

Although the supplier and customer business units have various connections, this research concentrates on the focal relationship highlighted in grey in Figure 2-11. In the literature, both business units are generally addressed as centres: the *buying centre* (BC) on the buyer's side (e.g., Robinson et al., 1967; Webster and Wind, 1972), and the *selling centre* (SC) on the seller's side (e.g., Spekman and Johnston, 1986; Backhaus, 1992; Godefroid, 1995). Furthermore, the *Decision-*

Making Unit (DMU) is also a frequently used term (e.g., Kotler, 1994) and refers to both, the SC and the BC.

Peck et al. (1999: 42) highlight that "the concept of the decision-making unit (DMU) is important at all levels within the distribution chain." Depending on the individual characteristics, every DMU participant might have different expectations about the relationship. "If relationships are to provide marketers with competitive advantages through tailoring their offer," as Tanner (1999: 246) notes, "then understanding the individuals who buy is critical to determining how to tailor the offer."

Schütze's (1992) approach to expand both centres has to be mentioned. He does not distinguish between the BC and the SC but between several centres. According to him, all involved groups on the seller's and buyer's side can be taken together in one unit – the *Relationship Centre* (see figure below).

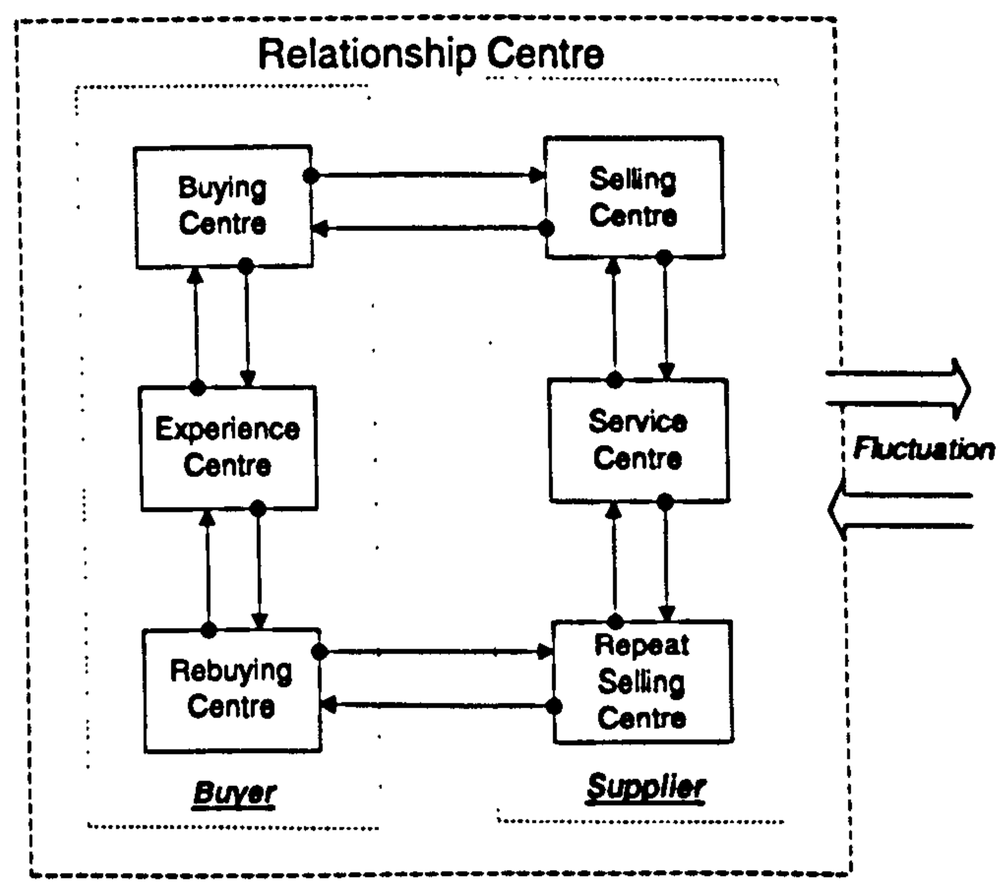


Figure 2-12: Changes in the Relationship Centre Over Time

Source: Schütze (1992: 263).

In Figure 2-12, Schütze draws attention to six centres: the buying centre and the selling centre that have been introduced above, the experience centre and service centre highlighting the increasing service content in the supplier's offer, and the re-buying centre and repeat selling centre. The latter pair of centres indicates that the centre membership of a new buy might differ from a repeated purchase. Since Schütze considers the fluctuation over time, the relationship centre appears in a fluid status, meaning that new participants replace old ones. This argument is

fostered by Ford et al. (1986: 59), who explain that "interaction can be inconsistent over time or there can be inconsistency between different interactions with the same partner undertaken by different personnel."

Although the structure of a given supplier relationship does not have to be so multifaceted as suggested in Figure 2-12, it became apparent in the literature that the simplicity of business relationships on a one-to-one basis gave away more complex settings between many groups of individuals. Therefore, the individuals within the centres are most suitable to comment on the relationship quality; and according to the specific focus of this study, it will be those to be found on the customer's side.

Apart from the constellation of the parties involved, relationships evolve over time. This point will be addressed next.

2.3.2 The Relationship Life Cycle

Business relationships have existed since human beings began trading, as Wilson (1995) notes. Hence, a newly founded organisation is not set up in 'free space' but in an established net of relationships (e.g., Ford et al., 1986; Anderson et al., 1994, Ritter, 2000). For the newcomer, most relationships are inactive and hidden, as no exchange has yet taken place. Only with awareness do these links become apparent. Trading becomes initiated and the individual relationship life cycles are set in motion.

Many scholars argue that business relationships develop and change in phases over time. One might be reminded of the analogy of the product life cycle (PLC) concept (see Levitt, 1965),[3] which follows much the same line of reasoning. PLC is built on the law of nature, suggesting a beginning and an end to the existence of a product. This line of thought can be applied to different situations and processes, such as business relationships. Indeed, Ellram (1991b) notes that the PLC

[3] The four product life cycle phases, according to Levitt (November-December 1965) are as follows:

1. Market *Development*;
2. Market *Growth*;
3. Market *Maturity*; and
4. Market *Decline*.

approach could be useful for understanding buyer-seller relationships. The phases of a relationship life cycle (RLC) have been described as follows:

Ford (1980)	Dwyer et al. (1987)	Ellram (1991b)	Wilkinson and Young (1994)	Wilson (1995)	Simon and Pohl (1996)	Comer and Zirger (1997)
1. Pre-Relation-ship	1. Awareness	1. Develop-ment	1. Pre-Relations Phase	1. Partner search and selection	1. Awareness	1. Awareness
2. Early	2. Exploration	2. Commit-ment	2. Develop-ment	2. Defining purpose	2. Exploration	2. Exploration
3. Develop-ment	3. Expansion	3. Integration	3. Maturity	3. Setting relationship boundaries	3. Expansion	3. Expansion
4. Long-term	4. Commit-ment	4. Dissolution	4. Decline	4. Creating relationship value	4. Commit-ment	4. Commitment
5. Final[4]	5. Dissolution			5. Maintenance	5. Dissolution	

Table 2-3: The Phases of the Relationship Life Cycle

Broadly speaking, the *Relationship Life Cycle* starts with *Awareness* (searching for potential parties for starting a business relationship), as shown in Table 2-3, develops through different phases and ends with *Dissolution* (termination of the relationship). Each phase represents a major transition in how parties regard one another. Furthermore, *Dissolution* leads to *Awareness*. Depending on the circumstances, the new RLC could start with a new party or a former dissolved relationship could awaken again if the situation seems appropriate at a later point in time.

Awareness as the pre-exchange stage could be treated separately from the established relationship; this stage starts the cycle and has not yet reached a bilateral level. Thus, if exchanges never occur and there has been no opportunity for exploration of each party's credentials, the opportunity to develop high-quality supplier relationships is limited or even impossible. In the case of *Dissolution*, where the post-relationship stage sets in, it could be argued that the cycle stops operating as an inevitable result. Almost every relationship stage could lead to *Dissolution* (see e.g., the *Supplier Hierarchy*, where suppliers can drop out of the

supply base at any time; Christopher and Jüttner, 1998), except the *Awareness* stage as a result of its unilateral nature.

Interestingly, Dwyer et al. (1987: 19) highlight "not every dyadic linkage of which the buyer or seller is aware enters the exploration phase, and not every relation probed and tested in exploration enters expansion or becomes soldered by commitment." This means that the expansion and commitment phases have to be seen separate from awareness, exploration, and dissolution – expansion and commitment are the two relationship maintenance phases (Simon and Pohl, 1996).

From the relationship marketing point of view, maintaining a relationship and developing purchasers into partners are major goals (refer back to Figure 2-4 on page 18). The following figure provides an overview of the relationship life cycle with the focus on relationship maintenance.

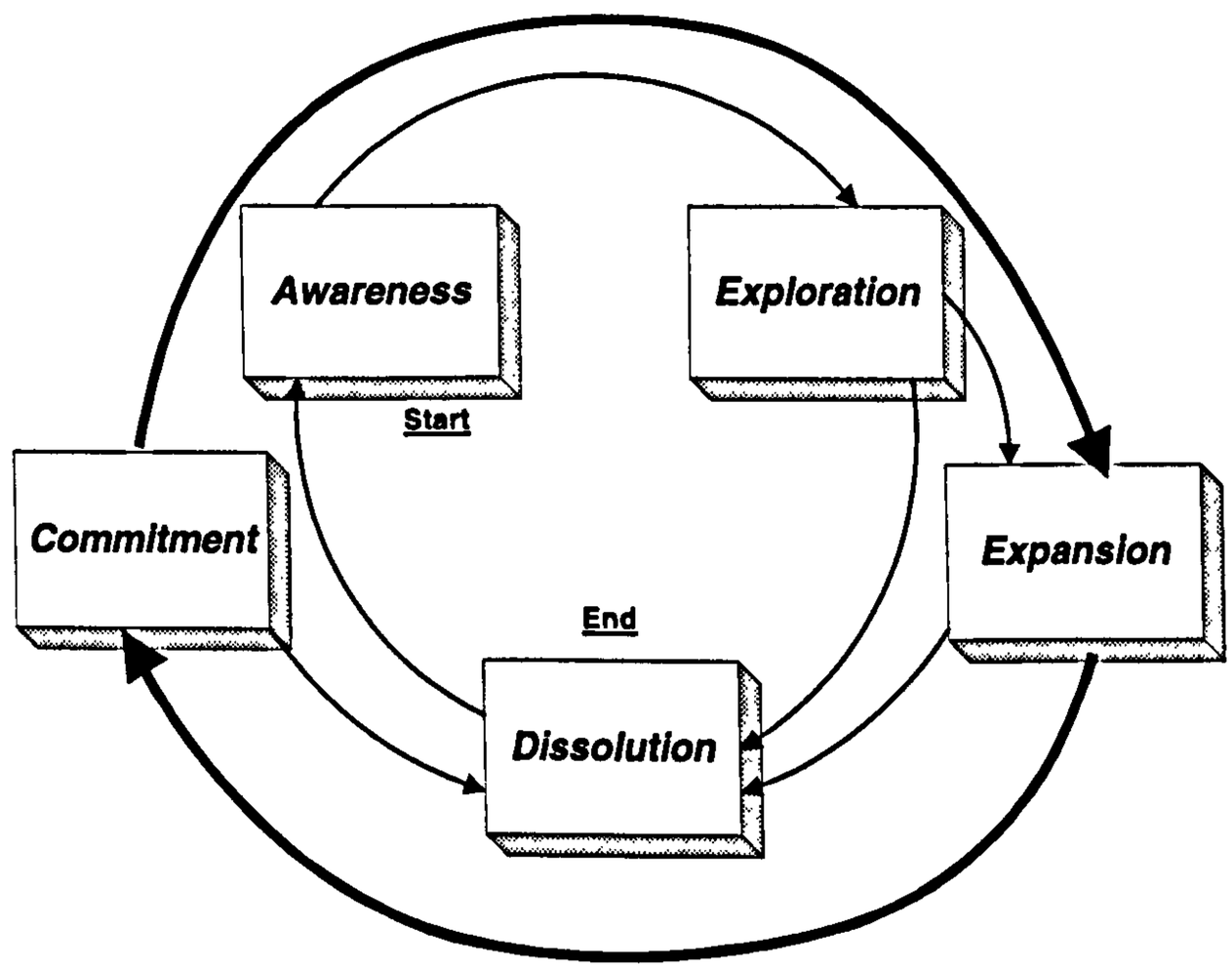


Figure 2-13: Maintaining the Relationship Life Cycle

The figure highlights that the life cycle of a business relationship does not stop if both parties are committed and willing to expand their relationship over time. Relationship maintenance, according to Anderson (1995: 347) "can be viewed as the customer and supplier firms continuing to engage in collaborative exchange

[4] Note: The final stage of Ford's (1980) model represents the matured form of a business relationship. Thus, this stage was reserved for highly developed relationships and not for terminated ones.

episodes together." Put differently, a long-term perspective – and with it, a loyalty issue – is attached to both phases.

Relationship maintenance is particularly interesting for the current research purposes, as the chances of fully developed social contacts between both organisations are greater. By contrast, companies in new relationships experience a considerable social distance (Ford, 1984). This means that both parties are not in a position to perceive the quality of their relationship to its full extent at this early stage. Rempel et al. (1985) argue that there is a developmental progression in terms of the time and emotional investment required to establish and fully understand relationship concepts, such as RQ.

Ellram (1991a: 6) states that after six to twelve months suppliers and customers are capable of evaluating the "future viability of the relationship." This time period might be sufficient to go beyond the awareness and exploration stages and to be conscious about the quality of the relationship and to decide to maintain it. Relationships that remain in the maintenance stage represent a good platform for partnerships. This special form of business relationship will be discussed next.

2.3.3 Special Form of Business Relationship: Partnerships

It is often stated that firms seek to form strategic partnerships with both suppliers of tangible goods and of services. But what are partnerships? This section introduces partnership definitions, debates the nature of partnerships and discusses partnerships as a close form of relationship.

2.3.3.1 Partnership Definitions

During the past decade, there has been extensive research into supplier relationships and partnerships. Given this high level of interest, it is perhaps not surprising to find that partnership has been defined in a number of different ways and Table 2-4 illustrates this:

Partnership Attribute	Brennan (1997)	Ellram & Hendrick (1995) / Ellram (1995)	Graham et al. (1994)	Gentry (1996)	Saxton (1997)	Scott and Westbrook (1991)	Stuart (1993)	Webster (1992)
Closeness						X		
Commitment		X	X	X				
Co-operation								
Dependency	X					X	X	X
Focus on continuous improvements				X				
Long-term View			X	X			X	
Resource Exchange					X			
Sharing of Information		X	X	X				
Sharing of Risks and Rewards		X	X	X				
Trust						X		X
Value of the Resource Access					X			
Voluntary			X					

Table 2-4: Different Views on the Partnership Concept

Webster (1992: 5), for instance, defines a 'real partnership' as a way "in which each partner approaches total dependence on the other in a particular area of activity and mutual trust replaces the adversarial assumptions." The two key characteristics of partnership in his view are thus, 'dependency' and 'trust' and this is indicated in Table 2-4. The table, while not exhaustive, illustrates that previous definitions of partnership differ widely. On the whole, partnerships can be characterised by a high level of commitment, mutual dependency, trust, and a long-term orientation where the sharing of information as well as risks and rewards are typical. Unfortunately, a consistent definition of partnership based on empirical evidence cannot be found in the literature – and no commonly accepted

theoretically derived one exists yet. Partnership definitions in the literature often exhibit the following characteristics:

- They are vague and rarely include measures, which, if available, could help in operationalising the concept (e.g., Landeros et al., 1995).
- Where measures are included in definitions, these are based on the authors' perceptions, which are defined prior to investigations (e.g., Ellram, 1995).
- Definitions are inconsistent among authors, which suggests that different constructs are measured (e.g., refer to Table 2-4 on the previous page).
- Where definitions identify partnership attributes, these are usually based on very limited empirical evidence.

Partnership can be better understood as soon as the nature of this form of relationship is explained.

2.3.3.2 The Nature of Partnerships

The relationship between manufacturers and suppliers can take many forms. These relationships can be seen on a continuum ranging from purely discrete transactions at one end, to long-term relational exchanges between interdependent partners at the other (Mohr and Nevin, 1990). Webster's representation of this range is shown in Figure 2-14.

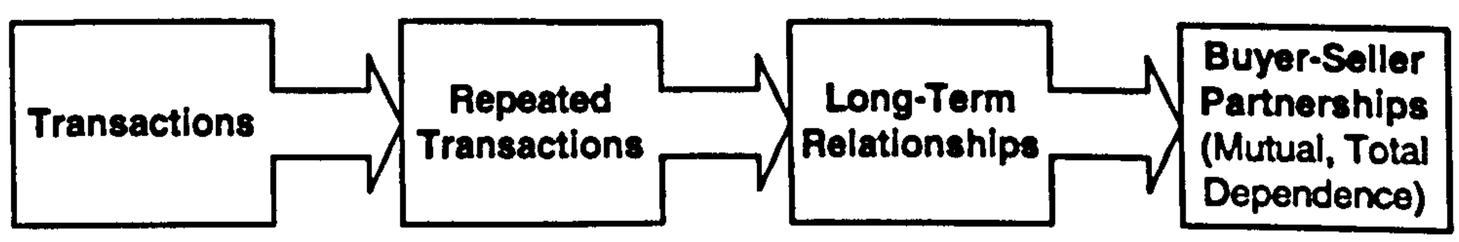


Figure 2-14: The Range of Supplier Relationships

Source: Based on Webster (1992: 5).

Webster suggests that relationships based on transactions can further be developed into partnerships; besides, there is only one type of partnership. However, Lambert et al. (1996) propose that there are three kinds, depending on their 'short-term' (Type 1), 'long-term' (Type 2) and 'long-term with no-end' (Type 3) character (see Figure 2-15 overleaf).

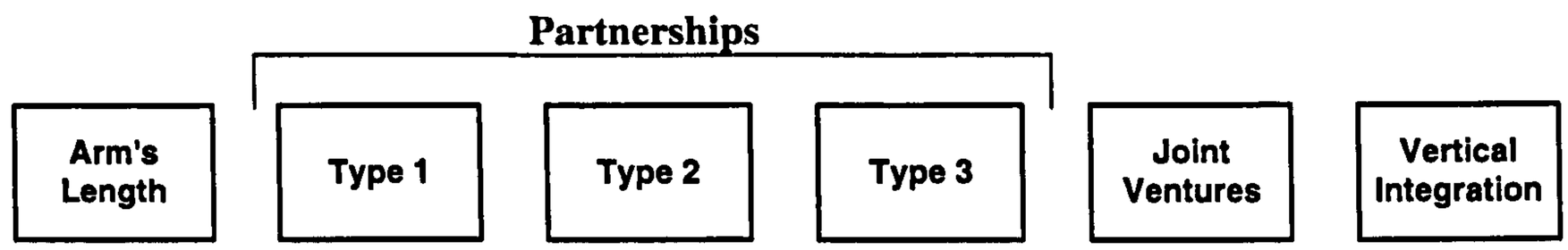


Figure 2-15: Types of Relationship

Source: Lambert et al. (1996: 2).

Within modern buyer-seller relationships, substantial resource investment is necessary – consequently, managing the relationship for the long-term becomes more important (Dwyer et al., 1987; Simpson and Mayo, 1997). It is helpful to use the time horizon to differentiate between the partnership types (as Lambert et al. have). One can see parallels to the relationship maintenance stage discussed earlier (recall Figure 2-13 on page 31), where maintaining a relationship is done over time. However, partnerships go beyond maintaining long-term relationships. In practice, it cannot be assumed that a manufacturer and a supplier in a long-term relationship see themselves in a partnership. It could be that a manufacturer stays with a supplier because he finds no alternative. Or, perhaps the manufacturer has purchased the product from the supplier over several years due to a consistently low price. Their relationship may not go anywhere beyond the placing of an order and its delivery. Partnerships are a special form of supplier-relationship – they are much closer.

2.3.3.3 Partnerships as a Close Form of Relationship

Lambert et al. (1996) contend that partnerships are 'closer' than other types of relationship. Ellram (1991b) defines partnerships similarly in terms of 'close sharing relationships,' while Macbeth (1998) sees them as a contrast to 'distant relationships.'

According to Ford (1984), manufacturers and their suppliers now emphasize close relationships, rather than 'playing the market,' where they focus solely on cost reduction or increased revenues. Ford suggests that *relationship closeness/distance* could be measured in terms of five dimensions: geographical, time, technological, cultural, and social. In contrast, Kalwani and Narayandos

(1995) make the point that the level of closeness may indicate the presence of nothing more than joint action and expected continuity in the relationship.

Homburg (1995) argues that a clear definition of relationship closeness, and an approach to measuring the degree of it, is currently lacking. He conducted about thirty qualitative interviews in various industry sectors and concludes from his research that the term 'closeness' between suppliers and industrial buyers consists of four dimensions: 1) product, service, and logistics; 2) supplier interaction; 3) supplier's commitment; and 4) atmosphere. Unfortunately, he does not give any ideas about how he analysed the interviews and derived the dimensions. In addition, it is not clear to what extent his results may be generalised.

Based on the assumption that partnerships are close relationships, Lemke et al. (forthcoming) recently explored the partnership concept in four German engineering companies. Their research was conducted using the Repertory Grid Technique (the technique will be explained later on page 127) with an exploratory sample of ten managers. The study revealed that supplier partnerships are very different from other forms of relationship and the authors identified five distinct attributes of partnerships with suppliers: personal business relationship, delivering special products, involvement in new product development, maintaining the relationship, and the supplier's location.

Despite the latter exploratory study on partnerships, it can be deduced that this close form of supplier relationship is still an inconclusive concept today and warrants further attention.

2.4 Quality Management: From Product to Relationship

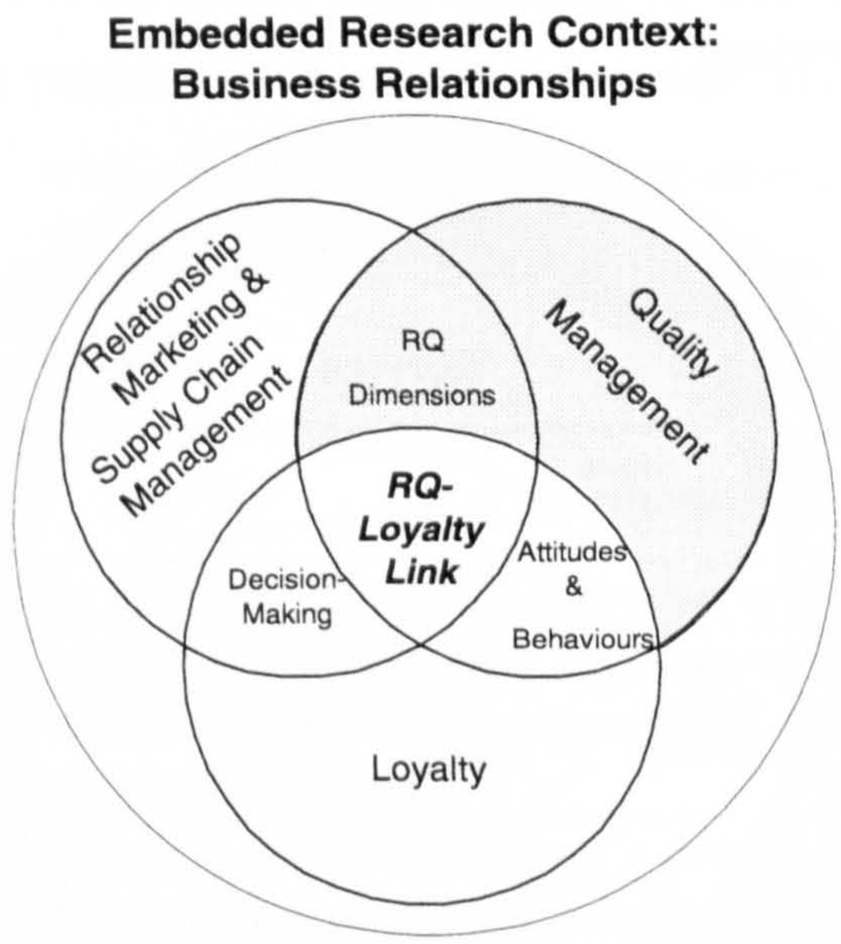


Figure 2-16: The Literature Focus of Section 2.4

Supplier relationships comprise different elements. In order to explore the quality of relationships with suppliers, discussing the product content is a good place to begin. Moving on to the service context will pave the way for discussing the quality of a relationship itself.

The nature of products is changing, as Payne et al. (1995) explain, and the table below outlines their observation.

Category	Past	Present	Future
Item	*Product*	*Augmented product*	*System contracts*
Lead time	*Short*	*Long*	*Lengthy*
Service	*Modest*	*Important*	*Vital*
Delivery place	*Local*	*National*	*Global*
Delivery phase	*Once*	*Often*	*Continually*
Strategy	*Sales*	*Marketing*	*Relationship*

Table 2-5: Perceptions of Values – The Changing Nature of Products
Source: Based on Payne et al. (1995: 24).

A product can be analysed from different angles. Payne et al. suggest six dimensions starting from 'item' to 'strategy.' Interestingly, it is said that the strategy has moved away from pure sales in the past and will focus on the

relationship when fully developed in the future. Besides, the service content will become vital. These circumstances may explain that the product becomes increasingly augmented over time. The expansion of additional features to the product is illustrated below:

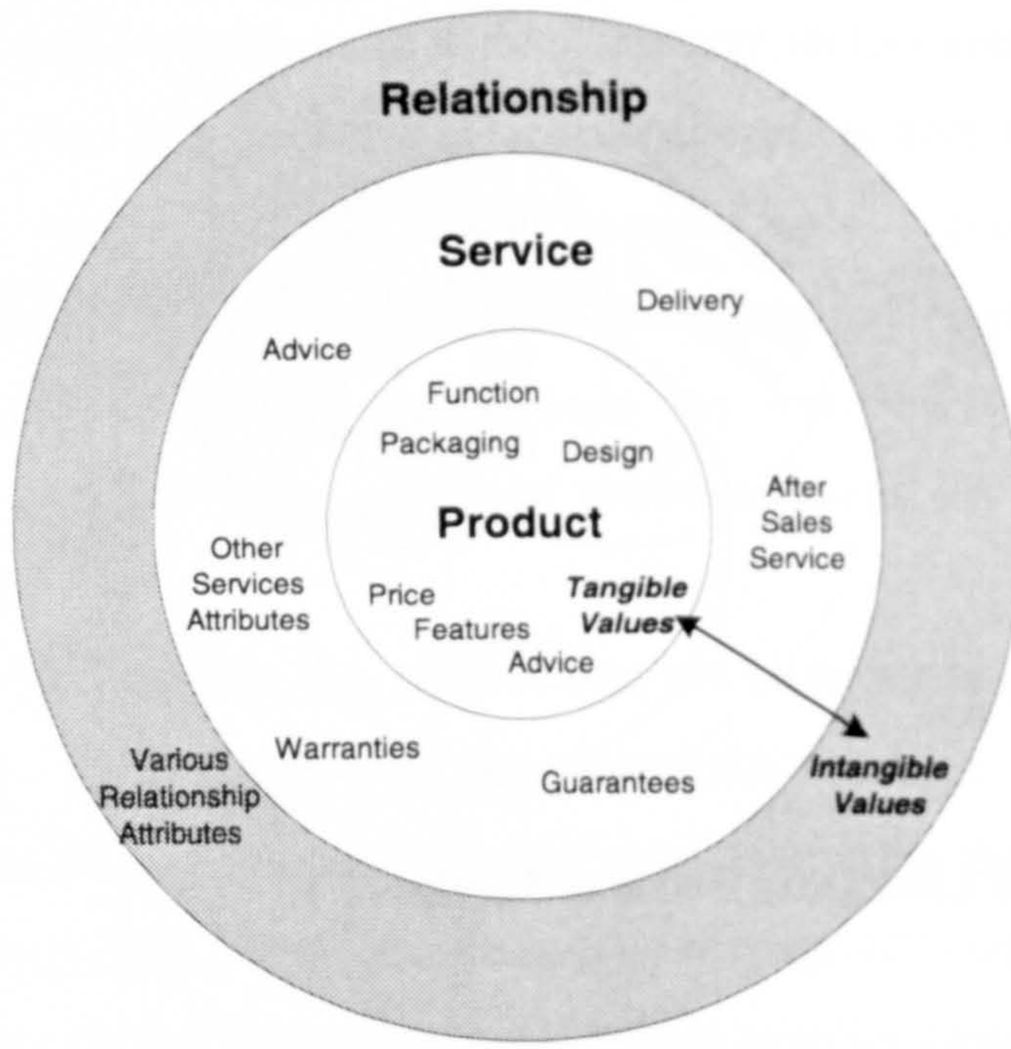


Figure 2-17: The Product Surround

Source: Based on McDonald and Payne (1996: 28).

As shown in Figure 2-17, the product is the tangible core of the relationship. Price, packaging, function etc. are concrete product attributes. Advice, warranties etc. become less tangible and can be found in the service layer. The relationship extends not only the product, but also the service. Christopher et al. (1991: 142) explain, "the concept of quality goes far beyond the product itself to embrace the entire relationship between the organisation and its customers." Exploring the intangible layer is one goal of this research and is highlighted in grey. However, these distinctions should not be painted too sharply. Although the figure marks out some different shades of quality layers, the discussion will show that some overlap exists. Nevertheless, only after the quality of products and services has briefly been addressed can attention be turned to the intangible quality of relationships.

2.4.1 Product Quality

As the product is the tangible offer to the market, the quality of a product can be easily measured. Kotler et al. (1999: 566) describe product quality loosely as "the ability of a product to perform its functions." In other words, product quality is normally associated with conformance to pre-determined specifications, producing zero defects. Garvin (1987), however, proposes eight distinct product quality dimensions:

Product Quality Dimension	Explanation
Performance:	*The primary operating characteristics of a product.*
Features:	*The characteristics that supplement the basic functioning.*
Reliability:	*Probability of a product malfunctioning or failing within a specific time period.*
Conformance:	*Degree to which a product's design and operating characteristics meet established standards.*
Durability:	*Measure of product life in economic and technical terms.*
Serviceability:	*Speed, courtesy, competence and ease of repair.*
Aesthetics:	*How the product looks, feels, sounds, tastes or smells.*
Perceived Quality:	*Indirect measures for comparing brands.*

Table 2-6: Product Quality Dimensions
Source: Garvin (1987).

Garvin draws attention to dimensions like performance, features, conformance and durability (see Table 2-6). These are very tangible; however, he also points to serviceability and aesthetics as two separate dimensions. Both quality aspects carry more intangible elements. As will be seen later, service quality incorporates some tangible aspects too, which connects both quality layers. Generally, both layers are seen on a continuum, where tangible elements are easy and intangible elements are difficult to evaluate (see e.g., Rushton and Carson, 1989). Viewing a product and its service content from the two angles provides a complementary perspective of a product and its augmented service.

Product quality, despite its importance, can only serve as a starting point for identifying the quality of relationships. Sharland's (1997: 407) work reveals that the quality in the finished product market has "virtually no impact on the buyer's perception of the relationship." The service is the differentiator (e.g., Aijo, 1996;

Larson, 1996). Product quality is relatively easy to evaluate, but the quality of a service poses greater difficulty based on its increased intangible character.

2.4.2 Service Quality

Services do not physically enter the supplier's product, but augment it with more intangible elements. Thus, services differ from the product in terms of their intangibility, heterogeneity, perishability as well as their inseparability of production and consumption (e.g., Rushton and Carson, 1989; Walker 1995). Zeithaml and Bitner (1996: 117) define service quality vaguely as "the delivery of excellent or superior service relative to customer expectations."

Parasuraman et al. (1988) consider both, expectations and perceptions and base their model on the two aspects. A series of focus group studies conducted by the authors (1985) elicited ten determinants of service quality: reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding/knowing the customer, and tangibles. Later, Parasuraman et al. (1988) developed the *SERVQUAL* concept and reduced the ten aforementioned dimensions to the following five:

Component:	*Description:*
Tangibles:	*Physical facilities, equipment, and appearance of personnel.*
Reliability:	*Ability to perform the promised service dependably and accurately.*
Responsiveness:	*Willingness to help customers and provide prompt service.*
Assurance:	*Knowledge and courtesy of employees and their ability to inspire trust and confidence.*
Empathy:	*Caring, individualised attention the firm provides its customers.*

Table 2-7: Service Quality Dimensions

Source: Parasuraman et al. (1988: 23).

Table 2-7 outlines the five service quality dimensions, suggested by Parasuraman et al. The first dimension (i.e., tangibles) presents the direct link to the core product, the remaining dimensions are purely service oriented and are thus, more intangible. However, the boundaries of the three layers that surround a product (refer back to Figure 2-17) should not be understood as sharply defined.

Therefore, some of the SERVQUAL dimensions might partly represent relationship quality attributes. For instance, 'empathy' could potentially be one of the attributes that explain the quality of supplier relationships and it could therefore be a connector of the service and outer relationship layer.

Before leaving the SERVQUAL model behind, it is worth noting that Parasurama et al.'s approach has not only been well established by the originators, but also several studies quantified the SERVQUAL scales, as Soteriou and Chase (1998) as well as Menon et al. (1998) report. Although established, SERVQUAL has its critics, largely due to the expectation-perception paradigm used. In the customer satisfaction context, for example, Walker (1995: 7) points out "researchers have cautioned against merely accepting the disconfirmation paradigm in its present form as appropriate for service evaluations." Interestingly, Cronin and Taylor (1992, 1994) find the customer's perception as the more accurate measure of service quality and they exclude expectations completely. The authors developed the SERV*PERF* model. This concept is SERV*QUAL*, but is based on performance only (i.e., customer's perception), rather than the disconfirmation paradigm. Finally, Buttle (1996) presents a review of the controversies of SERVQUAL that go beyond the boundaries of this thesis.

At this point, it has to be re-emphasised that the quality of the supplier relationship incorporates more than merely product and service quality variables. Crosby et al. (1990: 68) explain, "service quality can be considered a necessary, but not sufficient, condition for relationship quality." What this kind of quality may be, is the subject of the next section.

2.4.3 Relationship Quality

The concept of relationship quality (RQ) has taken on increased importance with the advent of continuous improvement strategies and other best practices in manufacturing that limit the number of suppliers used by a firm. Since RQ is a new concept, there exists a great diversity of viewpoints about it. To illustrate the variety, the following table highlights a broad range of examples, which has been used to come to terms with RQ:

Authors	RQ-Constructs																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Crosby et al. (1990)																				X	X
Storbacka et al.(1994)	X			X	X															X	
Wray et al. (1994)																				X	X
Lassar and Zinn (1995)		X				X															
Monczka et al. (1995)		X								X				X	X					X	
Bejou et al. (1996)																				X	X
Han et al. (1996)				X																X	X
Leuthesser (1997)																				X	X
Oliver, C. (1997)													X				X			X	
Dorsch et al. (1998)				X				X				X				X				X	X
Smith (1998)				X	X															X	X
Jap et al. (1999)							X				X				X						X
Boles et al. (2000)										X										X	X
Naudé and Buttle (2000)			X															X	X	X	X
De Wulf et al. (2001)				X																X	X
Hibbard et al. (2001)				X																	X

Key *(common constructs = :*)

1 = Bonds
2 = Co-operation; support
3 = Coordination
4 = Commitment
5 = Communication
6 = Competent
7 = Conflict
8 = Customer orientation
9 = Equity
10 = Dependence
11 = Disengagement
12 = Ethical profile
13 = Harmonic
14 = Joint programmes
15 = Length of relationship
16 = Minimal opportunism
17 = Non-constraining
18 = Power
19 = Profit
20 = Satisfaction
21 = Trust

Table 2-8: Different Views on Relationship Quality

As outlined in Table 2-8, the operationalisation of RQ differs significantly and so do the interpretations. Wray et al. (1994) conclude, "although the increasing importance of relational as opposed to discrete exchange has triggered considerable research into the quality of buyer-seller relationships, measurement of the [RQ-]concept remains poor." Note that none of the studies explored the RQ concept; the concept is simply pre-defined. Dorsch et al.'s (1998) research clearly illustrates that the dimensions of relationship quality are only insufficiently explored, and Boles et al. (2000: 75-76) re-emphasise, "prior studies have typically examined different constructs or, if examining the same constructs, the measures used are often unlike those in previous research."

In the table, *commitment* (construct 4), *satisfaction* (construct 20), and *trust* (construct 21) come to light as common RQ-constructs across all studies. Crosby et al.'s (1990) work in the life insurance context is a pioneering effort that represents the first major attempt to develop a model of the antecedents and consequences of buyer-salesperson relationship quality. In particular, Crosby et al. defined relationship quality conceptually at the outset of the study, based on satisfaction and trust alone. They used the concept as an indicator of the health and future well-being of long-term service sales relationships afterwards. More specifically, relationship quality was used to determine a salesperson's sales effectiveness and the likelihood of a customer's future interaction with the salesperson. Consequently, almost all later researchers refer to Crosby et al.'s study and adopt their approach, which explains why agreement is found on satisfaction and trust as two of the three common RQ constructs.

As examples, Wray et al. (1994), Bejou et al. (1996) and Boles et al. (2000) simply accepted the Crosby et al. (1990) measures of relationship satisfaction and trust. Indeed, Crosby et al.'s (ibid.) definition enjoys a wide measure of support in the majority of articles concerned with relationship quality. Smith (1998: 78) summarises "although there is no consensus on what constructs make up relationship quality,..., it is generally conceptualised as being concerned with the extent to which relators trust each other, are satisfied with the relationship, and are committed to its long-term maintenance." Also, De Wulf et al. (2001: 36) explained recently that trust, commitment and satisfaction are typically taken as a

basis of RQ and they therefore "assume that a better-quality relationship is accompanied by greater satisfaction, trust, and commitment."

Taking the theoretical concept of a single study as a basis is advantageous for replicating the results. However, no attempt has been made to explore RQ in a qualitative methodology first-hand and thus, the concept has been defined by the existing literature almost in theoretical terms alone. The unanimity notwithstanding, there are grounds for believing that other factors will need to be considered for measuring the concept.

The importance of quality in supplier relationships has been acknowledged and Naudé and Buttle (2000) are surprised that not much attention has been paid to the concept by academics. They (ibid.: 359) state "the core contribution of many researchers over the past two decades has been to identify the importance of relationships in business-to-business markets. However, defining just what managers regard as a good relationship is not an issue that has been studied in any depth." They (ibid.: 360) conclude "further research is needed to shed light on how different independent variables might influence just what is required from a relationship." Also Bejou et al. (1996) were surprised to find that "there is little empirical analysis of the relative importance of these [RQ-]factors or the examination of the additional factors that could affect the quality of buyer-seller relationships."

Although Leuthesser and Kohli (1995) explain that satisfaction is an important aspect of relationship quality, it should be noted that satisfaction is differently defined by a number of studies. Satisfaction represents a complex array of variables itself (see e.g., Dröge, 1997; Oliver, R., 1997) and developed into a research stream of its own (see e.g., Ruekert and Churchill, 1984; Oliver, R., 1997; Geyskens et al., 1999, Homburg and Rudolph, 2001). For instance, Homburg and Rudolph (2001) highlight that customer satisfaction in industrial markets is an under-researched area and they propose seven distinct dimensions, such as satisfaction with products, salespeople, order handling, complaint handling among others.

Taking Dorsch et al.'s (1998) relationship quality research as an example, they (ibid.: 137) conclude that "customer satisfaction with a vendor and customer

intention [i.e., commitment] to continue the vendor relationship tend to reflect global assessments rather than evaluations of specific vendor relationship attributes.,...., In particular, the commitment and satisfaction variables were excluded from the second MDA [i.e., Multiple Discriminant Analysis]."

The examples in Table 2-8 on page 42 show how the RQ-field is opened up for alternative explanations. The definition and measurement of the concept is currently a source of controversy amongst researchers. Unfortunately, the disagreement over definitions of the RQ concept has led to the situation where the meanings of other concepts deployed in the literature overlap. Naudé and Buttle (2000: 355) argue "there is clearly a lot of overlap between constructs,..., and this remains an area for future clarification." The most notable confusion exists about the meaning and applicability of related RQ-concepts, namely relationship satisfaction, relationship closeness, and relationship strength.

Relationship satisfaction is broadly defined as "an overall assessment that the relationship contributes something good to the parties" (Eriksson and Vaghult, 2000: 365). Geyskens et al. (1999), for instance separate economic and non-economic relationship satisfaction. However, it has been generally accepted that relationship quality is a higher-order concept and that relationship satisfaction could be a potential construct of it (cf. De Wulf et al., 2001 and Table 2-8). Bove and Johnson (2001) argue that relationship closeness is reserved for (romantic and personal) friendships. However, it has been used earlier to describe partnerships (refer back to page 35) and research has shown that 'closeness' is particularly suited to be applied in partnership research (see Lemke et al., forthcoming; Han et al., 1993). Relationship strength is an appropriate concept to describe the magnitude of a relationship between two individuals (i.e., a customer and salesperson or a customer and service worker), as Bove and Johnson (2001) explain. Relationship quality is the most applicable term in the context of customer-service firm, buyer-seller or channel dyads when describing the magnitude of a relationship between a customer and firm or two organizations, according to the authors. Moreover, Boles et al.'s (2000) study indicates that relationship quality is even more important for the business-to-business customer than it is for the end-consumer.

From this brief discussion it is suggested that the business-to-business market is the best research context to explore RQ. Ariño and de la Torre (1998), for example, see the quality of a relationship between companies developing from the personal relationships within. This notion of subjective personal influences on the overall business relationship needs to be explored further.

Christopher et al. (1991) claim that in markets where companies offer similarly high levels of product quality, the quality of an ongoing relationship becomes a means of gaining competitive advantage. Anecdotal evidence supports this notion. However, this thesis responds to the challenge and explores the relationship quality constructs empirically. In an exploratory approach it would seem possible to dimensionalise relationship quality according to several sets of variables by focussing on the supplier relationship itself. In order to design the research project, the typical characteristics of previous research are worth pointing out – these are as follows:

- Aim: Scholars explore possible links between RQ and another important aspect of a relationship, e.g., the link between RQ and the organisational performance (Oliver, C., 1997); between RQ and the supplier's share of business (Leuthesser, 1997); or between RQ and the evaluation of supplier relationships (Dorsch et al., 1998).
- Adopting one approach: Researchers adopt the Crosby et al. (1990) model, which assumes trust and satisfaction as a basis of relationship quality. However, Crosby et al. have not explored RQ, rather, they conceptually defined the quality of relationship, which other researchers now take for granted (e.g., Wray et al., 1994; Bejou et al. 1996; Boles et al., 2000).
- Focus: Researchers concentrate too much on the service sector (e.g., Crosby et al., 1990; Bejou et al., 1996). Boles et al. (2000: 80) point to other business-to-business sales settings "where a product, as opposed to a service, is the focus of the sales call. The intangible nature of the service setting may result in relationship quality having a greater influence on the consequences of expertise and anticipated future interaction than would be the case where a tangible product is being sold." An exploratory study in the manufacturing environment is called for.

- Method: Quantitative approaches (e.g., mailed questionnaire designs) require prior knowledge of the relationship quality concept. This view hinders the exploration of the additional and true RQ constructs (cf. Wray et al., 1994); yet, this approach dominates.
- Single Informants: Researchers rely on single informant data (e.g., Dorsch et al., 1998; Boles et al., 2000). A relationship, however, is a multi-faceted exchange scenario and different views should be captured.
- Contradictory Results: Previous studies of the factors contributing to RQ have produced mixed results in terms of the emerged constructs and the levels of significance obtained (see Table 2-8). There is little agreement on the definition of concepts, how they should be operationalised, or what labels should be attached to them (Bove and Johnson, 2001).

Additional methodological issues of researches within the field of relationship quality and loyalty will be discussed in the appropriate chapter later (refer to section 2.8 on page 73). In order to explore relationship quality, as well as the customer's loyalty later on, it is inevitable to be clear about the psychological underpinnings. Or, as Elbing (1978: 179) puts it, "a general awareness of basic psychological processes aids immeasurably in making logical inferences about the causes of behaviour." This topic will be taken up next.

2.5 Psychological Considerations

Figure 2-18: The Literature Focus of Section 2.5

From the psychological perspective, analysing the link between relationship quality and the customer's loyalty opens two avenues. On the one hand, it is possible to take the behaviourism route (e.g., Watson, 1913; Watson and Rayner, 1920), which holds the view that psychology should be an objective science of behaviour without reference to mental processes. Viewing behaviour in this way means that one should only deal with directly observable stimuli and responses from a third-person's point of view. As subjective inner feelings cannot be observed, the behaviourism perspective ignores any possible subjective influence on behaviour. This detail, however, is not deemed a deficit, as any behaviour is a reflex, influenced by a conditioning process (Pavlov, 1927). Pavlov (1927) as well as Watson (1913) believed that a lot of human behaviour and learning could be explained in terms of stimulus-response relationships. In short, examining mental states of individuals is not necessary for understanding behaviours and thus, is abandoned in behaviourism.

A number of references, on the other hand, chose to regard the human being itself as being a critical element rather than focussing only on what happens to the individual from the outside (e.g., Allport, 1955; Kelly, 1955a; Yalom, 1995; Halligan and Marshall, 1997). Thus, the mind has to be explored from a subjective

first-person perspective in order to comprehend individual behaviour to its full extent. Yalom (1995: 492) summarises particularly well the thoughts of authors who challenged behaviourism: "Where, they asked, is the person? Where is consciousness, will, decision, responsibility, and a recognition and concern for the basic and tragic dimensions of existence?" To provide answers to questions like these, the cognitive paradigm needs to be taken into account. This approach distinguishes between *what people think* (cognitive), *how they feel* (affective) and *what they do* (behavioural). Huczynski and Buchanan (1991) contrast both paradigms as follows:

Behaviourist, stimulus-response	Cognitive, information processing
Studies only observable behaviour	Also studies mental processes
Behaviour is determined by learning sequences of muscle movements	Behaviour is determined by memory, mental processes and expectations
We learn habits	We learn cognitive structures (and alternative ways to achieve goals)
Problem-solving is by trial and error	Problem-solving also involves insight and understanding
Dull, boring, but amenable to research (?)	Rich, interesting but complex, vague and unresearchable (?)

Table 2-9: Comparing the Behaviourist Postion with the Cognitive Position
Source: Huczynski and Buchanan (1991: 95).

Table 2-9 contrasts the behaviourist and cognitive perspectives. The cognitive paradigm is able to explore mental processes and cognitive structures when evaluating alternatives, by understanding the problem solving process. The cognitive element poses greater difficulties for the research design than the behavioural understanding outlined in the left column of the table, because mental processes need to be objectified and measured.

Interestingly, Burr and Butt (1992: 90) highlight that "increasingly, former behaviourists have moved towards explanations in terms of cognition and meaning." Although it might be already apparent, it should be emphasised at this point that the psyche of the individuals is a critical issue in the present investigation. This necessity diverts the discussion towards behaviour and attitudes; a cognitive perspective will therefore be taken and a deeper discussion of behaviourism is outside the scope of this thesis.

In the cognitive paradigm, attitudes are the central elements. The dilemma with attitudes is that authors interpret them differently and there is no single definition of the term that is universally accepted (Manstead, 1996). It might come as a surprise that Fishbein and Ajzen (1972) found more than 500 different approaches in publications to measuring attitudes, three decades ago. Therefore, the following section will debate the development of the established theories. Afterwards, it is important to discuss behaviour in order to see the attitude and behaviour link that will sketch out the background of the potential RQ-Loyalty connection later.

2.5.1 Attitude

In the early 60s, Rosenberg and Hovland argued that an attitude is not a single factor, but a far more complex and multidimensional concept. This concept is an exploratory device to understand human behaviour, as it influences behaviour directly (see Figure 2-19).

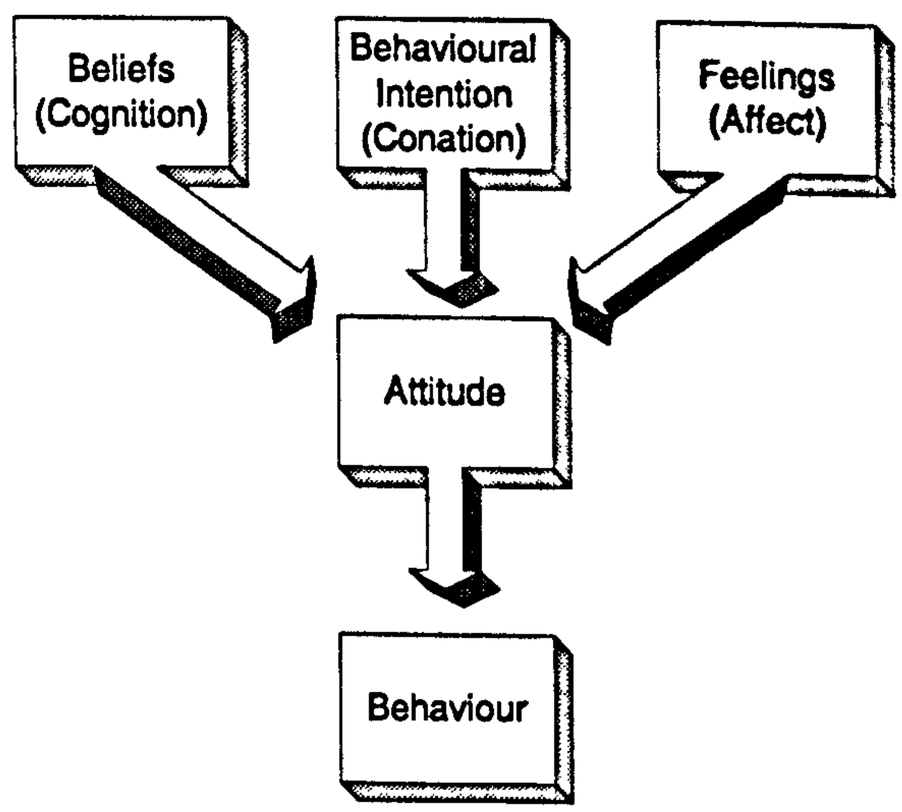


Figure 2-19: Hierarchical Model of Attitude

Source: Based on Rosenberg and Hovland (1960: 3).[5]

[5] Note that for comparative purposes to the modified model of the attitude structure (see Figure 2-20) the classic illustration (in Figure 2-19) has been adapted. Rosenberg and Hovland (1960) originally placed the three components cognition, conation and affect before attitude. This could give the impression that the elements are antecedents of an attitude. Yet, the authors (ibid.) stated that they are components of attitudes, which might be more visible in the adapted figure above. Recently, Haddock and Zanna (June 1998) chose to illustrate the original hierarchical model similar in this respect. Besides, the original model contained the term *behaviour* rather than *behavioural intention*. Also here, the original model has been adapted to the modern understanding for comparability purposes. Rosenberg and Hovland (ibid.) meant *behavioural intention*, but labelled this component *behaviour*.

The figure shows that an attitude consists of three elementary components. Behavioural intention plus beliefs and feelings is frequently referred to as the *three-component model* or the *tripartite model*, which is the most widely cited model of attitude structure. This holds that the attitudinal variables are hypothetical classes of responses to stimuli and cannot be observed. This is so, because these responses exist inside human beings (Breckler, 1984). Breckler (ibid.) as well as Ajzen (1989) referred to several studies, which empirically showed a strong positive correlation between the three factors (see interplay between the three components in Appendix 3 on page 325).

Later, scholars argued in favour of treating behavioural intention differently from beliefs and feelings. In this way, intention is an outcome of an attitude rather than an integral part of it. In turn, intention has a direct influence on behaviour as shown below:

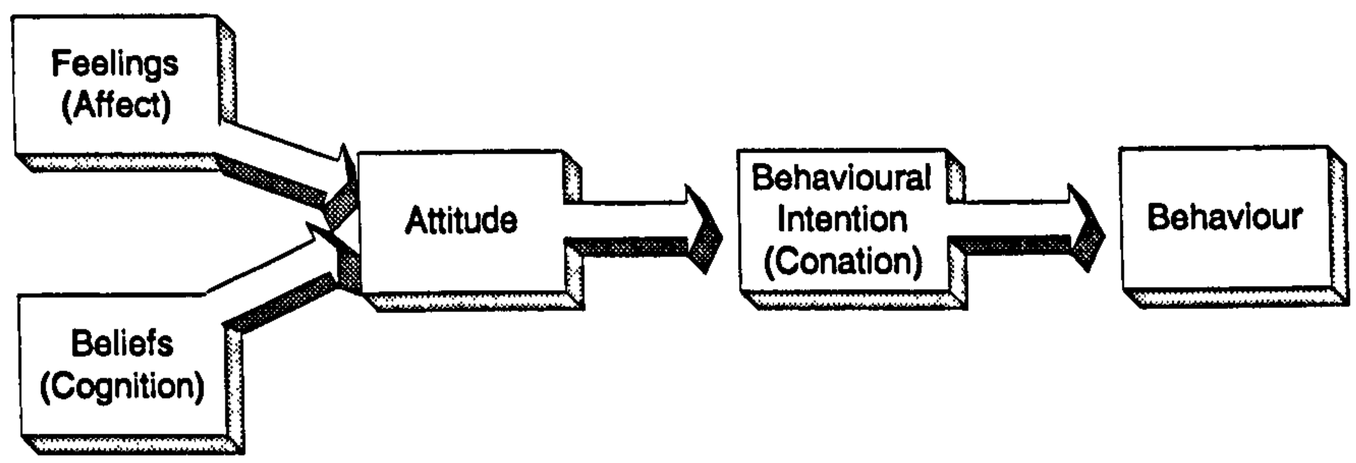


Figure 2-20: A Modified Model of Attitude
Source: Based on Engel et al. (1995: 365).

Figure 2-20 illustrates behavioural intention as being a hybrid of attitude and behaviour, which is the reason why the intention to behave in a particular way is capable of capturing motivational factors. Along these lines, Statt (1998: 10) defines an attitude as "a stable, long-lasting, learned predisposition to respond to certain things in a certain way." The general definition seems to neglect beliefs and feelings and so gives the impression that an attitude is largely the behavioural intention alone. In fact, scholars recently measured an attitude by intention alone. Dorsch et al.'s (1998) research is a case in point: In terms of analysing commitment of relationships, they (ibid.: 131) note "the attitudinal component of commitment can be operationalised as a behavioural intention to develop and maintain a stable relationship." Their standpoint is supported by Foxall and

Goldsmith (1994: 93), who point out that "an attitude is generally understood to refer to predisposition to respond in a consistent manner to a stimulus, i.e., a tendency to act or behave in some predictable way." Yet, there are several ways to come to grips with attitudes:

Response Mode	Response Category		
	Affect	**Cognition**	**Behavioural Intention**
Verbal	*Expressions of feelings towards attitude object*	*Expressions of beliefs about attitude object*	*Expressions of behavioural intentions towards attitude object*
Nonverbal	*Physiological responses to attitude object*	*Perceptual responses (e.g., reaction time) to attitude object*	*Overt behavioural responses to attitude object*

Table 2-10: Different Types of Evaluative Response

Source: Based on Manstead (1996: 47).

Table 2-10 highlights six general approaches (verbal and nonverbal) to identify the three attitudinal responses with regard to the attitude object (e.g., a product). Furthermore, all three elements have to be analysed in order to understand the actual behaviour in the end.

In 1975, Fishbein and Ajzen paid attention to all three components separately and placed them in a subsequent order. This understanding modified the model in Figure 2-20 even further; the following figure depicts their views as follows:

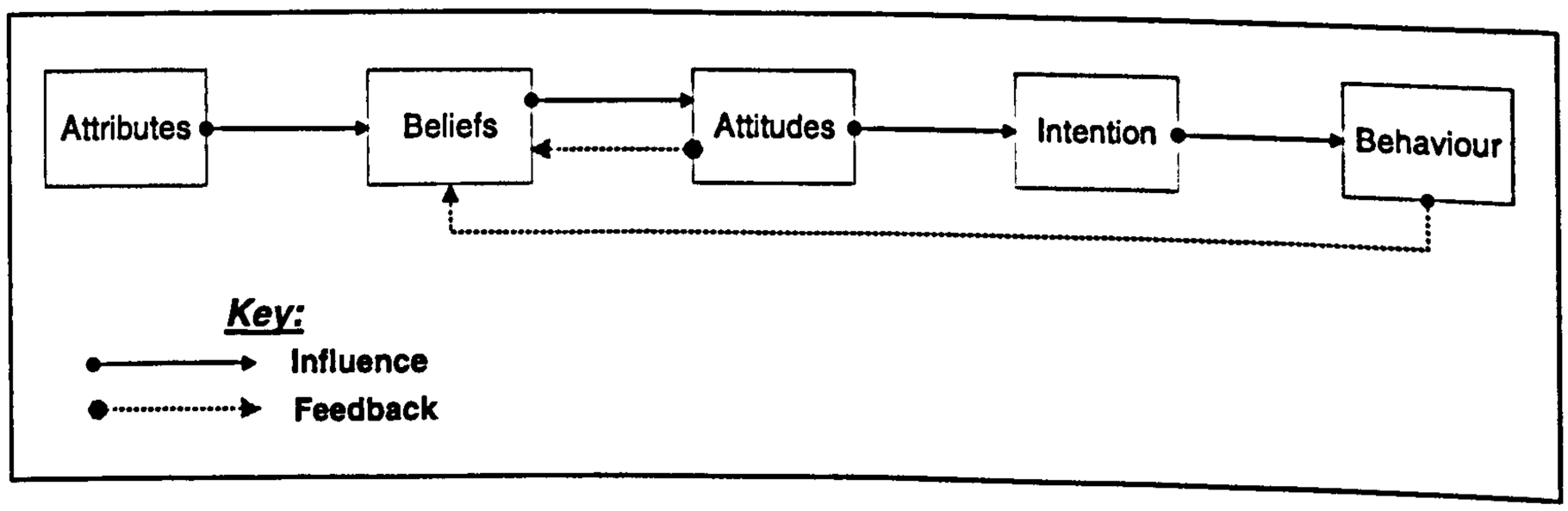


Figure 2-21: Schematic Presentation of Conceptual Framework Relating Beliefs, Attitudes, Intentions, and Behaviours with Respect to a Given Object

Source: Based on Fishbein and Ajzen (1975: 15).

As suggested above, an individual associates an attitude object (e.g., a supplier) with various attributes (e.g., friendliness, reliability). In this study, these attributes can be found in the intangible relationship layer (refer to Figure 2-17 on page 38)

and provide the basis for the formulation of certain beliefs about the supplier (e.g., the supplier is friendly and reliable). These beliefs lead to the manufacturer's attitude toward the supplier, which represents an overall evaluation (e.g., this is our 'best' supplier). Fishbein and Ajzen (ibid.) used the term *attitude* synonymous with *evaluation*, *affect* or *feeling*. The 'favourable' or 'unfavourable' attitude has an impact on specific intentions with respect to the supplier (in this study, to maintain the supplier relationship or to terminate it and to switch to another supplier). Behaviours are under full control of these intentions and re-inform the beliefs of the manufacturer (i.e., feedback loop).

Fishbein and Ajzen (1975) developed the *Theory of Reasoned Action* (TRA) later, which accommodates for subjective norms (i.e., individual's beliefs about social judgements and how they operate in a particular group of people). Ajzen (1985) developed TRA even further to the *Theory of Planned Behaviour* (TPB) in order to reflect on the 'perceived behavioural control' (i.e., the theory acknowledges that intentions can be carried out only to the extent that individuals have sufficient control over their behaviour). These problems, however, exceed the framework of the present consideration and the original model by Fishbein and Ajzen (1975; refer to Figure 2-21) may suffice for the present investigation.

Bringing the attitude discussion visually into the present research context, the link between relationship quality and loyalty could be conceptualised as follows:

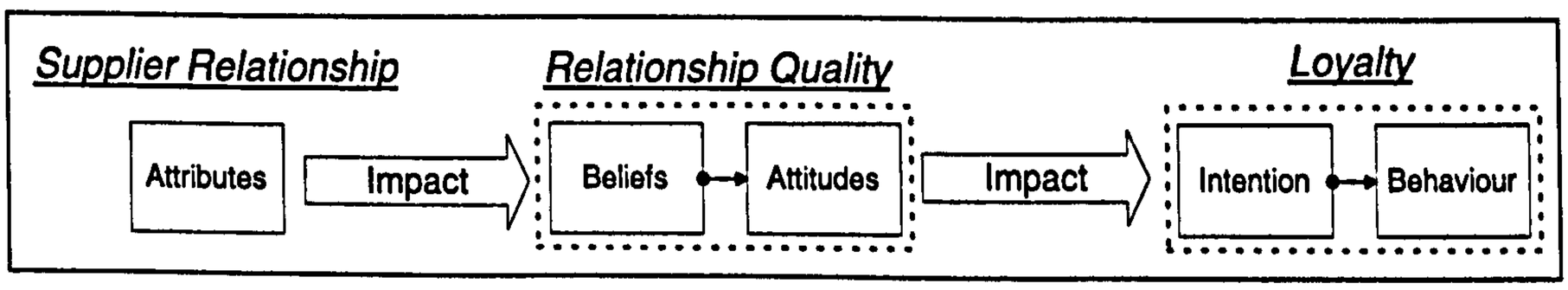


Figure 2-22: Relationship Quality and Loyalty: Attitude Considerations

The connections between the variables in Figure 2-22 correspond to Fishbein and Ajzen's (1975) model (see Figure 2-21 on previous page). The re-grouping in terms of *supplier relationship*, *relationship quality* and the *loyalty* is done for the current research purpose, which does not misrepresent the views of the original authors. The reason why the behavioural intention is part of the manufacturer's *loyalty* will be discussed in the appropriate section later (refer to 2.6 on page 59).

Altogether, this means that for understanding specific behaviours of a manufacturer, one has to start with the identification of the main attributes of supplier relationships that shape them to a high-quality or low-quality relationship. If all RQ-attributes were established, they could readily be taken from the literature. As there are no established measures in the literature (refer to 2.4.3 on page 42), the investigation has to start from here.

Beliefs, attitudes and intentions are commonly characterised as being on an evaluative dimension starting from a positive to a negative spectrum. Interestingly though, a neutral position between positive and negative is not a possible standpoint at all. Eagly and Chaiken (1993: 2) note that "an individual does not have an attitude until he or she responds evaluatively to an entity on an affective, cognitive, or behavioural basis." This opinion becomes important later in the literature review when the *intention* (e.g., to stay loyal) will be discussed against the actual *behaviour* (e.g., staying loyal). Now, two simplified options of a behavioural intention can be given, when *somebody likes to do something* (i.e., positive intention) or *somebody does not like to do something* (i.e., negative):

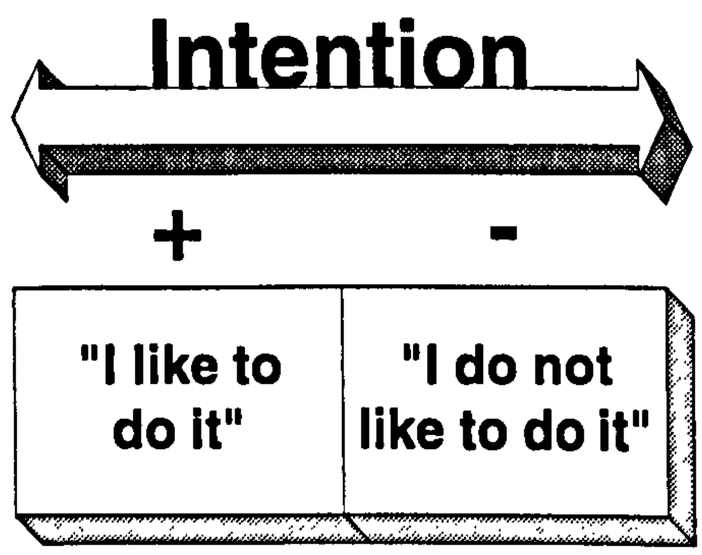


Figure 2-23: The Simplified Attitude Dimension: Focus on Intention

Figure 2-23 contrasts a positive intention to do something with the negative intention to do it not. Apart from attitudes within people, the attention is now drawn to observable behaviour, which occurs externally to human beings. As Myers (1998: 4) points out "you cannot observe a sensation, a feeling, or a thought, but you can observe people's behaviour as they respond to different situations" (italics omitted).

2.5.2 Behaviour

In the marketing discipline, Loudon and Bitta (1988: 8) define consumer behaviour as "the decision process and physical activity individuals engage in when evaluating, acquiring, using, or disposing of goods and services." Loudon and Bitta's understanding clearly includes *overt behaviours* (i.e., physical activity)[6] as well as *covert behaviours* (i.e., decision process or thinking processes).[7] For the current research, however, this description is not precise enough. By including *covert behaviours* in the behaviour definition, the distinction between attitude and behaviour would disappear – cognitive and attitudinal elements have to be singled out. The best two determinations of behaviour found are the ones given by Myers (1998) as well as Huczynski and Buchanan (1991), as they focus on overt aspects alone:

- Behaviour "is anything an organism *does* – any action we can observe and record" (Myers, 1998: 4);
- Behaviour "is the term given to the things that human beings do that can be directly detected by the senses of others" (Huczynski and Buchanan, 1991: 22).

Both behaviour definitions above lead to the distinction in terms of *somebody is doing something* (i.e., positive behaviour), or *somebody is doing nothing* (i.e., negative in terms of 'not performing the behaviour'). The following figure gives a snapshot:

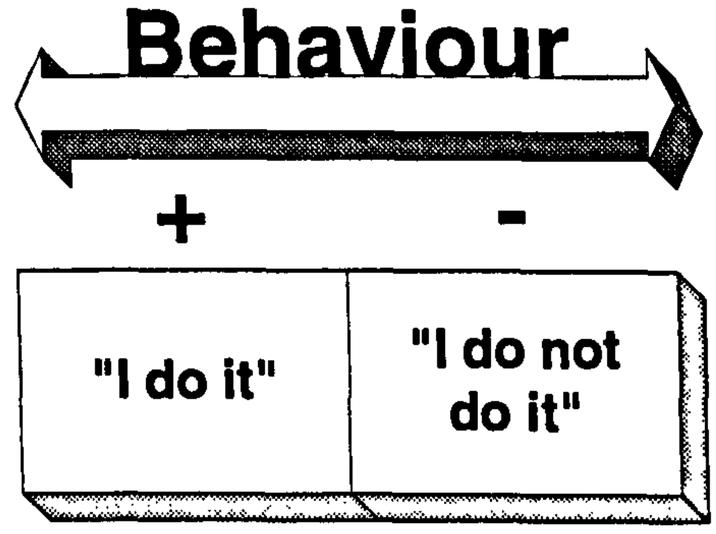


Figure 2-24: The Simplified Behaviour Dimension

[6] Overt behaviours are defined as "*actions* that other people can directly observe" by Spiegler and Guevremont (1998: 30).
[7] Spiegler and Guevremont (1998: 30) defines covert behaviours as "things we do that others cannot directly observe."

Figure 2-24 shows the behaviour of somebody doing a particular action as opposed to somebody who does not do it.

After introducing attitudes and behaviours separately, the understanding of the connection between both is necessary to explore the potential Relationship Quality-Loyalty link.

2.5.3 Synthesis of Attitude and Behaviour: An Integrated Discussion

The debate of whether attitudes influence behaviour is an open-ended, timeless topic in the literature. Whereas some authors note that attitudes are virtually unrelated to behaviours (e.g., Hayes, 1996; Keefe, 1980), others argue that they are (e.g., Ajzen, 1996; Fazio et al., 1983). In more general terms, Fazio (1986) concludes that attitudes guide behaviour in some situations. Although the circumstances of these situations are less clear, a considerable amount of work is done in this respect.

As an example, if people have time to reflect on their decisions, they "are more likely to act in accordance with their attitudes," as Ajzen (1989: 259) notes. Moreover, individuals who are highly involved are more likely to act on their attitudes than those who are less involved (Ajzen, 1996). This is so, because attitudes guide behaviour only if attitudes can be assessed in the individual's memory (Fazio et al. 1983).

In the current research, the manufacturer's decision to stay loyal to a supplier or to switch to another is unlikely to be an ad-hoc choice. Furthermore, all individuals in the DMU are highly involved in the decision making process by definition (otherwise they would not be DMU members). Therefore, relevant attitudes will be assessable in the decision maker's memory considering the high involvement and the time usually taken.

In the same vein, when the attitude formation is based on behavioural experience in the past with the attitude object (i.e., a given supplier), evidence shows that subsequent behaviour is more predictive (Fazio et al., 1983; Fazio, 1986). In the current research, the manufacturer has ongoing supplier relationships

and is therefore experienced with the supplying side. Consequently, a close relation between attitudes and behaviour can be expected.

One article is particularly worth mentioning: Ajzen and Fishbein (1977) reviewed 109 published studies, which analysed the attitude-behaviour relationship. By way of comparisons, they (ibid.: 912) conclude that "a person's attitude has a consistently strong relation with his or her behaviour when it is directed at the same *target* and when it involves the same *action*" (emphasis added). The authors point out that attitudes and behaviours are principally related, but in order to identify this link it was argued that the measurement of the following four 'attitudinal and behavioural entities' must be consistent:

1. *Action* (i.e., behaviour);
2. *Target* (at which the action is directed);
3. *Context* (in which the action is performed); and
4. *Time* (at which it is performed).

The reason why the attitude-behaviour relationship is not always obvious in empirical work, so Ajzen and Fishbein (ibid.) explain, is a matter of methodological inconsistencies, where the measurement of attitude and behaviour entities were logically different. Putting Ajzen and Fishbein's framework into the current research context, the following comparisons can be made:

Entity:	Attitude:	Behaviour:
Action:	The attitude about a general class of behaviour (i.e., Loyalty) will be explored.	Exactly this behavioural class will be measured.
Target:	The attitude will be examined with regard to the supplying party.	Behaviour will be measured precisely with respect to particular suppliers, described by meaningful attributes.
Context:	The attitude investigation takes place in business situations, which are most suited to exploring the RQ-Loyalty-Link in an established business relationship (i.e., supplier selection process).	Behaviour will be measured with respect to this defined context.
Time:	Attitudes will be identified with respect to the time when a particular context/situation takes place.	Behaviour will be measured during this business occasion in an experimental design.

Table 2-11: Four Entities Compared Across Attitude and Behaviour

By comparing attitude and behaviour across the four entities in Table 2-11, a consistency of possible measurement becomes apparent. Hence, one is tempted to conclude that a correlation between attitudes and behaviour is likely in this research. This might be so, as not only the methodology will keep the measurement of all entities logically consistent (to be explained later; refer to 7.3.1.4.2 on page 205), but also because the unit of analysis are individual decision makers (cf. Ajzen, 1996). Although individual managers could perceive a situation differently (see e.g., Fazio et al., 1983; Rollinson et al., 1998; Ashmos et al., 1998) the link between intention and behaviour on an individual level remains unaffected.

Particularly on a cumulative level, intention is even more persistent over time and is thus a good long-range predictor of actual behaviour. Ajzen and Fishbein (1980: 48) lend support to this notion, as "aggregate intentions are apt to be much more stable over time than are individual intentions." Ajzen and Fishbein (ibid.) argue for a population of unrelated individuals. In the present research, the individuals are comparable when selecting suppliers and consequently, the intention-behaviour link should be even stronger for the long-term. So, what does it exactly mean to stay loyal – what are the options? This question will be answered in the next section.

2.6 Loyalty

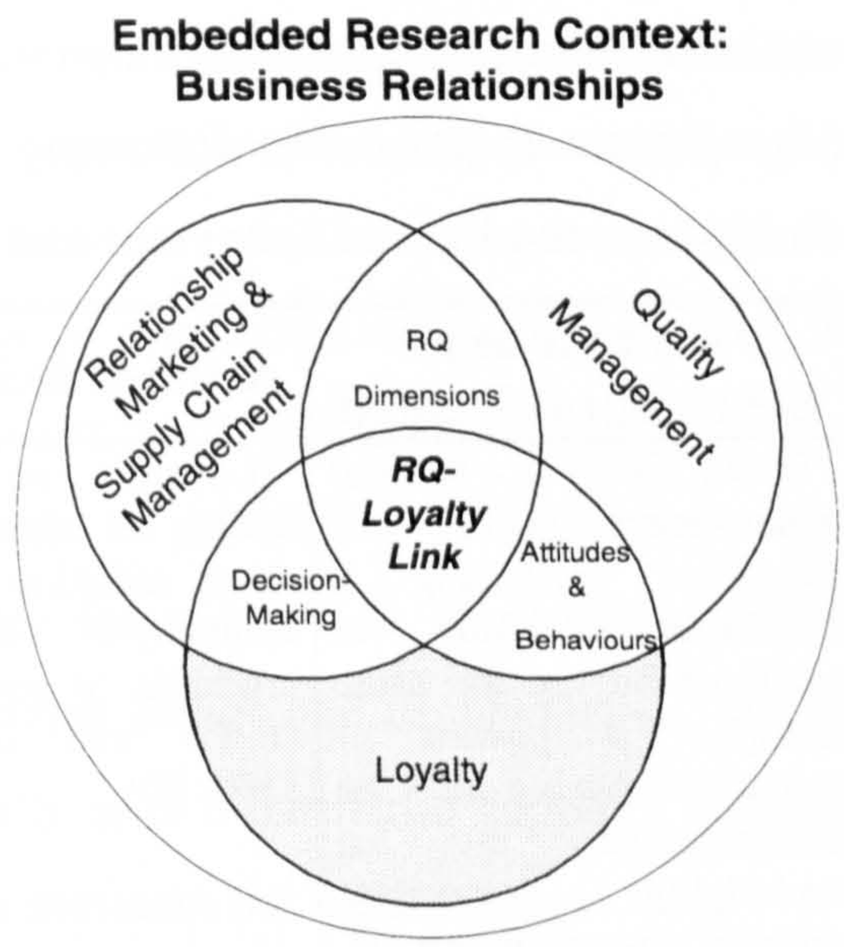


Figure 2-25: The Literature Focus of Section 2.6

At the beginning of the academic discussion on loyalty, the topic was analysed with a behavioural focus alone (i.e., a customer supports an organisation with his re-patronage behaviour). This approach was criticised later on. It seems insufficient to measure the multidimensional nature of loyalty with a unidimensional approach (i.e., repurchase 'yes' or 'no'). The distinction between loyalty based on an attitude or sole behaviour, dropped from the discussion above, has continued to find favour with other researchers in marketing.

Day (1970: 59) describes this situation as follows: "the two dimensional view of loyalty, which requires an understanding of the interplay of attitude and behaviour, appears more insightful than the usual behaviouristic view based entirely on the proportion of total purchases." Along these lines, Barnes (1994: 565) questions the loyalty construct of several researches by saying "a customer may deal with a particular company because it is convenient to do so, or may purchase a particular brand on a regular basis because, although it is not the preferred brand, it is the only brand carried by a convenient retail store."

Accordingly, true loyalty only exists if both attitude/intention and behaviour are positive (i.e., I like to stay loyal and I stay loyal). Although, drawing the attitudinal-behavioural distinction might seem obvious, the literature is marked

with controversial opinions. Loyalty is a term which can have a variety of meanings, and if it is going to be of any use to the current investigation it seems necessary to think about what implications the various meanings have and which is the most useful to the present inquiry. The following table sketches out the diversity of loyalty definitions in the light of behaviour and attitude:

Behavioural Related	Attitude and Behavioural Related	Attitude Related	Intention Related
"[Consumers] repeat their purchases on a regular basis, buying the same brand" (Usunier, 1996: 114). "We can recognise loyal behaviour as a tendency (not explained otherwise) for a customer to repeatedly buy from a particular supplier" (Bubb and Rest, 1973: 26).	"Brand loyalty is a form of repeat-purchasing behaviour reflecting a conscious decision to continue buying the same brand,..., a pattern of repeat purchasing must be accompanied by an underlying positive attitude toward the brand" (Solomon, 1996: 290).	"[Loyalty is] the feeling of attachment to or affection for a company's people, products, or services" (Jones and Sasser, 1995: 90).	"Customer loyalty expresses an intended behaviour related to the product or service" (Selnes, 1993: 21).

Shift of Academic Focus →

Table 2-12: The Diversity of Loyalty Definitions

Table 2-12 shows that loyalty definitions are either behavioural related, attitude and behavioural related, attitude related, or intention related. Most scholars would agree that the current trend of interpreting the loyalty concept moves away from the pure behavioural focus towards intention (e.g., Dick and Basu, 1994; Oliver, R., 1997), as shown in the table. For instance, De Wulf et al. (2001: 37) propose that "purchase intentions,..., can be considered behavioural indicators of loyalty." In the economic and political context, Hirschman (1970) presents the loyalty concept as a twofold reaction. He saw *loyalty with no thought of exit* as distinct from *loyalty*

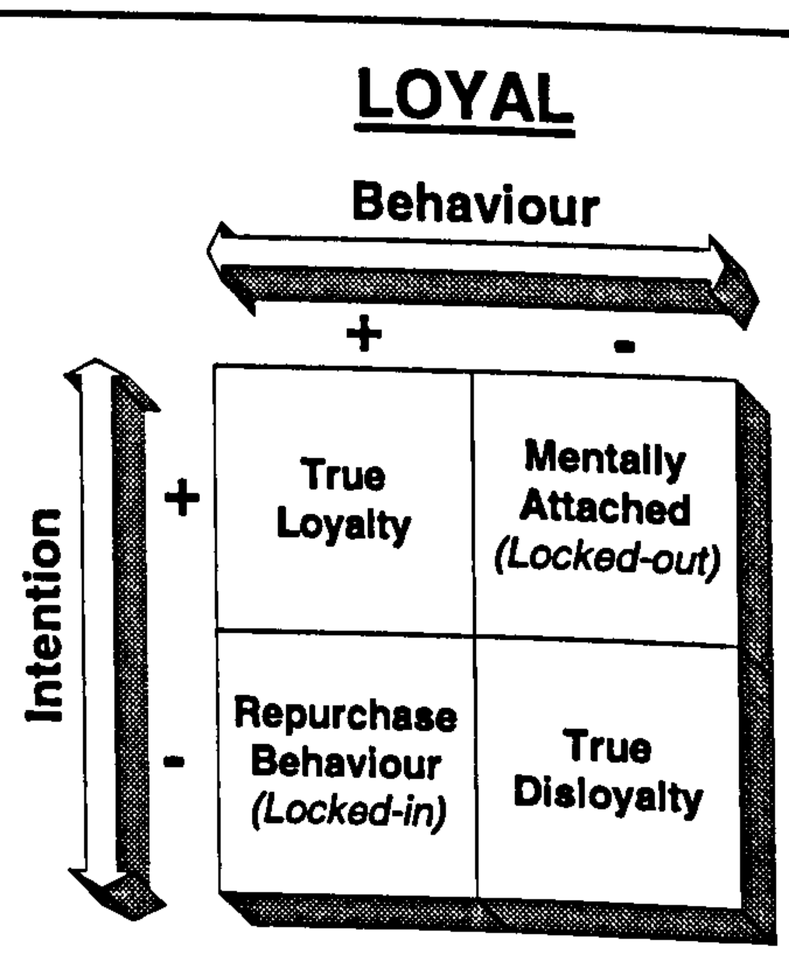


Figure 2-26: Loyalty Matrix

with thought of exit.[8] Figure 2-26 above incorporates these views as it is based on earlier discussions where not only a differentiation between positive and negative behaviour (i.e., *I do it* vs. *I do not do it*) was sensible but also a distinction between positive and negative intention to do something (i.e., *I like to do it* vs. *I do not like to do it*). As a result, the matrix yields four types of intention-behaviour connections as a practical way of examining the available options. It should be noted, however, that the four labels are not specifically taken from the literature and they might be debatable. Yet, their sole objective is to address the respective option under discussion (i.e., combination of intention and behaviour). For instance, *Repurchase Behaviour* or *Locked-in*, expresses that the customer places orders frequently with a particular supplier, although the customer has no particular intention to maintain the relationship.

It is worth highlighting that *Locked-in* (e.g., dependence on a particular supplier) or *Locked-out* (e.g., production capacities of the favourite supplier are exhausted and the manufacturer cannot place any orders or other customers are more attractive to the supplier) cannot be controlled or can only be changed under severe difficulties by the manufacturer. Put differently, *Locked-in* and *Locked-out* options are biased by the external environment and the RQ-Loyalty link cannot be fully explored under these conditions. *True Disloyalty* and *True Loyalty*, by contrast, are under volitional control of the manufacturer. The latter two options are particularly interesting for the current research purposes, as the manufacturer is able to make a choice (i.e., behaviour can be fully controlled by the customer).

As could be seen with *Locked-in* and *Locked-out*, also *True Disloyalty* and *True Loyalty* are mirror images. In order to understand the manufacturer's loyalty to a supplier the two loyalty options where the intention and behaviour correspond should be taken into account. Or, as Jacoby and Kyner (1973: 2) point out, "scientific inquiry requires that all aspects of a phenomenon, including its inverse, be studied in order to reach a comprehensive understanding." In other words, why does a manufacturer select certain suppliers while excluding others?

[8] The option 'loyalty with thought of exit' is also known as *neglect* (e.g., Singh, Winter 1990), as *indirect strategies* of leaving a relationship (Dwyer et al., April 1987) as well as the *intra-psychic phase* (Hayes, 1996).

In order to investigate the potential connection between the intangible quality of supplier relationships and the manufacturer's loyalty, the common selection and decision making procedures will need to be discussed.

2.7 Evaluating Alternatives and Making a Choice

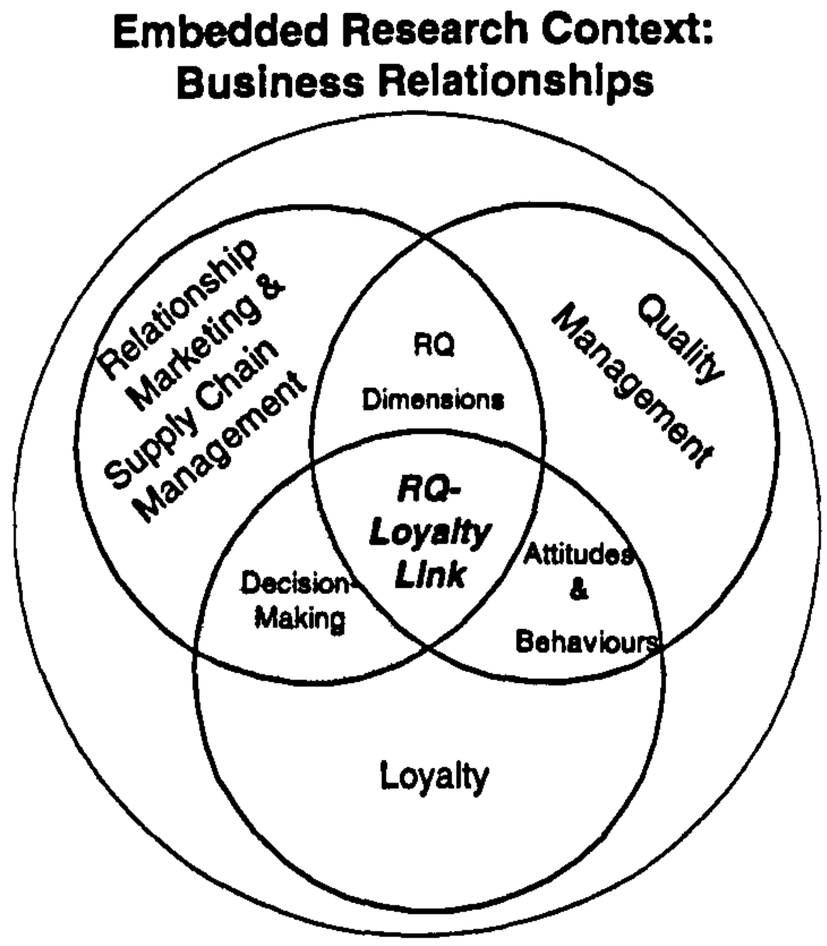


Figure 2-27: The Literature Focus of Section 2.7

At the interface of RQ and Loyalty, one can find the process of how individuals and groups make decisions. Tannenbaum (1950: 22) confirms "human behaviour results from either unconscious or conscious processes. When these processes are conscious, decision-making is involved." Since decision making and problem solving are closely tied, an integrated debate will follow, which will subsequently feed into a discussion on supplier selection processes.

2.7.1 Problem Solving and Decision Making Processes

Problem solving and decision making are frequently discussed in relation to making a choice (see e.g., Tannenbaum 1950; Cyert et al., 1956; Elbing, 1978). This could indeed give the impression that problem solving and decision making are synonymous. In fact, some authors use them as identical terms, according to McFadzean and Money (1994). Rollinson et al. (1998: 189) warns us not to confuse both concepts since "a problem solving process implies, for instance, that

alternative solutions are produced for a recognised problem and decision making is defined as one when a choice is made between alternatives." Problem solving is broader than decision making, since the 'production of a solution' is more far-reaching than 'making a choice.' A choice implies that alternatives are compared (Carroll and Johnson, 1990). The solution process, by contrast, assumes the implementation of a choice (or decision) as well. The following figure brings clarity into this debate:

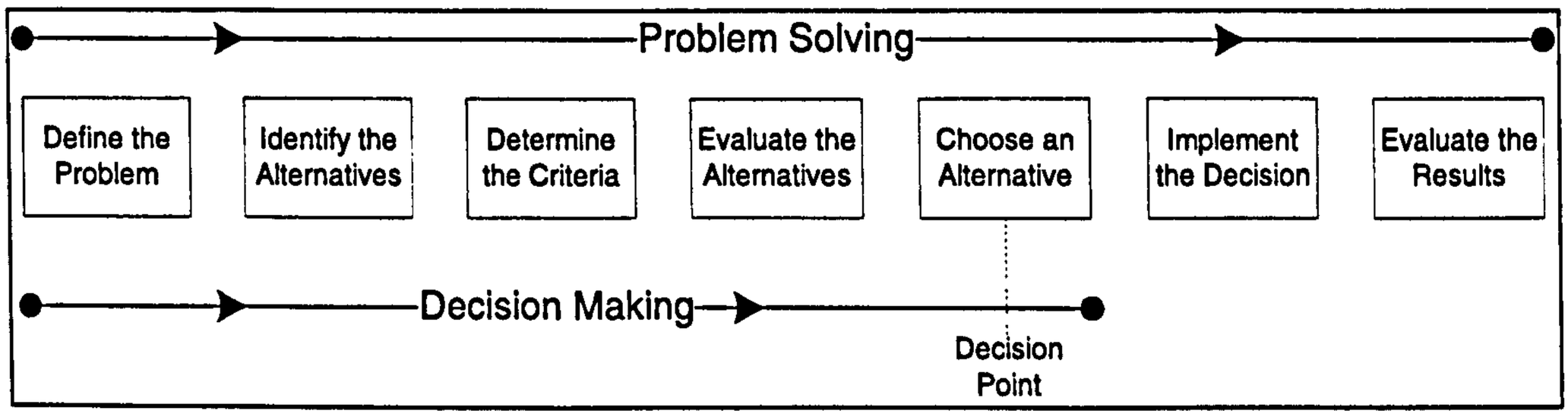


Figure 2-28: Problem Solving and Decision Making

Source: Based on Anderson et al. (1998: 4).

Figure 2-28 shows the commonalities and differences between problem solving and decision making. Both processes start with the definition of the problem (e.g., a supplier for a particular component is needed); then, possible alternatives have to be identified (e.g., alternative suppliers). Afterwards, the criteria (e.g., price, product quality) have to be determined, so that alternatives can be evaluated (e.g., supplier criteria are compared). The most favourable alternative will be chosen – this is the decision point where the commonality between problem solving and decision making ends (e.g., out of a pool of potential suppliers, the preferred supplier will be selected). Problem solving goes further, implements the decision and evaluates the results.

In the light of this research, it is suggested that the focus should be solely on the decision making process, since the implementation and evaluation stage of the problem solution process (e.g., reflecting on the experiences after having selected a given supplier) is not within the study's scope.

Each decision maker has a mental image of the decision task to be solved. These images – also called 'problem space,' according to Carroll and Johnson (1990) – as well as the outcome of the individual decision processes do not have to correspond. Burr and Butt (1992: 37) point out that "two people faced with objectively the same decision will have different subjective decisions to make; different things are likely to be at issue." Preiss et al. (1996: 102) argue in similar vein, "when you give a group of people the same facts, they invariably interpret them differently according to their different perspectives, backgrounds, and experience.,..., While they are all looking at the same thing, each sees it from his or her own frame of reference. We call this phenomenon a personal context." Put simply, in the evaluation stage, some individuals in the DMU might have the intention to dissolve the supplier relationship, while others would prefer to stay loyal to a given supplier. Although both behaviours are mutually exclusive, the two contrasting choices are feasible as they are based on the preferences of individual decision makers.

Smith (1989: 964) highlights that "the early phases of problem solving are demarcated by the occurrence of certain *feelings*, *beliefs*, and *intentions*" (emphasis added). Recall that an attitude is a structural variable, originally equalised with all three elements (refer to Figure 2-19 on page 50) and the importance of considering the attitudes of the individual manager in the decision making process becomes apparent.

Before discussing supplier selection processes, it might be worthwhile to allocate this type of organisational decision within a scheme of all possible decisions in a manufacturing organisation. Heller et al. (1988, as cited in Arnold et al., 1998) provide a useful way to cluster organisational decisions (see Figure 2-29 on the next page).

The choice to maintain the relationship with a particular supplier judged against alternative relationships is a specific organisational decision. Most often, this decision is of a strategic kind and the choice is made in the finalising phase (compare with cell 3 in figure on the right). The implementation phase goes beyond the selection process, as discussed earlier.

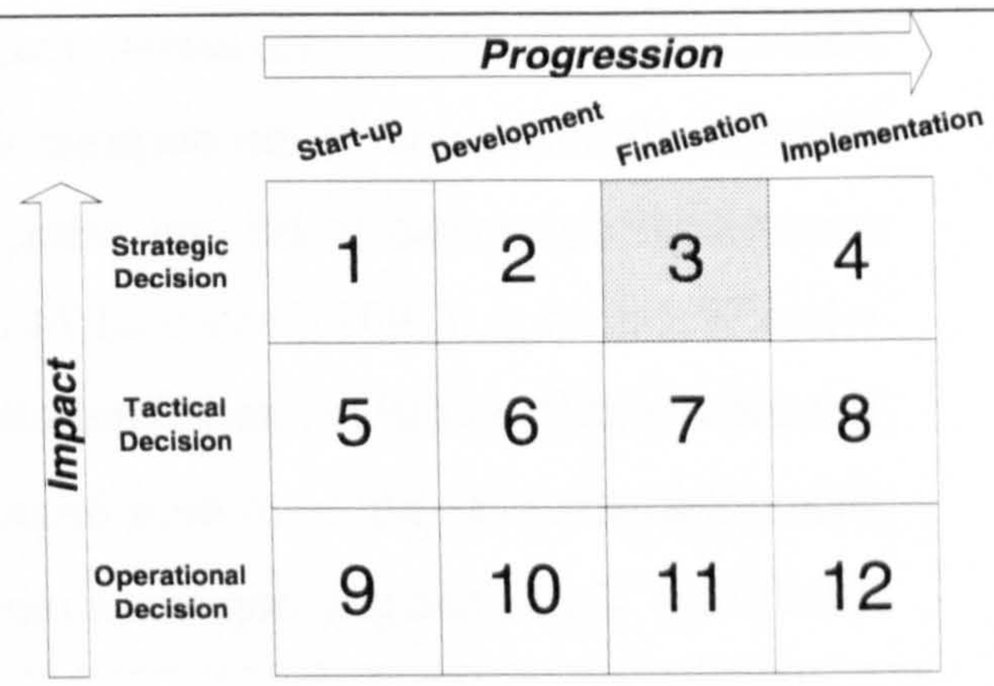


Figure 2-29: Organisational Decision Situations

Source: Heller et al. (1988, as cited in Arnold et al., 1998: 315).

Finally, individuals who are knowledgeable about the problem faced need to be involved in the decision making process. This requires that the organisational problem and the goal are both clearly defined beforehand and the DMU membership is appropriate. Cherrington (1994: 576) lends support to this notion, because "without some form of goals or objectives, decision makers have no criteria for evaluating alternatives or selecting a course of action." But, what are the criteria in supplier selection processes?

2.7.2 Selecting Suppliers

How suppliers should be selected is the critical question today (Mohanty and Deshmukh, 1993). Unfortunately, so Lee and Wellan (1993) explain, there is little documentation on the method used for supplier selection. Even today, Birch (2001a: 43) argues from a practitioner's viewpoint "during my years in purchasing, I have been constantly surprised to see how little attention is given to assessing potential sources of supply in any structured way. It is often said that prevention is better than cure, and this applies especially to purchasing."

Selecting suppliers goes hand in hand with the evaluation of the suppliers' performance (e.g., Vyas and Woodside, 1984; Pearson and Ellram, 1995; Gallouj, 1997). In the early 60s, it was argued that the supplier's performance can be

characterised by three dimensions: quality, delivery and price (Smith et al., 1963). Thus, it should come as no surprise that the three most often quoted selection criteria were reported to be 'net price,' 'delivery and 'quality' (in stated order), when Weber et al. (1991) reviewed 74 articles published since 1966. For instance, Perreault and Russ (1976) and Turnbull and Wilson (1989) argue that a supplier's share of business is likely to be a function of price, product quality, and delivery reliability. These are the important tangible evidence of a supplier's ability and motivation to perform. Placing price as the most dominant factor on which sourcing decisions are based, is an indication of an adversarial relationship (see e.g., Groves and Valsamakis, 1998). Slack et al. (1998: 476) called it the 'traditional objectives of the purchasing function,' which are characterised by the 'five rights of purchasing':

- At the right price,
- For delivery at the right time,
- Of goods and services to the right quality,
- In the right quantity, and
- From the right source.

Although the traditional approach to purchasing might have been appropriate in the past, Dyer et al. (1998: 69) explain, "the traditional notion of arm's-length relationships – buyers frequently rotating purchases across multiple supplier sources while employing short-term contracts – is no longer an economically sensible approach in most industries." Along these lines, it is argued that focusing mainly on price is inappropriate as it is "perhaps one of the most defined characteristics of primitive purchasing" (Lamming, 1993: 148). Lamming does not suggest that price is irrelevant, but the relative emphasis among the traditional factors has changed over time and other factors might be more important. Thompson et al.'s (1998) study, for example, shows that price lost its great importance in selection procedures. Therefore, the priority of the three selection criteria has changed, with quality becoming the most important factor, followed by reliability in deliveries and lastly price (Holmlund and Kock, 1996). However, in addition to quality, delivery and price a manufacturer looks to his suppliers for

design expertise and other capabilities (Pearson and Ellram, 1995). In this vein, both Kolay (1993) and Monczka et al. (1995) stress that it is essential to identify and audit the strategic capabilities of potential suppliers, such as their ability to contribute to product development.

Altogether, a move from the three criteria used in traditional purchasing towards the more comprehensive set of criteria in modern supplier management is evident in the literature and Table 2-13 illustrates this change.

Traditional Approach	Supplier Management Approach
• *Unit price is the main emphasis* • *Quality* • *Speed of delivery*	• *Total costs* (Larson, 1994; Harrison, 1990) • *Quality* (Burt, 1989), *quality record* (Larson, 1994; Harrison, 1990) and *supplier's use of TQM* (Mohanty and Deshmukh, 1993; Levy et al., 1995) • *Delivery* and *cycle times* (La Londe and Masters, 1994; Leenders et al., 1994; Lyons et al., 1990; Mohanty and Deshmukh, 1993) including *JIT delivery capability* (Burt, 1989; Lee and Wellan, 1993) • *Financial stability* (La Londe and Masters, 1994; Burt, 1989; Ellram, 1990) • *Environmental standards* (La Londe and Masters, 1994) • *Supplier's technological capabilities* (Monczka et al., 1993; Burt, 1989; Ellram, 1990) and *strategic contribution* (Kolay, 1993) • *Service* – flexibility, guarantees, technical support, etc. (Mohanty and Deshmukh, 1993) • *Industrial relations* (Burt, 1989) • *Organisational cultural aspects* (Leenders et al., 1994; Harland, 1996; Ellram, 1990) • *Risks* (Lyons et al., 1990; Ellram, 1990)

Table 2-13: Traditional Purchasing vs. Supplier Management

The table shows that the criteria used for selecting and monitoring suppliers in traditional approaches to purchasing were unit price (first), followed by quality and speed of delivery. Price has often been the factor given the main emphasis, as discussed earlier. Quality tended to be looked at from the conformance point of view, i.e., if the supplier's quality simply met the current required level, it was acceptable (see also product quality dimensions on page 39). Just as the role of price has diminished in evaluating supplier performance in many sectors, so quality has become a more critical factor. However, quality no longer simply applies to the product itself but also to the service and other aspects of the supplier-manufacturer relationship. For instance, a good relationship is a

prerequisite to good problem solving and co-operation in product design. Current thinking proposes a wide set of factors and so, monitoring and selecting suppliers became more complicated in the supplier management approach. In this complexity, the supplier relationship plays an essential part.

The increased complexity has an additional side effect. The 'purchasing manager of the past,' who was traditionally in charge of selecting suitable vendors alone, now heads up a sourcing team (Nachtweh, 1998). The DMU has more options to analyse a supplier from different angles under the guidance of the purchasing manager who, due to his experience, adopts the roles of a 'coach' and 'teamplayer.'

Unfortunately, empirical evidence is lacking as to whether manufacturers really use the wider list of factors (indicated in the right-hand column of Table 2-13) in their monitoring of performance, and particularly for the current research, in their selection of suppliers. Previous research on supplier selection typically shares the following characteristics:

- Buying scenarios: Researchers typically do not distinguish between buying scenarios. Verma and Pullman (1998), for instance, explored the perceived importance of quality, delivery, costs and flexibility when purchasing 'key components' and 'raw materials.' The two purchased goods do not necessarily share the same requirements and it is questionable whether the researchers have actually analysed comparable buying situations.
- Sample: Researchers normally rely on single informants (typically purchasing managers) and either do not specify company size or ignore it altogether.
- Quantitative approach of study: The mailed questionnaire design is the most popular research tool with scholars in the field of supplier selection (e.g., Verma and Pullman, 1998). In this way, new selection criteria remain unexplored while the relative importance of known (or obsolete) ones is investigated.
- Established measures: Almost all researchers try to measure the importance of hard quantitative supplier attributes in the selection process.

The soft side is virtually ignored (although its importance has been acknowledged).

- Cross-section of industries: Verma and Pullman (1998: 748) argue "it is possible that the supplier selection process varies from industry to industry and/or within different geographical regions around the globe." Researchers do not identify the important supplier selection criteria for a carefully defined research context.
- Not practically sound: Researchers evaluate the perceived importance of supplier selection criteria rather than observing how managers actually choose suppliers in practice. For instance, Verma and Pullman's (1998) research shows, that managers perceive quality as the most important supplier attribute. However, the same sample of managers assigns more weight to cost and on-time delivery attributes than quality when selecting a supplier in an experimental research design.

The first point of criticism, i.e., neglecting the impact of different buying scenarios, is a detail that will be discussed in the next section.

2.7.3 Buying Scenarios

Buying scenarios influence the way manufacturers select their suppliers and it is necessary to categorize buying types that recognize the quality of supplier relationships (cf. Tanner, 1999). In this respect, scholars agree that the purchasing decision is influenced by two basic considerations:

- the stage of the purchasing decision process, and
- the purchasing situation itself.

McQuiston (1989) explored the first issue and asked industrial purchasers whether they felt any stages were more critical to the success of the purchase situation than other stages. McQuiston (ibid.: 72) concludes "the general consensus was that the stages closest to making the decision were most crucial, especially the evaluation of product alternatives and the choice of a supplier."

These findings suggest that it is more helpful to investigate the RQ-Loyalty link at the stage closest to the actual purchasing choice – or at the exact decision point, as highlighted earlier (refer back to Figure 2-28 on page 63).

In discussing the second issue, i.e., analysing different purchasing situations, it is worth noting that two schools of thought exist for dividing these situations:

- Buygrid Model: straight rebuy, modified rebuy and new task (based on Robinson et al., 1967);
- Modified Buygrid Model: novelty, complexity, importance (based on McQuiston, 1989).

McQuiston (1989) sees his typology of purchasing situations as a modification of the original Buygrid Model, showing their relatedness in the new task/novelty dimension. McQuiston (ibid.: 77) states that the purpose of his research was "to expand the Robinson et al. (1967) theory of buyclasses to include the constructs novelty, complexity, and importance." However, the original Buygrid Model has been validated and found to be a useful conceptual and analytical tool for both academics and practitioners interested in organizational buying behaviour. For example, De Boer et al. (2001: 78) explain "the distinction between new task modified re-buy and straight re-buy facilitates a recognizable 'entrance' for the purchaser and at the same time the classification comprises different levels of uncertainty about he purchase and the accompanying supplier selection." Consequently, the original Buygrid Model will be adopted in this research.

The buy class taxonomy classifies industrial purchase scenarios into three types. The basis of classification, according to Robinson et al. (1967), is as follows:

1. How novel or unfamiliar the purchase situation is to the manufacturer,
2. How much information the manufacturer must gather for making the decision, and
3. The extent to which the manufacturer seriously considers alternative solutions to the purchase problem.

According to the characteristics noted above, the three types of purchase are differentiated in the following way:

Purchase Type	Short Description
Straight Re-buy:	*Routine reordering from the same supplier of a product that has been purchased in the past.*
Modified Re-buy:	*Purchase that involves considering a limited number of options before making a selection.*
New Task Purchase:	*Purchase that results from an extensive search for information and a formal decision process.*

Table 2-14: Purchase Types

Table 2-14 describes a straight re-buy scenario as a repeated purchase that happens without any modification of terms. A new task scenario is very new to a manufacturer and he has hardly any experience with the purchase. In a modified re-buy scenario, a manufacturer already has prior experience of the product purchase but the particular scenario demands some degree of novelty. The manufacturer may search for information about alternative sources of supply and terms. Due to different specifications in a product or service that has been bought before, there will be less evaluation than when the buyer has no experience or skill in the purchase, as in a new task situation, but much more than in a straight re-buy (cf. Rajagopal, 1995). This explains, why a modified re-buy can "either [be] an upgraded straight re-buy or a formerly new task that has become familiar" (Anderson et al., 1987: 72-73).

On the whole, the modified re-buy situation is particularly relevant to organisational buying behaviour theory and industrial buying practice, as it partly explains new tasks as well as straight re-buy scenarios. In a modified re-buy scenario, Kotler et al. (1999: 283) explains, "the 'in' suppliers may become nervous and feel pressured to put their best foot forward to protect an account. 'Out' suppliers may see the modified re-buy situation as an opportunity to make a better offer and gain new business."

In an ideal case, it would be fruitful to cover all purchasing situations in order to analyse organisational buying behaviour. However, based on 1) the qualitative

nature of the study (theory building rather than broad-based theory testing driven by hypotheses), 2) the limited number of subjects (which hampers the analysis of all situations), and 3) the resource restrictions of the research (in terms of budget and time needed) it is suggested that the focus should be on one purchasing situation. Limiting the research to a specific purchasing context allows the development of grounded measures and control for extraneous sources of variation.

Beside the issues raised, the buying centre members might change from one to another purchasing scenario, as the DMU structure will have to be in tune with the situation (e.g., Lau et al., 1999). Hence, the more buying situations are investigated, the more likely it is that not all respondents will be involved throughout the research process (i.e., to explore the quality of supplier relationships first and to determine the link between RQ and loyalty afterwards). For the current study, the purchasing situation has to fulfil four basic criteria:

- It must involve *members of a buying centre* so that all RQ-factors of Stage II can be tested in Stage III;
- It must be a *real situation* in the chosen research context and the subjects must have gained a sufficient level of experience with it;
- It must be a *frequent and important purchasing situation* which signals not only a theoretical but also a practical interest; and
- The buying situation must allow *access to 'out suppliers,'* i.e., those that are not in the supply base of a given manufacturer. This circumstance tests the link between relationship quality and the final supplier selection at best.

In light of the basic requirements of the purchasing situation, the researcher focuses on the modified re-buy scenario. Selnes (1998: 306) argues that in re-buy situations, is it likely that suppliers are selected from an existing pool of vendors, as "a re-buy decision is usually equivalent to a decision to continue a business relationship." This scenario is therefore appropriate to test why manufacturers stay loyal to certain suppliers, while dissolving the relationship with existing suppliers is another option.

A modified re-buy, as theoretical as the term may sound, has to be translated into practice in order to make it applicable for the current research purposes. Before remarking further on the methodological issues of the research, attention will turn to the controversial findings of the RQ-Loyalty link.

2.8 Relationship Quality-Loyalty Link

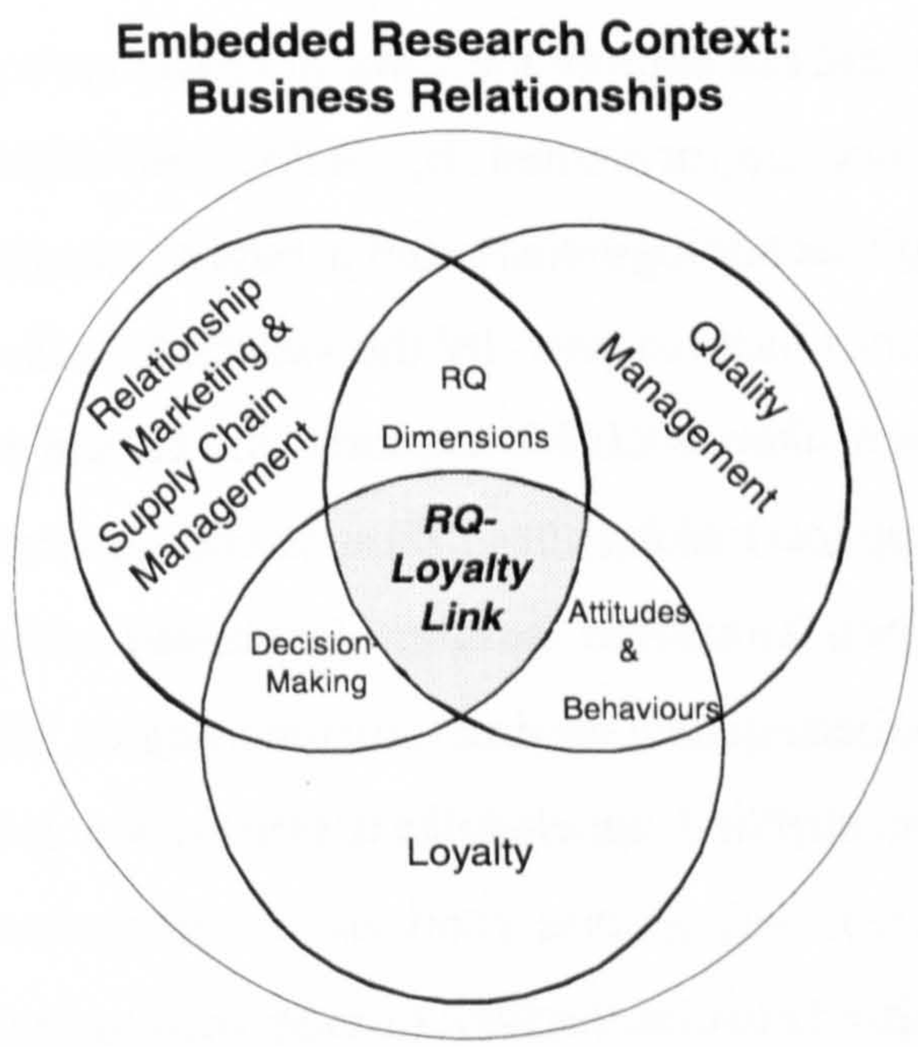


Figure 2-30: The Literature Focus of Section 2.8

The last section of the literature review addresses the quality of supplier relationships and the influence it potentially has on manufacturers when selecting suppliers. Recently, Patterson and Dawes (1999: 400) note, "only one empirical study could be located that specifically linked relationship quality and/or satisfaction to choice or consideration sets in automobile markets." The single study that Patterson and Dawes found was the one conducted by Lapersonne et al. (1995); no other relevant studies could be identified.

Lapersonne et al.'s exploratory research in the French automotive industry aimed to identify whether private consumers for cars consider more than one brand when making a choice. Among the independent variables, 'satisfaction with the previous car and dealer' was measured. Their interview results show, that of the 1,008 individuals that have recently purchased a car, 222 (22% of the sample)

considered only one brand. Among those, 172 (17% of total sample) considered the brand of their previous car. The authors conceptually define RQ as the 'satisfaction with the previous car and dealer.' They then analysed the sample of 172 and established the relationship between RQ and repurchase behaviour. However, given the fact that 83% of the overall sampling pool considered other brands than the previous, the link between satisfaction and repurchase behaviour appears to be weak in the French automotive industry. Besides, it should be re-emphasised that they did not explore the concept of RQ beforehand.

Contrasting results are presented by Heide and Weiss (1995: 41) who speculate that in high-technology markets "a buyer's decision to consider new vendors could be determined, in part, by the satisfaction that exists with current vendors." Patterson and Dawes (1999) explored the choice set structure (i.e., the final short list of suppliers) along these lines in the Australian high-technology business markets. They employed a mix of qualitative (i.e., interviews) and quantitative (i.e., mailed questionnaires) methodologies. They relied on one member per buying centre and conclude that satisfaction is a good predictor of repurchase intentions.

A notable gap exists between the literature devoted to the relationship quality concept and that concerning how suppliers are selected. In particular, to the knowledge of the researcher there is no empirical work that explores the quality of supplier relationships in a particular research context and links it to the loyalty of a manufacturer. However, the following studies may serve as indicators of this potential link as they are tangibly related to the present research topic.

Bubb and Rest (1973: 27) argue, "a supplier will be more likely to be selected if he has recently been used and proved satisfactory." In this vein, Ford's (1984) research illustrated later that industrial purchasers' assessments of their suppliers are not based on views of suppliers' technical and commercial skills in isolation. Instead, they are closely associated with their assessment of suppliers' skills in developing a relationship with them. "To suppliers of services," as Wray (1994: 33) explains, "the development of strong relationships helps to build loyalty from customers whose loyalty is challenged by competing suppliers." Bendapudi and Berry (1997) argue conceptually in the service marketing context that the

customer's motivation to stay in a relationship determines the quality of the relationship; i.e., if somebody is motivated to maintain a relationship one can deduce that the perceived relationship quality with the other party is high. However, speculations like these are typically supported by anecdotal evidence alone.

Lately, New and Burnes (1998: 386) point to the manufacturer's tendency to base decisions on intuitive factors: "In evaluating whether or not to do business with a particular supplier, many companies now tend to have very rigorous criteria for assessing their capabilities. However, once a supplier has been selected, ..., customers are often thrown back on more informal and ad hoc selection criteria." It seems that softer – or more intangible – relationship factors need to be taken into account, if it is a question of selecting a suitable set of suppliers for the long-term. Consequently, the supplier selection problem involves many intangible factors, but still requires logical and rational control of decisions. This turns the selection process into a complex procedure, which commonly requires a multi-factor analysis (Weber et al., 1998; De Boer et al., 1998).

From the academic side, it has been argued that research on the supplier selection problem focuses too often on hard number-driven factors (Vokurka et al., 1996). The soft side is virtually ignored, although its importance has been recognised. Mohanty and Deshmukh (1993: 26), for instance, conclude "supplier selection is an important management issue,.., especially when many of the factors are non-quantifiable/intangible, the evaluation becomes a challenging research area."

One study that strove to capture softer relationship factors is of special note: Choi and Hartley (1996) conducted a study that incorporated four soft factors in addition to twenty-two hard items in a mailed questionnaire design. The four soft factors were: closeness of past relationship, likelihood of long-term relationship, communication openness and company's reputation for integrity. Although the study shares the common drawbacks of single informant research, not identifying the RQ attributes beforehand, not focussing on a specific purchasing situation etc., the results were striking. They not only show the influence of soft relationship

issues in the supplier selection process these days, but also the deteriorated position of the initial low price, which ranked among the least important factors.

Verma and Pullman (1998) highlight that "the past empirical articles are based on the managers' rating of the perceived importance of different supplier attributes. An actual choice of supplier involves evaluating the characteristics of the suppliers, based on their attributes and selecting one or more supplier(s) that best suit the needs of the firm." The authors were surprised to find that no article has gone back to first principles and explored which supplier attributes make a difference in the selection process.

It appears as if the old-established supplier evaluation and selection mechanism would not be perfectly suited any longer and a group of experienced individuals is now in charge of selecting vendors. Neely (1998) explains this shift by introducing the appropriate measurement strategy of supplier performance. This is based on the traditionally strong link between performance measurement and supplier selection (refer back to 2.7.2 on page 65 and see the table below).

Category of Goods being Supplied	Appropriate Measurement Strategy
Product/process critical	Quality of relationship
Leveraged goods	Supplier assessment: quality, dependability, speed and flexibility
Commodity goods	Total acquisition cost

Table 2-15: Measures for Tracking Supplier Performance

Source: Based on Neely (1998: 27).

Table 2-15 illustrates that, for measuring supplier performance, different foci can be applied depending on the category of goods that have been supplied. The appropriate measurement strategy for evaluating the performance of suppliers who have supplied critical products and processes has to do with evaluating the quality of the buyer-supplier relationship. Many writers have acknowledged the importance of the relationship, since the trend to single and dual sourcing is apparent in several industry sectors (e.g., Christopher, 1998; Goffin et al., 1997). Both sourcing modes are suitable for a relationship-based buying strategy (Sheth et al., 1999). Evidence of this relationship-selection link is highly anecdotal,

however. Moreover, measuring the soft side of supplier relationships remains a problematic issue (cf. Blois, 1997).

Based on the preceeding debate, De Wulf et al. (2001) assume that relationship quality ultimately influences behavioural loyalty. They (ibid.: 43) test their assumption and conclude "an important finding is,..., the positive path from relationship quality to behavioural loyalty." The authors measured relationship quality via commitment, trust, and satisfaction. Boles et al. (2000) took a similar approach when replicating Cosby et al.'s (1990) work. Their findings have shown that their relationship quality construct consisting of trust and satisfaction predicts future purchase intentions for business customers in various industries in the US. Boles et al. (ibid.: 80) conclude "a quality relationship with high levels of trust and satisfaction is required to guarantee that future business will transpire between the two parties." However, although the results seem promising when recognising a potential link between commitment, trust and satisfaction and loyalty it would seem worthwhile to explore whether relationship quality can be explained by the three basic measures first.

The purpose of this research is to bridge what appears to be a gap in supplier management literature between the assumption that a high level of relationship quality and the selection of suppliers is strongly connected. Previous approaches to exploring potential linkages between a good relationship (whichever term has been used to conceptualise it) and the customer's loyalty can be categorised as follows:

- Quantitative studies: Researchers typically approach the field with a preconceived view about high quality relationships (usually investigating this through postal surveys). In this way, scholars do not uncover the attributes of relationship quality as they miss capturing the views of the experts in the field – the practitioners.
- Single informants: Researchers often rely on the information of one individual within each company. Yet, a multiple respondent approach is more beneficial (Tanner, 1999) as "individual parties to a relationship tend to have somewhat unique perspectives on the ongoing interaction,

resulting in part from their particular positions in the exchange network" (Heide and John, 1992: 39).

- Scope too wide: Exploratory studies are typically based on a cross-industrial sample, overlooking the fact that managers' views might be coloured by the industrial context, organisational size, etc. For example, supplier-wholesaler relationships may differ from those between suppliers and manufacturers (Weitz and Jap, 1995). Although cross-industrial samples would allow the investigation of different research contexts, the sample sizes of each sector are often too small. In addition, all studies failed to see an important reality: that purchasing situations differ substantially in their degree of complexity and the experience buyers have with that situation, and that this may have an impact on how relationship quality is connected with loyalty (regardless of how both concepts might have been measured).

2.9 Summary and Conclusions

Chapter 2 discussed the literature surrounding the connection between relationship quality (RQ) and loyalty. The main areas have been identified and a Venn Diagram is used as a scheme throughout the literature review (see Figure 2-31).

The review started with a discussion of Relationship Marketing (RM), a recent marketing philosophy that has been described as a paradigm shift by many authors. Maintaining relationships and developing customers into partners are two of the main objectives of RM. The literature review has shown that relationship quality is one of the tenets of relationship marketing and that lasting and deep relationships are the result of the parties involved having a positive attitude towards the outcome of their work.

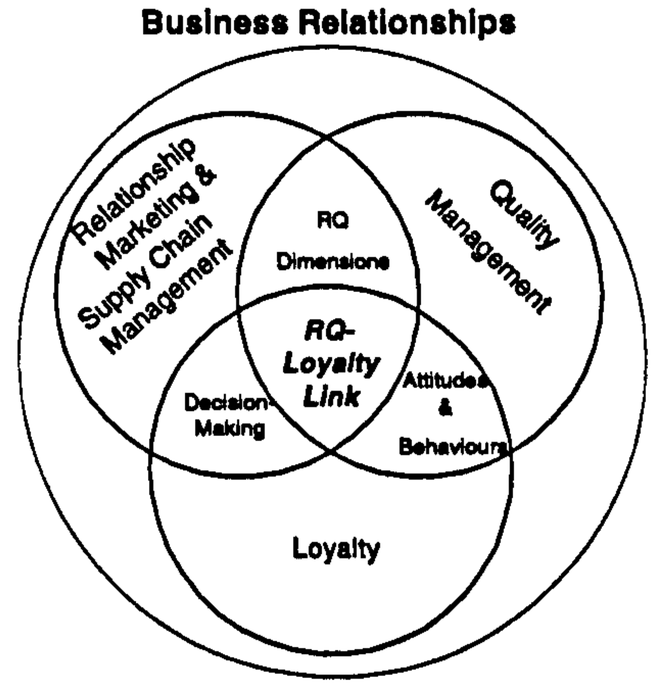


Figure 2-31: Literature Review – The Areas Covered

The review moved on to explore Supply Chain Management (SCM). SCM is an evolutionary approach, developing from the field of logistics. In the endeavour to enhance the management processes alongside the physical flow of material, relationships within the supply chain are increasingly attracting attention. In particular, manufacturers rely more and more on their suppliers for satisfying their customers' demands. Since a small number of suppliers account for the bulk of industrial purchases today, the manufacturer may want to focus all his efforts on building long-term high quality relationships with a few suppliers. Maintaining the relationships with key suppliers in order to develop a reliable and viable source of supply is one crucial element of effective SCM.

'Business relationship' was the next point that was captured by the review – it is the context of the current study. The supply chain consists of various relationships and from a manufacturer's vantage point, one can employ the upstream (i.e., towards suppliers) and the downstream view (i.e., towards

customers). Supplier-manufacturer relationships (i.e., supplier relationships in short) are connected via business units rather than through a simple face-to-face contact between two individuals. These can be found on both sides and are sometimes described as the buying centre and selling centre, at other times as decision making units (DMUs).

Supplier relationships go through different phases, starting from awareness and ending in dissolution. Keeping a relationship in the maintenance stage – staying loyal from the manufacturer's standpoint or being selected over and over again from the supplier's – is a key issue for both parties. The research will have to explore supplier relationships in the maintenance stage, as manufacturers will then have had the time to fully explore the quality of the relationship. A special form of business relationship is a partnership and the review highlights the fact that no consensus has been found on a single definition. Recent research has used relationship closeness as a vehicle to explore partnerships in greater detail – however, this topic certainly deserves future attention by academics.

The literature review captured the quality aspects of a relationship, starting by discussing product and service quality. The tangible product can be found at the core of an offer, which is augmented with more intangible issues in the service layer and finally is surrounded by other intangible relationship attributes. The latter attributes will need to be explored in order to determine the content of relationship quality.

Recently, the relationship quality concept has aroused interest among researchers and one pioneering work measured the construct conceptually with relationship satisfaction and trust. Later, researchers adopted the two measures and added other measures to it, e.g., commitment, equity, and power. Unfortunately, the key attributes of RQ have not been explored by scholars, its basis is very much unknown and the concept is far from obtaining a consensual operationalisation.

The discussion on psychological issues highlighted that the motives of the manufacturer will need to be investigated in order to understand why certain suppliers are being selected over others. For the proposed piece of research, the literature review has shown, the intention to do something (i.e., the manufacturer

would like to select a certain supplier) and to do it as intended (i.e., the manufacturer selects the supplier) are closely tied.

This debate laid the path for the subsequent discussion on loyalty where authors differentiate between the attitudinal and behavioural sides of the concept. It became apparent that the research has to focus on the loyalty options where the attitudinal and behavioural sides correspond (i.e., the manufacturer is able to control whether to select a supplier or not).

The review moved on to decision making processes and showed that the research has to centre on the stage where the manufacturer decides to select a given supplier. This stage has been described as the 'decision point,' which will need to be determined for the research context.

In the past, suppliers have been evaluated according to price, quality, and delivery issues. Today, however, this approach has been questioned and suppliers have to measure up to additional factors. These are dependent on the buying situation: a routine buy (or straight re-buy) differs from a new task purchase where the manufacturer has no experience. The modified re-buy falls between the two scenarios. From the review, one could deduce that the study has to focus on the modified re-buy scenario; albeit, this particular scenario will need to be especially defined in the research process.

Perhaps a good indicator of loyal relationships with a few key suppliers is the overall quality level of the supplier relationship. The review ended by analysing the potential link between RQ and loyalty. Measures of relationship quality and related concepts have been associated either directly or indirectly with customer loyalty. Even when the same term is used, its measurement has varied between researchers. The inconclusive results indicate 1) that the link is context dependent (i.e., industry, country, buying scenario etc.) and 2) concepts are ill-defined and not agreed upon. Knowing the ingredients of a high-quality relationship is important because suppliers are often surrounded by uncertainty and incorrect beliefs about what matters to manufacturers. This results in relationship marketing programs that are ineffectively implemented.

Arguments of the above kind suggest that firms could benefit from understanding the mechanisms behind customer retention in industry. When the

manufacturer's central role in developing quality supplier relationships is considered, it is surprising that relatively few studies have examined what suppliers can do to establish high quality relationships with manufacturers. Previous research suffers from the following shortcomings:

- Researchers adopt one conceptualisation of RQ based on trust and satisfaction without exploring the concept first-hand in the selected research contexts.
- Studies centre too often on the service sector and findings cannot be generalised to the manufacturing context.
- When extending the research context beyond the service sector, scholars base their mailed questionnaire designs on cross-industrial samples where comparisons cannot easily be made (i.e., different organisational sizes and constraints of specific industrial environments).
- Quantitative approaches require a prior knowledge of the RQ concept and hinder the exploration of true RQ attributes; however, researchers prefer mailed questionnaire designs for their deductive approach.
- RQ is often differently conceptualised (apart from satisfaction and trust), explaining partly the existence of contradictory findings.
- Studies rely on single informant data although relationships are based on multiple perspectives.
- The focus is typically on the purchasing manager, although different functions are involved in managing and selecting supplier relationships nowadays.
- Researchers do not differentiate buying scenarios, neglecting the influence they have on managing and selecting suppliers.

The issues emerging from the literature review lead to the next part of the thesis, which is concerned with the research question as well as philosophical and methodological aspects of the research.

CHAPTER THREE

3 RESEARCH QUESTION AND PHILOSOPHICAL STANCE..... 83

3.1 INTRODUCTION..... 83

3.2 RESEARCH QUESTION 83

3.3 PHILOSOPHICAL STANCE..... 84

3.4 SUMMARY AND CONCLUSIONS..... 87

3 Research Question and Philosophical Stance

3.1 Introduction

This chapter of the thesis commences with the purpose of the present investigation. The research question is the statement of the purpose and will be introduced next. The philosophical underpinnings of the study will be debated afterwards.

3.2 Research Question

The discussion in the literature review that centred on supply chain management, relationship quality, loyalty, besides other issues, reached a focal point that is addressed in the following research question:

In commercial customer-supplier relationships, what is relationship quality (RQ) from the customer's standpoint and how does it relate to the customer's loyalty?

The research is concerned with the exploration of 'what comprises the quality of a commercial business relationship from a customer's standpoint,' as well as with the determination of 'the influence of each Relationship Quality factor on the final customer's choice to maintain a business relationship with certain suppliers rather

than with others.' In the absence of specific relationship quality attributes from the literature, the first part of the research has to be undertaken using an exploratory approach.

The three research stages take place in Germany and they focus on 1) Engineering (Stage I-III), 2) Electronics (Stage I-III), and 3) Process (Stage I only). Before introducing the research strategy, it is worth highlighting the philosophical underpinnings of the study.

3.3 Philosophical Stance

Philosophical positions are differentiated on a continuum, ranging from the phenomenological to the positivistic. Delanty (1997), however, questions the established philosophical continuum. He (ibid.: 135) points out "for over one hundred years the positivist dispute has shaped the self-understanding of social science.,...., when we look at contemporary debates on science there is very little left of that controversy: nature and society no longer seem to be the opposites they were previously believed to be.,...., My overview points to a new area of contention, one between realism and constructivism." What Delanty suggests is that realism and constructivism are the boundaries of an emerging continuum of philosophy in social science. Delanty arrives at the conclusion to merge both positions in order to adequately conduct scientific explorations. This ties in with Gergen's (1998) opinion that both, constructivism and realism, should be thought of as complementary viewpoints. The synthesising position might be called 'constructivist realism,' according to Beck (1996, as cited in Delanty, ibid.).

Hatch (1997: 6) highlights that "very little objectivity in management [exists], when you get right down to it." In the same vein, Carroll and Johnson (1990: 26) cautions scholars in decision research against merely assuming that an objective reality is the basis for the decision making; "people respond to situations as they interpret them, not as they exist in some objective reality."

In order to explore the research problem, the philosophy has to recognise that the interpretation of relationships and the selection of a suitable supplier is driven by individuals. In other words, the philosophical standpoint has to allow the

identification of the structures behind objective behaviours (i.e., the manufacturer's attitude, based on relationship quality attributes, and the behaviour to select suppliers). Decisions are coloured by the individuals' feelings and beliefs – or in short, by their attitudes. As Fazio et al. (1983: 733) note, "[theorists] have considered one of the major functions served by attitudes to be that of organising and structuring a rather chaotic universe of objects."

So, individuals are acting in their socially constructed reality (e.g., Festinger, 1950; Cartwright and Zander, 1960); a reality which is structured through interaction with others and therefore fluid at the same time. Also from the psychological standpoint, "it has long been an accepted tenet of projective psychology that each individual imposes his own unique structure on the world about him" (Levy and Dugan, 1956: 53). In other words, individuals do react to the world as they understand it and the social context influences individuals' constructs. The authors (ibid.) continue "accepting this as a basic assumption, one is next required to tease out the dimensions utilized by the individual in this structuration." Initial support for this standpoint comes from Kelly (1955a), who argues even further that individuals develop a whole set of personal theories about what the world is like, which they use as a guide for their own actions and responses. These theories comprise individual constructs about a particular aspect of decision making (e.g., selecting a supplier).

A construct is a rule by which one subconsciously understands the environment/world. Kelly calls his basic philosophical position *constructive alternativism*, which takes the view that there potentially exist an unlimited number of alternative constructions of events. An 'event' represents a relationship with a supplier in this research (refer to Figure 6-3 on page 130). Harré and Gillett (1994: 134) summaries Kelly's view as follows "human beings are scientists, forming hypotheses and theories about their world and trying to make sense of it."

It is in this way that knowledge is not neutral or objective; it is a social construction shaped by its context. Consequently, through interpersonal negotiations between a supplier and a manufacturer as well as an implicit understanding rooted in shared experience and shared relationship history the human social order is produced (Berger and Luckmann, 1966). The authors (ibid.:

30) argue for the social construction of complete societies and point out "society does indeed possess objective facticity. And society is indeed built up by activity that expresses subjective meaning." This philosophical position is thus termed *Social Constructivism* and it embodies the following assumptions, according to Gergen (1985; as cited in Burr 1995: 3-5):

1. A critical stance towards taken-for-granted knowledge;
2. Historical and cultural specificity;
3. Knowledge is sustained by social processes; and
4. Knowledge and social action go together.

First, a critical stance towards taken-for-granted knowledge is to challenge the view that conventional knowledge is based upon objective, unbiased observation of the world. It is therefore in opposition to what are referred to as positivism and empiricism in traditional science – the assumptions that the nature of the world can be revealed by observations, and that what exists is what one perceives to exist. Second, the historical and cultural specificity means that all ways of understanding are historically and culturally relative. Not only are they specific to particular cultures and periods of history, they are seen as products of that culture and history, and are dependent upon the particular social and economic arrangements prevailing in that culture at that point in time. Third, knowledge sustained by social processes means that the knowledge of the world is constructed between people. 'Truth' is therefore the current accepted way of understanding the world. Fourth, knowledge and social action going together means that each different construction also brings with it, or invites, a different kind of action from human beings.

In short, the epistemological stance[9] of this vantage point holds that the focus is not upon some objective reality but upon the different meanings with which the worlds of individuals – or reality – become invested. The epistemology is based on the ontological assumption that reality is socially constructed. Thus, the world can only be understood by examining the personal constructs of the individual

[9] Grayling (1998: 9) defines epistemology as the "theory of knowledge,..., which examines questions about the nature of knowledge and how we get it."

actors. The methodology has to be capable of capturing the 'voices' of these individuals with regard to the same phenomenon or problem. Furthermore, the exploration should ideally take place within a narrow time frame because reality is time and context related, according to Gergen's four assumptions noted above.

Social constructivism allows this and social constructivist perspectives have received an increasing interest in the field of psychology during the last decade (Ladwig, 1996; Parker, 1998). Moreover, for conducting research in business units, Steyaert and Bouwen (1994: 125) conclude, "since social constructionism emphasizes the relational qualities and the multiplicities of social realities, we find it an adequate theory to guide qualitative research in a group context." The social constructivist standpoint has thus been adopted for exploring the research phenomenon at hand.

3.4 Summary and Conclusions

Chapter 3 addressed the identified gap in the literature by the following research question: 'In commercial customer-supplier relationships, what is relationship quality (RQ) from the customer's standpoint and how does it relate to the customer's loyalty?'

The investigation was informed by a specific philosophical direction, called 'social constructivism.' This standpoint allows the exploration of decision making processes of individuals and recently, research in the area of psychology has turned to this philosophical perspective. Social constructivism accepts that human beings have their own perspectives on reality and it is therefore perfectly suitable to explore decision making processes in a group context. This philosophical stance underpins the present investigation.

CHAPTER FOUR

4 RESEARCH STRATEGY AND METHODOLOGY – OVERVIEW ... 88

4.1 INTRODUCTION ... 88

4.2 RESEARCH STRATEGY ... 88

4.3 METHODOLOGY ... 90

4.4 SUMMARY AND CONCLUSIONS ... 91

4 Research Strategy and Methodology – Overview

4.1 Introduction

The present chapter discusses the research strategy and methodology of the study in more general terms. Only after these points have been addressed can attention be turned to the three individual research stages, where both issues will be debated in great detail.

4.2 Research Strategy

Due to the novelty aspect of conducting supplier management research in German industry, the researcher sought out a strategy for capturing more general aspects of the research area. This strategy had to be able to reach key informants for exploring the issue of managing suppliers in a relatively short space of time. In addition, the findings should be suitable to subsequently develop other research strategies.

A survey was able to fulfil these goals, as "a survey researcher asks people questions in a written questionnaire,..., or during an interview, then records answers. The researcher manipulates no situation or condition; people simply answer questions.,..., in a short time period" (Neuman, 1997: 31).

The way of addressing a phenomenon influences the research strategy. The present research question has a twin focus as it governs a 'what' and 'how' content (recalling that the research question is '..., *what* is relationship quality,..., and *how* does it relate to the customer's loyalty?'). Broadly stated, *what* and *how* questions "convey the language of an emerging design of research" (Creswell, 1994: 71). That is to say that the research design will be influenced by the outcome of preceding research stages.

If only little is known about the research phenomenon, the 'what-question' indicates an exploratory approach and can ideally be investigated in a case study strategy (Robson, 1996). The 'how-question,' the second part of the present inquiry, signals that the study requires some control by the researcher and an experiment is best suited (Robson, ibid.). Figure 4-1 provides a snapshot of the arrangement of research strategies chosen.

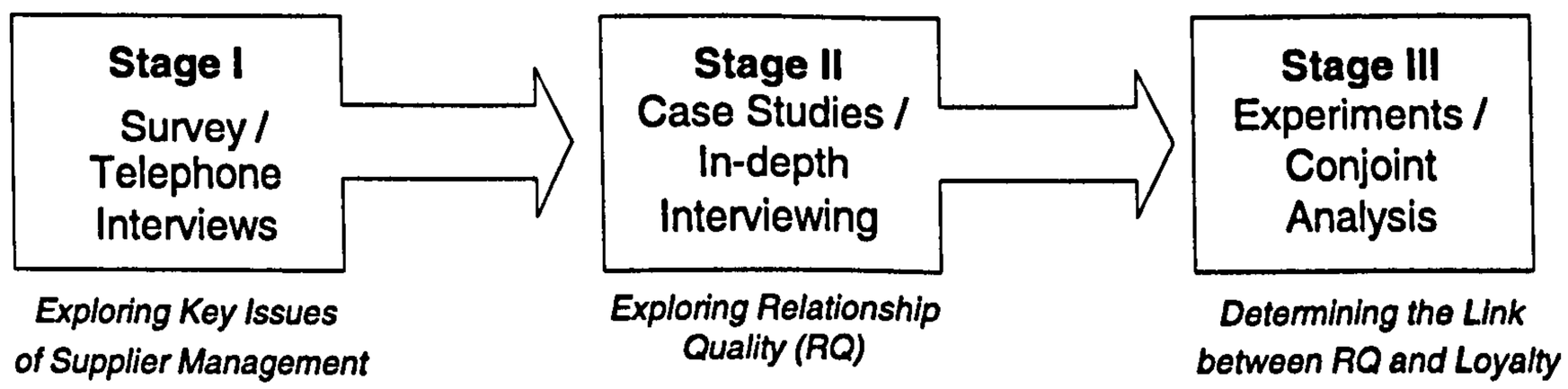


Figure 4-1: The Research Strategies and the Underlying Goals

The three stages consist of surveys, case studies and experiments. These are not research methods – rather, as research strategies, they encapsulate an array of various methods. The researcher conducted telephone interviews with key informants in German manufacturing industry in Stage I in order to explore general issues in supplier management (the methodology of Stage I will be described in Chapter 5 on page 92). In Stage II, the case study research strategy has been adopted where in-depth interviews have been carried out with German managers. The goal was to explore the quality of relationships with suppliers (the methodology of this stage will be outlined in Chapter 6 on page 121). In Stage III, the researcher employed the experiment strategy where the conjoint analysis is a suitable technique to explore the RQ-Loyalty link (the methodology of Stage III

will be discussed in Chapter 7 on page 195). The research strategies embody different methodologies – a point that will be addressed next.

4.3 Methodology

The term *methodology* refers to the complete research process and describes the detailed approach to data collection and its analysis. The research approach is usually differentiated between the quantitative and the qualitative kinds (see the table below).

Qualitative Approach to Research	Quantitative Approach to Research
Human Science Perspective	Natural Science Perspective
Phenomenology, Idealism, and Constructivism	Positivism
Multiple realities, socially constructed, and context dependent	One true reality, measurable
Inductive	Deductive
Theory generating	Theory driven
Hypothesis generating	Hypothesis testing
Verstehen (Understanding)	Predicting
Seeking meaning	Understanding laws and causes
In-depth interviews, participant observation, and "researcher as instrument"	Experimental designs and standardised instruments
Involved and interactive researcher	Objective and detached researcher
Description	Quantification
Discovery oriented, asking questions	Outcome oriented, answering questions
Triangulation	Multitrait-multimethod
Methods and procedures are fluid and evolving	Methods and procedures are predetermined and followed rigorously throughout study

Table 4-1: Differentiating Characteristics of Quantitative and Qualitative Approaches

Source: Based on Ponterotto and Grieger (1999: 51).

Methods (highlighted in grey in Table 4-1) are at the centre of any methodology, as they are "the actual techniques or procedures used to gather and analyse data related to some research question or hypothesis" (Blaikie, 1995: 7).

From a theoretical standpoint, the table above contrasts the two extreme ideologies adopted in a single study (e.g., experimental designs vs. in-depth interviews). Indeed, the qualitative and quantitative approaches continue to be discussed as a dichotomy of opposing paradigms. In practice, however, one has to realise that a researcher is not restricted to a fixed set of qualitative or quantitative methods. Hammersley (1996: 173) explains that "the degree of constraint that is

involved is nowhere near as great as the quantitative-qualitative distinction implies." The author's point becomes especially apparent in a research project consisting of more than one stage. In this vein, Creswell (1994: 177) draws attention to the two-phase design approach, "in which the researcher proposes to conduct a qualitative phase of the study and a separate quantitative phase of the study."

In principle, the *qualitative/quantitative two-phase design approach* appears suitable for the present investigation, because the research question is carved up into two logically connected parts. As discussed earlier, the researcher settled for a three-stage design in order to get an overview of the research field from a practical standpoint first. In the following, the stipulated methods of all three stages will be explained.

4.4 Summary and Conclusions

Chapter 4 outlined the overall approach of this research, typically referred to as the 'research strategy.' The study consists of three stages and each stage aims at exploring a particular aspect of the research question.

The goal of Stage I is to investigate key issues of supplier management (e.g., supplier selection process) and the survey strategy is suitable. Stage II aims at exploring the quality of supplier relationships – conducting case studies represents the appropriate research strategy. Determining the link between relationship quality and loyalty is the objective of Stage III. An experimental design is the tailor-made strategy of this part of the research.

The selected research strategies are not particular methods; they stand for the general approaches of the individual research stages. Therefore, Chapter 4 provided a general overview of the research process. The chapters that follow will discuss in detail the methodological issues of each of the three research stages.

CHAPTER FIVE

5 STAGE I: KEY ISSUES OF SUPPLIER MANAGEMENT AND THE APPROPRIATENESS OF THE RESEARCH QUESTION FROM A PRACTICAL VIEWPOINT 92

5.1 INTRODUCTION 93
5.2 RESEARCH STRATEGY: SURVEY 93
5.3 METHODOLOGY (QUALITATIVE) – TELEPHONE INTERVIEWING 94
5.4 SAMPLE AND UNIT OF ANALYSIS 96
5.5 DATA ANALYSIS 98
5.6 FINDINGS 106
5.7 DISCUSSION OF FINDINGS AGAINST THE BODY OF KNOWLEDGE 115
5.8 LIMITATIONS OF STAGE I 118
5.9 SUMMARY AND CONCLUSIONS 119

5 Stage I: Key Issues of Supplier Management and the Appropriateness of the Research Question from a Practical Viewpoint

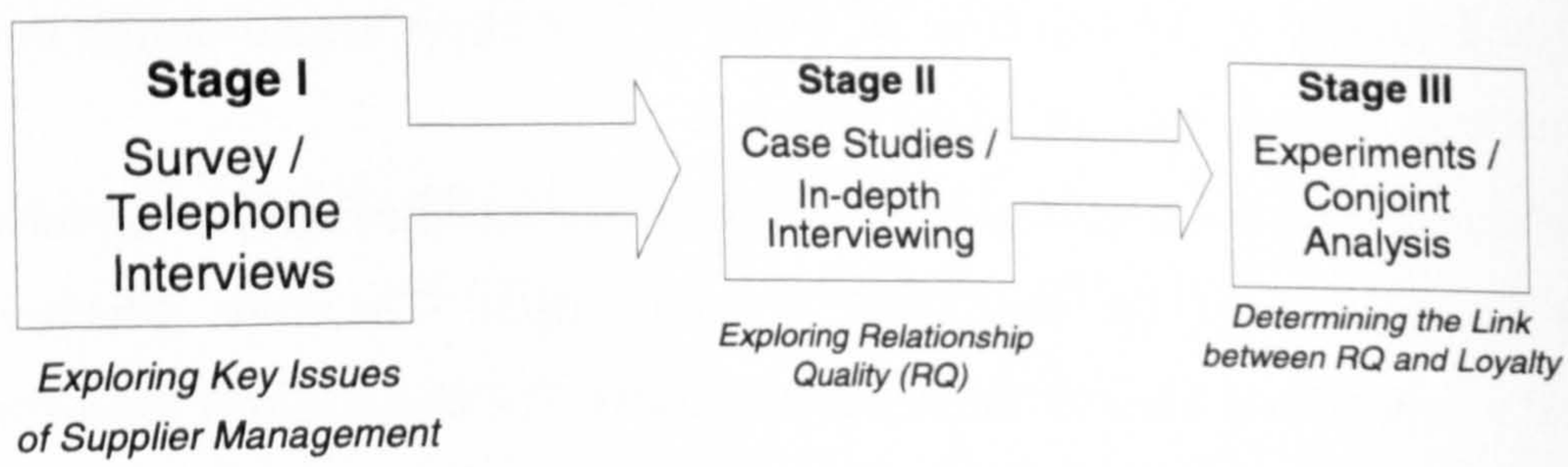


Figure 5-1: Stage I of the Research

5.1 Introduction

Stage I of the study explored key issues of supplier management in German manufacturing industry. In particular, the three goals of this stage were:

1. To determine whether the management of suppliers is deemed important by manufacturers in Germany.
2. To explore the ways suppliers are selected.
3. To investigate the nature of supplier relationships from a manufacturer's perspective.

In order to shed light on all three issues, the researcher conducted telephone interviews with key informants in the field. The process will be described next.

5.2 Research Strategy: Survey

A telephone survey shares many of the advantages of face-to-face interviewing, such as high response rates, correction of obvious misunderstandings, possible use of probes (Newell, 1993; Robson, 1996). Furthermore, they are ideal to seek answers to open questions in a time efficient and cost effective way (Dillman, 1978, 2000). These advantages carried considerable weight in Stage I, as the locations of the manufacturing plants were distributed throughout the country. Consequently, the telephone interview became suitable, as Creswell (1998) argues, because the researcher does not have direct access to individual managers.

Moreover, business managers are under considerable time constraints and, due to this reason, the response rate for telephone interviews might be higher than for face-to-face conversations. In line with this argument, the researcher decided to focus on key informants. As Conant et al. (1990: 371) point out "in the face of time and resource constraints the single informant approach allows for a large number of organisations to be surveyed."

Altogether, this research utilised a telephone survey in order to provide insight into elementary issues of supplier management in German manufacturing industry. Furthermore, the survey was a useful research strategy to ensure that the research phenomenon is not only theoretically sound, but also relevant to practice.

The details of the survey strategy will be described in the remainder of this chapter.

5.3 Methodology (Qualitative) – Telephone Interviewing

The telephone questionnaire used was based on the one developed by Goffin et al. (1997) and consisted of three major parts: a) background information of respondents and general supplier management issues; b) supplier selection (factors and process); and c) supplier performance (including auditing, performance monitoring and new product development). The researcher was fully involved in the development of the questions concerning supplier relationships as well as the selection of suppliers. He translated the questionnaire into German afterwards, which was then checked by an independent German expert in the supplier management field. The methodology of Stage I of the research has been published by Lemke et al. (1999a, 1999b; 2000a; 2000b; 2000c) and Szwejczewski et al. (1999; 2001).

Five pilot interviews were conducted in order to check and optimise the questionnaire. The first pilot test was an in-depth face-to-face interview with a senior purchasing manager. As a result, some changes to the research instrument were necessary in terms of phrasing questions (i.e., incorporating typical business expressions of the respondent) and slight re-structuring of the order of the questions. Subsequently, testing the survey over the telephone was crucial as it "means that such things as normal line noise and the respondent's ability to concentrate while completely dependent on the verbal oral message are components of the test situation, as should be the case" (Dillman, 1978: 229). The next four pilot interviews with purchasing managers were via the telephone and helped in optimising the instrument under real conditions (three pilots led to further minor amendments; the fourth, however, showed that the research design was absolutely suited to the current research purposes). Since these four interviews were with companies from the IBFA-D database (1998 entrants as opposed to the 1997 entrants in the real study), the interview pilots were chosen to be representative of the final sample.

As stated earlier, Stage I of the research formed part of a greater study. With the focus of the PhD research, the following questions of the telephone interview are of relevance:

Area of Question	No. of Question	Question
A	1.	How important is supplier management at your company? (Critical, Very Important, Important, Marginally important, Irrelevant, Don't know)
	2.	How has this importance been developed in the last 3-5 years? (Increased, Decreased, Stable, Don't know)
B	3.	Who is involved in the decision process? *(Members of Buying Centre / DMU)*
	4.	How do you decide which suppliers to keep and which to reject? *(Process of Selecting Suppliers)*
	5.	Which issues do you consider in the selection process? *(Selection Criteria)*
	6.	Do you consider the following issues as well (SCM; Environment; Product Development)? *(Prompting Specific Selection Criteria)*
C	7.	Describe your relationships to suppliers in more detail, please.
	8.	Has the relationship changed over the last 5 years?

Table 5-1: Interview Questions Concerning (A) the Importance of Supplier Management, (B) Selecting Suppliers, and (C) Supplier Relationships

The eight questions listed in Table 5-1 cover the general issues of three relevant areas: A) the management of suppliers (importance and trend of importance); B) the selection of suppliers (process, criteria and the individuals involved); and C) the relationship with suppliers (general nature and recent changes). The interview questions generated qualitative data that was included in the data analysis afterwards.

The researcher conducted all interviews (including pilots) in his native language and since the interviews were exploratory in nature, recording the conversation on tape was beneficial (Oppenheim, 1992). This procedure was followed in 32 cases, after obtaining the respondent's consent at the start of the interview. In addition, notes were taken during the interview process. In the cases of the 2 respondents who did not feel comfortable with the recording, the researcher made detailed notes and transcribed the conversation immediately after

the actual interview. Overall, the interviews took 30 minutes on average and discussed in detail each company's approach to supplier management following a structured questionnaire. Given the senior role that most of the respondents held in the organisation (refer to the sample description in the next section), the time spent with the researcher on the phone suggests that the topics covered were a special interest to them as managers.

5.4 Sample and Unit of Analysis

5.4.1 Sample

Stage I focussed on three industry sectors: 1) Electronics, 2) Engineering, and 3) Process. A stratified sample with a random start of the database population of the 110 German organisations that entered the IBFA-D in 1997 (i.e., the sample pool) was created. The goal of the first research stage was thus to conduct interviews with a representative sample of the database and fifty companies were selected to be contacted. This number is deemed sufficient to ensure that appropriate numbers of organisations are drawn from homogeneous subsets of that database population (i.e., the three industry sectors).

In line with Dillman's (1978, 2000) recommendations for applying a 'total design method' for telephone surveys, all selected organisations were sent an initial letter explaining the research project. The first contact (as listed in the database; usually the Managing Director/*Geschäftsführer*) was asked to pass the letter on to the most appropriate manager dealing with the selection and management of suppliers (normally the purchasing manager). On the back of the letter was a pre-printed form for the manager responsible for suppliers to complete with his/her name and contact details. In addition to the first letter, a follow-up letter was sent three weeks later. If responses were not received within 2 further weeks, then a telephone follow-up was undertaken. In this final contact phase, the MD was called directly and asked whether he was willing to co-operate. Through such intensive contact with companies, a 68% response rate was achieved. As an incentive to all participating companies, respondents were offered the results of the study in return for their support.

The researcher scheduled appointments so that the interview could be held at a convenient time for the respondents; appointments were usually made one week in advance. An important advantage of the key informant design, as pointed out by Kohli (1989), is that it enables respondents to remain anonymous. This procedure does not necessitate their disclosing the names of other buying centre members, thus encouraging candid responses. Furthermore, a key informant was used for pragmatic reasons as a large number of companies can be surveyed when time and resources are limited (Conant et al., 1990).

Two particular steps were taken in the present study to ensure the validity of the key informant answers. First, a *pre-screening* and *selection* procedure was used to ensure that the participants were both motivated and able to describe the relationships with suppliers, which is consistent with Campbell's (1955) criteria for identifying key informants. Specifically, each individual whose name appeared on the IBFA-D database was directly sent an introductory letter (typically the contact was the Managing Director). Second, each individual was personally contacted by phone prior to the interview in order to identify who was knowledgeable about the management and selection of suppliers as well as to arrange a suitable time for the telephone interview. This step was important, as Campbell (1955) demonstrated, because knowledgeable individuals, when answering well-developed questionnaires within their area of expertise, generate high quality data. The researcher then called at the agreed time and carried out the interview. The conversation was mostly held with senior purchasing managers (see Table 5-2).

Function of Interviewee	Proportion
Senior Purchasing Manager	*20 (59%)*
Managing Director	*9 (26%)*
Other	*5 (15%)*

Table 5-2: Structure of Sample by Interviewee Function

From the original sample of 50 managers/organisations, 34 detailed telephone interviews were carried through (which yields a response rate of 68%). The sample breakdown by industry is shown overleaf.

Industry Sector	Companies Contacted	Interviews Conducted	Response Rate
Electronics	*11*	*9*	*82%*
Engineering	*34*	*21*	*62%*
Process	*5*	*4*	*80%*
Total	**n = 50**	**n = 34**	**68%**

Table 5-3: Structure of Sample by Industry Sector

Interviews where mostly conducted with managers in engineering companies followed by the electronics industry and lastly the process sector. All managers contacted were responsible for supplier management within their organisation.

5.4.2 Unit of Analysis

The unit of analysis is "the kind of case to which the variables or phenomena under study and the research problem refer, and about which data is collected and analysed," as Hussey and Hussey (1997: 66) note. The study centred on managers who are responsible for supplier management and the unit of analysis was thus the individual manager rather than the organisation.

5.5 Data Analysis

Smith (1995a) proposes an idiographic approach to the interview analysis, which means that the researcher begins with particulars and slowly works up to generalisations by cross-comparing interview transcripts of multiple respondents. Thus, interpreting qualitative findings is an analytical process and steps are built onto each other. It starts with preparing the qualitative material in text form and coding text units. Analysis ends with the identification of the underlying structure of the data, which can then be linked back to the focus of the research (Miles and Huberman, 1994). Miles and Huberman (ibid.: 91-92) argue "valid analysis requires, and is driven by, displays that are focussed enough to permit a viewing of a full data set in the same location, and are arranged systematically to answer the research questions at hand." This process has been followed in analysing the data of Stage I, as the interviews have been transcribed and interpreted afterwards.

As a note, the 5 pilot interviews described earlier have been excluded from the analysis as they were outside of the original sampling pool. The analysis, starting with transcribing the conversations, is based on the 34 in-depth interviews of the original sample.

5.5.1 Transcribing

A transcript is "any record of a performance" in the broad sense of the term, according to O'Connell and Kowal (1995: 94). The authors (ibid.: 98-103) present seven basic principles of transcribing as follows:

1. Only those components of spoken discourse which are to be analysed should be transcribed, and only what makes analysis intelligible should be presented in transcripts for the reader.
2. Graphemes should be used only for the segmental representation of lexical items, and punctuation marks should be used only for their conventional purposes.
3. The internal integrity of words should not be interrupted by any supernumerary symbols.
4. Subjective perceptions and/or categorisations of the transcriber should not be recorded as objective measurements.
5. Symbols used in transcription systems should stand for only one feature of the spoken discourse, and no feature should be represented by more than one symbol.
6. Descriptions, explanations, commentaries and interpretations should be clearly distinguishable from the transcription of phonological features of spoken discourse.
7. The transcriber, considered as a language user, is 'often quite unrealible' (which refers to the fact that transcribers set a job description for their task in accord with their own purposes, which may or may not be the same as those of the researcher).

Steps 1-6 have been followed during transcribing the interview data. Step 7, however, was irrelevant, as the researcher did not involve another person – the researcher transcribed all interviews. Finally, all respondents and companies have been coded, so that the potential influence of company images is eliminated in the analysis that commenced. Put differently, the analysis has been exclusively based on the transcribed text.

5.5.2 Analysis of Qualitative Data

Analysing qualitative data could be started within the data collection period, as it can lead to preliminary conclusions about what is happening in the case. Miles and Huberman (1994) suggested nine different methods. These can be applied in combination, during and/or after data collection:

1. **Contact Summary Sheet;**
2. **Codes and Coding;**
3. **Pattern Coding;**
4. Memoing;
5. Case Analysis Meeting;
6. Interim Case Summary;
7. Vignettes;
8. Prestructured Case; and
9. Sequential Analyses.

Although all nine options are suitable in analysing (multimethod) case studies, utilising all of them in Stage I would have overfulfilled the goal. Options 1-3, highlighted in bold, have been used instead and will be discussed in the following. Some of the other options have been applied in Stage II and will be explained in the appropriate sections later.

5.5.2.1 Contact Summary Sheet

To conduct a contact summary, "the field-worker reviews the written-up field notes,..., to develop an overall summary of the main points in the contact" (Miles

and Huberman, 1994: 51). These sheets are very important when conducting case studies (i.e., Stage II) and Miles and Huberman describe contact summary sheets in this spirit. However, the researcher found them helpful in the telephone survey of Stage I as they served as a basis for discussing the initial findings with his supervisor, colleagues, and fellow PhD students.

Each sheet consisted of the contact details of the respondent (name, company, function/area of responsibility), the date of the interview (date, time, duration of interview in minutes), the status (pilot conversation or real interview), key points (quick summary of answers given to the questions), as well as initial notes of the researcher (general impression about the interview, links between answers and short overall summary) besides other issues. The figure below displays the general outline of the summary contact sheet used.

Internal Number/Code:	
Status:	
Date:	
Duration of Interview:	
Organisation:	
Sector:	
Name:	
Position/Function:	
Area of Activities:	
Importance of Supplier Management:	
Trend of Importance:	
Who is involved in selection process:	
What does the selection process look like:	
Criteria of selection:	
Have other criteria being considered as well?	
Description of relationship:	
Recent changes of relationships:	
	Useful Quotes in Context
Context	*Quote*

Figure 5-2: Contact Summary Sheet of Stage I

Figure 5-2 shows the outline of the contact summary sheet and initially notes were made in the appropriate fields during the telephone interview. The form was subsequently completed on the computer in bullet point format and original quotes from the tape recording were added. A quote, which was deemed particularly useful (e.g., it highlights a common point shared by all respondents or it contrasts the typical answers given), has been noted in its particular context (e.g., 'description of relationship') on the bottom of the contact sheet.

Miles and Huberman (1994: 52) conclude "the contact summary,..., [is a] rapid, practical way to do first-run data reduction without losing any of the basic information (the write-up) to which it refers." A typical summary was not longer than one A4 page and the researcher found it useful to immediately 'flesh out' an up-to-date overview of the telephone survey.

5.5.2.2 Codes and Coding

Codes are "tags or labels for assigning units of meaning to the descriptive or inferential information compiled during a study" according to Miles and Huberman (1994: 56). The authors present the option to generate a provisional start list, containing codes from the literature prior to the study. In this respect, Charmaz (1995: 37) differentiates between quantitative and qualitative coding as follows: "unlike quantitative coding that means applying preconceived codes (all planned before the researcher even collects data) to the data, qualitative grounded theory coding means *creating* the codes as you study your data. The codes emerge as you study your data. By studying your data, you again interact with them and ask questions of them." The idea of applying preconceived codes (i.e., developing a start list) for describing supplier relationships or the quality of them was rejected. The reason is that the literature does not offer any factors that are commonly accepted. However, coding has been done in a focussed fashion. Charmaz (1995: 40) explains: "focussed coding refers to taking earlier codes that continually reappear in your initial coding and using those codes to sift through large amounts of data."

Coding can be done on paper, on the transcripts themselves. Yet, there are many other ways and one of those is the utilisation of computer software. "The programs," as Kvale (1996: 173) highlights, "are aids for structuring the interview material for further analysis; the task and responsibility of interpretation still rests with the researcher." *NVivo 1.0* (a Windows-based programme) was used for coding the interviews. The computer programme was employed for the qualitative data analysis in the form of a database, a tool for coding the interview data, and as a vehicle for the development of conceptual frameworks. Therefore, a number of techniques of analysis were applied to derive meaning from the data. In order to display a visual overview of the data, the connection of codes is indicated in Figure 5-3 as an example.

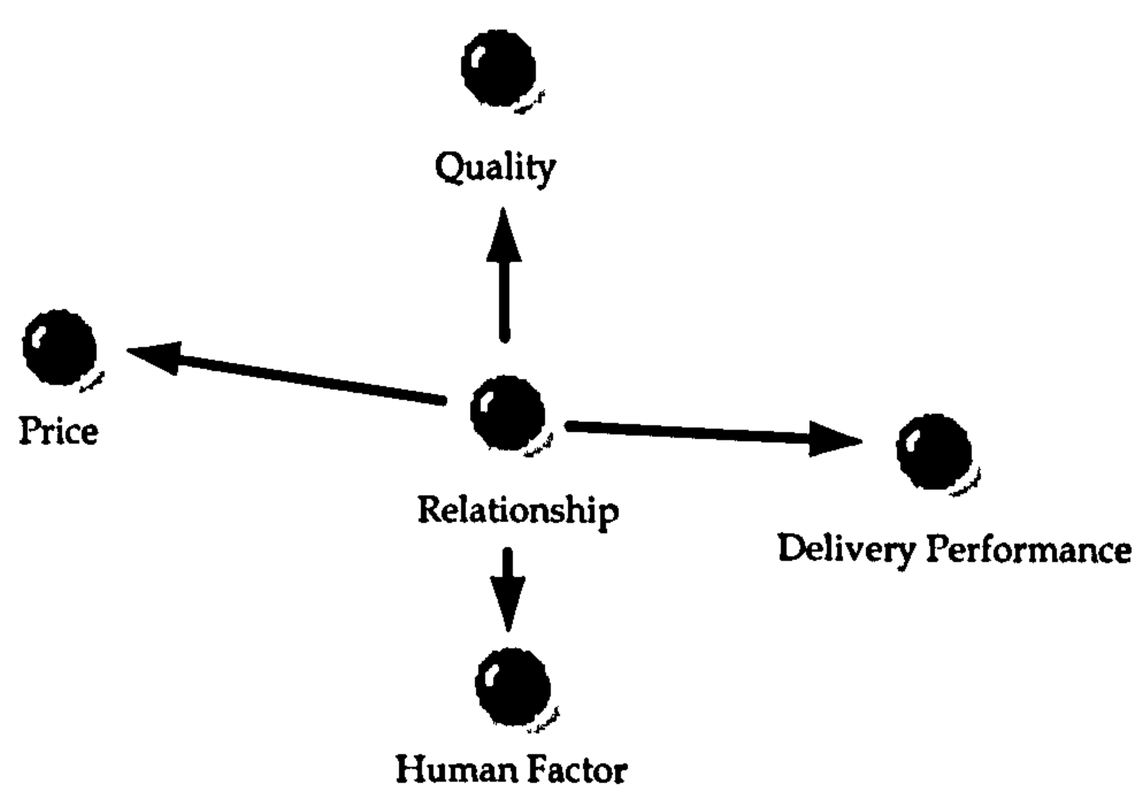


Figure 5-3: NVivo Diagram of Question 7 (Description of Relationship) – Staff and Logistics Executive in the Electronics Industry

Nvivo generated spider-diagrams of all the coded answers. The figure above is an example of the answer given by a staff and logistics executive in the electronics industry to question 7 'Describe your relationships to suppliers in more detail, please.' The original coded transcripts as well as the diagrams helped in gaining a better understanding of the data in the discussion with the supervisor, colleagues and fellow PhD students.

Although the structural order of codes might be interpreted as one way of analysing data, Potter and Wetherell (1995: 87) clarify that "[coding is] distinct from the analysis itself; it is merely designed to make the analytic task simpler by focusing on relevant materials." In this vein, Miles and Huberman (1994) highlight that many codes are bound to change and be refined in the process of

fieldwork. Other codes might not work in a particular study at all and thus be rejected altogether. In short, codes need to be revised during the fieldwork and this has also been done in Stage I.

Some answers in the interviews were suitable for more than one code (e.g., the first part of a sentence refers to one aspect, the second part makes reference to another). This approach is termed 'multiple coding,' so more than one code can capture a block of data. This technique is particularly useful in exploratory studies, as Mils and Huberman (ibid.) point out and helped in arriving at a fuller understanding of the data in this detailed coding approach.

Charmaz (1995: 37) argues that coding "is the pivotal link between collecting data and developing an emergent theory to explain these data." The author (ibid.: 40) continues, "by categorizing, you select certain codes as having overriding significance in explicating events or processes in your data." Charmaz hints at the next step of analysis: Pattern Coding.

5.5.2.3 Pattern Coding

Focussed coding helps to see the relationships and patterns between categories (Charmaz, 1995). These categories can be expressed in a pattern code – or inferential code – that helps to identify repetitive schemes in qualitative data. It can thus be described as an overlaying meta-code. These codes are usually added to the general list of codes. Miles and Huberman (1994: 69) point out "*first-level coding* is a device for summarising segments of data. *Pattern coding* is a way of grouping those summaries into a smaller number of sets, themes, or constructs. For qualitative researchers, it is an analogue to the cluster-analytic and factor-analytic devices used in statistical analysis." Four functions are typically associated with pattern coding, according to the authors (ibid.):

- It reduces large amounts of data into a smaller number of analytic units.
- It gets the researcher into analysis during data collection, so that later fieldwork can be more focussed.
- It helps the researcher elaborate a cognitive map, an evolving, more integrated schema for understanding local incidents and interactions.

- For multicase studies, it lays the groundwork for cross-case analysis by surfacing common themes and directional processes.

NVivo was used for further analysis, and themes in the form of groups of related codes emerged. These have been bundled (i.e., forming a meta code) and used as a basis for model development later on. The following figure displays an example of a graphical outcome of a pattern coding.

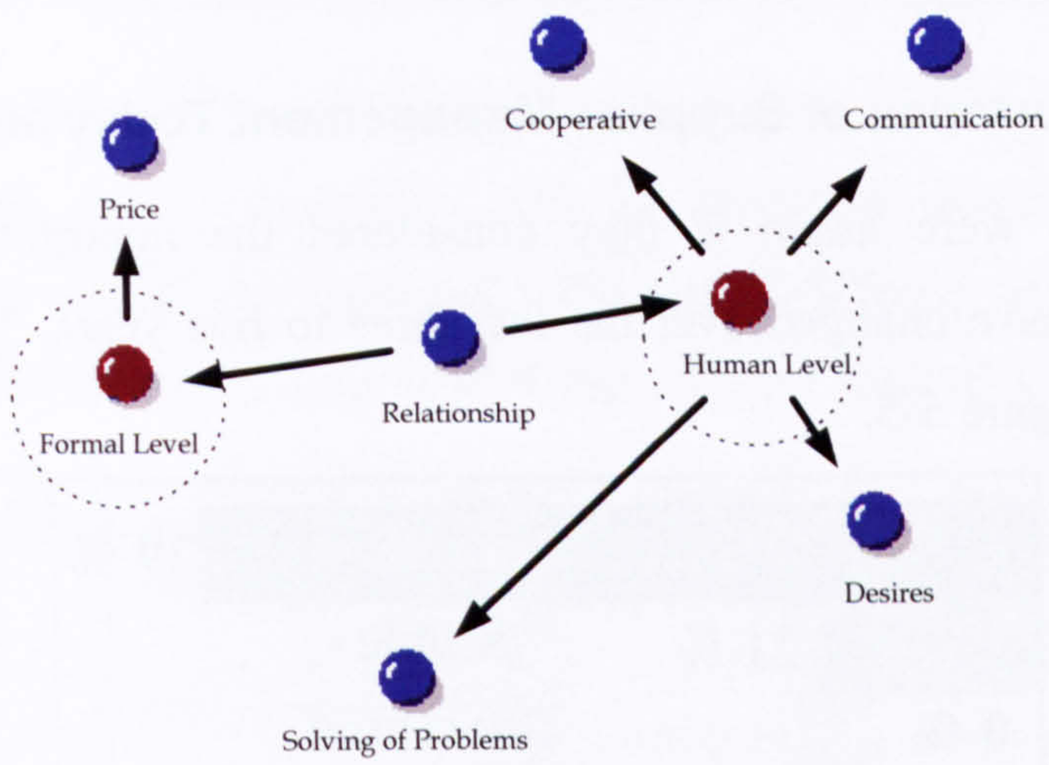


Figure 5-4: NVivo Diagram of Question 7 (Description of Relationship) – Purchasing Manager in the Engineering Industry

The figure above is an example of the answer given by a purchasing manager in the engineering industry to question 7 'Describe your relationships to suppliers in more detail, please.' During the coding process, the researcher realised that some respondents mentioned two levels within the relationship, while others pointed out individual components of it. The 'formal level' and the 'human level' of the relationship became pattern codes and are highlighted in dotted circles in the figure.

The pattern coding diagrams helped in developing generic models and similarities can be found to the final models later on (refer, e.g., to Figure 5-7 on page 113).

5.6 Findings

In this section, the results of the eight questions of the telephone survey will be introduced. Given the relatively small size of the sample, no real meaningful statistical analysis could be carried out. However, it has been possible to determine frequencies for the key questions that were asked, starting with the trend of supplier management importance.

5.6.1 The Importance of Supplier-Management Today and The Trend

The respondents were asked if they considered the importance of supplier management to have changed over the last three to five years. The answers are summarised in Figure 5-5.

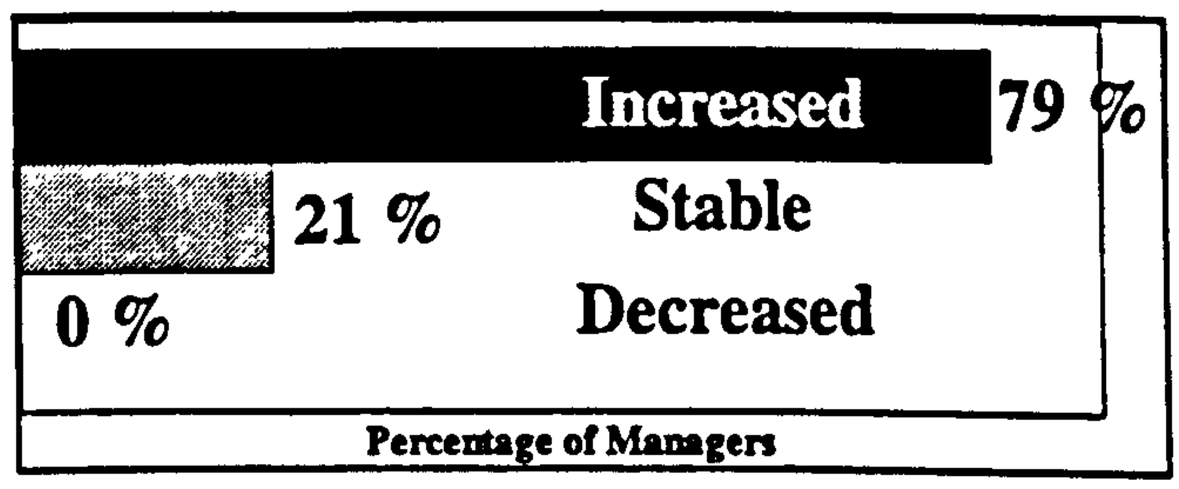


Figure 5-5: Perception of the Importance of Supplier Management

The figure shows that although 21% of respondents perceived the importance of supplier management as being stable in their organisations, 79% of managers saw the importance increasing. None perceived supplier management as decreasing in importance.

The second question aimed at identifying the level of importance compared to other business processes in general. 6% of respondents claimed that supplier management is 'critical' today (the highest of the six categories in the survey), while 91% of respondents argued that it is 'very important' (second highest category), and 3% stated that it is 'important' (third highest level). None of the respondents treats supplier management as an irrelevant issue. The reason for this strong confirmation is that "*purchasing is not a single-sided business but is underpinned by a bilateral supplier-customer relationship,*" as a purchasing

manager in the engineering sector explains.[10] A marketing manager in engineering states *"the relationship to the supplier is nearly as important as to the customer."* These are typical answers underpinning the significance of supplier management. As a central purchasing manager (electronics sector) pertinently emphasises *"we are only as good as our suppliers are."*

5.6.2 Supplier Selection: Individuals Involved, Process and Criteria

All the respondents were asked separate questions relating to the supplier selection process. Every respondent, with no exception, described the selection process as a team effort, incorporating a number of different functions. Table 5-4 outlines the main functions involved in the supplier selection process at the 34 companies surveyed.

Functions	Percentage
Purchasing	79%
Quality Management	56%
R&D	41%
Engineering	32%
MD / Top Management	26%
Production Manager	15%
Factory Manager	6%
Marketing	6%
Project Leader	6%

Table 5-4: Typical Functions Involved in Selection Process

In 79% of cases, the purchasing department is involved in selecting suppliers, followed by quality management (56%) and Research and Development (R&D, 41%). Normally, three functions make up the team responsible for supplier selection. It is worth noting that of the 34 firms surveyed, only two manufacturers integrate the marketing function into the sourcing teams.

Having identified who is involved in the supplier selection team, the interviews also covered the actual supplier selection process. Each of the companies was directly asked to describe their process and a general scheme of phases emerged.

[10] This quotation and others that follow are taken from the transcripts of the interviews.

Although the procedures vary to some extent, they can be aggregated into the nine main steps outlined in Table 5-5.

1. *Engineering / R&D have an initial product idea or the end-consumer places an order for a particular product;*
2. *Purchasing manager enquires about information/offers from potential suppliers or from specific suppliers (if required by the end-consumer or R&D);*
3. *The cross-functional sourcing team discusses the options;*
4. *The purchasing manager invites potential suppliers for first discussions;*
5. *Suppliers on the short-list deliver samples;*
6. *Quality manager evaluates the samples;*
7. *Purchasing manager negotiates with suitable suppliers;*
8. *Sometimes, an audit (before selection or shortly afterwards) will be conducted;*
9. *The team decides and purchasing manager places the order.*

Table 5-5: Typical Steps Taken in the Supplier Selection Process

The selection procedure starts with an initial idea or specific customer order. It then involves the purchasing manager who seeks out potential suppliers and initiates the bidding process. The sourcing team discusses the options on the basis of the information received before inviting a limited number of suppliers for further personal discussions. After drawing up a short-list, suppliers are asked to deliver samples, which the quality manager subsequently evaluates. Then, the purchasing manager negotiates the price and delivery conditions etc. Sometimes it is necessary to conduct an audit before the entire sourcing team enters into the final phase. Here, the group decides on which supplier to buy from and the purchasing manager places the order.

The nine steps can further be summarised into a *Five-Step Supplier Selection Process* model, as shown below:

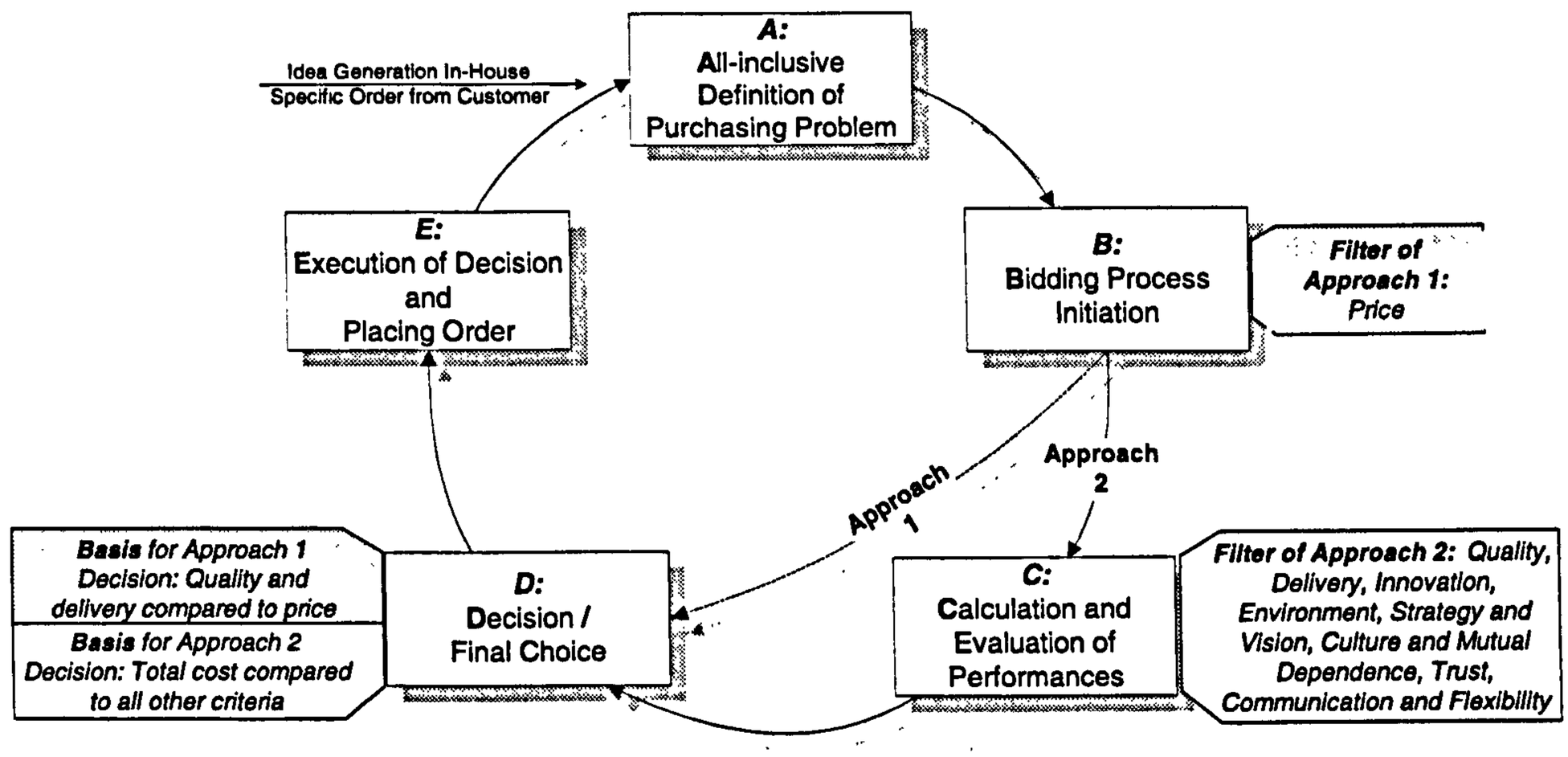


Figure 5-6: A Five-Step Supplier Selection Process – Stage I

Source: Based on Lemke et al. (1999b: 7).

Figure 5-6 indicates two approaches to supplier selection, labelled 'Approach 1' and 'Approach 2' in the model. For selecting suppliers, the *price*, as it seems, becomes either an issue early on (Approach 1) or in later stages of the selection process (Approach 2). What is the role of *price* when suppliers are being selected? The telephone interviews did not come closer to any answer. However, the telephone survey was used to clarify which criteria form the basis for selecting suppliers in general. The majority of 30 managers referred to *price*, whereas 27 respondents mentioned *product quality* and 23 reported *delivery performance*. Other criteria were mentioned rather infrequently, as Table 5-6 shows.

Selection Criteria	Frequency
Price	30
Quality	27
Delivery	23
Service	4
Relationship History	4
Certificates	4
Volume	3
Know-how / Competence	3
Flexibility	3
Supplier's Equipment	2
Commitment	1
Communication	1
Size of Organisation	1
Trust	1
Technology	1

Table 5-6: Selection Criteria

The top three selection criteria employed in practice are also those advocated by the literature – price, quality, and delivery performance (highlighted in grey). Although the manufacturers interviewed did not mention the *location* of the supplier, it might be that it is one of the subconscious pre-selection filters. Thus, the *location* could ensure speedy delivery and direct communication links unconstrained by foreign languages and country specific interpretations about legislative issues. Unfortunately, the findings do not shed light on this possibility.

In general, some German companies surveyed favour a combination of *price and quality* while others assess *price and delivery* for supplier evaluation purposes. The majority, however, takes all three factors into account when selecting a supplier. This explains why *price* always plays a role in the selection process, although it has to be emphasised that this factor is not the single most important criterion. A purchasing manager in the electronics industry describes this situation as follows *"in the past, the price was most important and then quality came in. Yet, if the quality is not right or we do not get the promised component delivered, a 'good price' will not help us run our business."* An MD in the same sector makes a similar point *"it is critical that products are of top*

quality. In addition, products have to be here on-time and only then does price become relevant. In fact, the price is the last issue to consider."

Examples like these clearly show that the understanding and approach to purchasing among German manufacturing companies has changed; the motto of the past 'how much quality do we get for a given price' has been replaced by 'how much do we have to pay for obtaining a given quality level.' By contrast, it became apparent that softer issues, such as *cultural fit* or *problem solving capabilities*, are still rarely considered in the selection decision in German manufacturing today. As an exceptional case in the engineering sector, a purchasing manager points out *"our selection criteria are quality, reliability in delivery performance and the supplier's 'willingness to operationalise crazy ideas' – and finally the price."* From this quote, it seems that subjective issues can be blended into the selection process, although the classic factors enjoy priority.

5.6.3 The Nature of Supplier-Manufacturer Relationships

As part of the investigation, the respondents were asked directly how they would characterise the relationships with their suppliers. Two general classes came to the surface in the interviews – Table 5-7 provides a snapshot of the answers given.

	Characteristic	Tangible	Intangible	Frequency
1.	*(Very) "Good"*		X	14
2.	*Partnership-like*		X	9
3.	*Co-operative*	X		5
4.	*Normal / Reasonable*		X	4
5.	*(Very) Open*		X	3
6.	*Understanding / Helpful*		X	3
7.	*Goal Directed / Profit focus*	X		4
8.	*Climate of trust*		X	2
9.	*Close*		X	1
10.	*Direct*		X	1
11.	*Liberal*		X	1
12.	*Long-term perspective*	X		1
13.	*Fair "Giving and Taking"*		X	1
	Frequency	**14**	**35**	**49**

Table 5-7: Relationship Characteristics

The table highlights the fact that fourteen managers characterised the relationship with their suppliers as "(very) good" and nine described it directly as

"partnership-like" (i.e., about a quarter of the respondents). From the respondents' point of view, both answers were meant to be conclusive, incorporating an array of supplier characteristics. The remaining eleven interviewees, however, did not use either "(very) good" or "partnership-like" expressions to describe the supplier relationship but referred to one or more factors instead. These managers described the relationships, for instance, as 'profit focus' or 'climate of trust.' This explains why the sum of frequencies (n = 49) is higher than the total number of respondents (n = 34). The researcher probed deeper into each relationship characteristic in order to gain a fuller understanding. Interestingly, only three factors could be backed up by tangible measures: 'co-operative' where regular supplier meetings are scheduled for problem solving and improving results, for instance; 'goal directed / profit focus' where goals are officially established between both parties; and 'long-term perspective' sealed by a long-term contract between the supplier and the manufacturer. The remaining eleven characteristics, such as 'understanding / helpful,' have been explained with phrases like *"It is my feeling that...," "My experience tells me that...,"* or *"In my point of view..."* In short, these characteristics are more intangible in nature, based on experience, and are therefore listed separately from the more tangible ones in Table 5-7.

Prompting questions were asked in order to arrive at a more complete picture. When coding the respondents' answers, the researcher discovered that managers have many words or phrases for explaining their relationships with suppliers. In *NVivo*, it was possible to create nodes for each, coding the different uses, and place them as subcategories of the node 'Question 7 – Supplier Relationships.' To discover the different ways the words are used, the researcher had to go behind the note system, to retrieve the data coded at each node, read and reflect and explore these meanings in context. Theorising about the relevance of these meanings to the supplier relationships required much reflection and study. To represent that growing theory visually, a model has been developed with *NVivo* (see Figure 5-7).

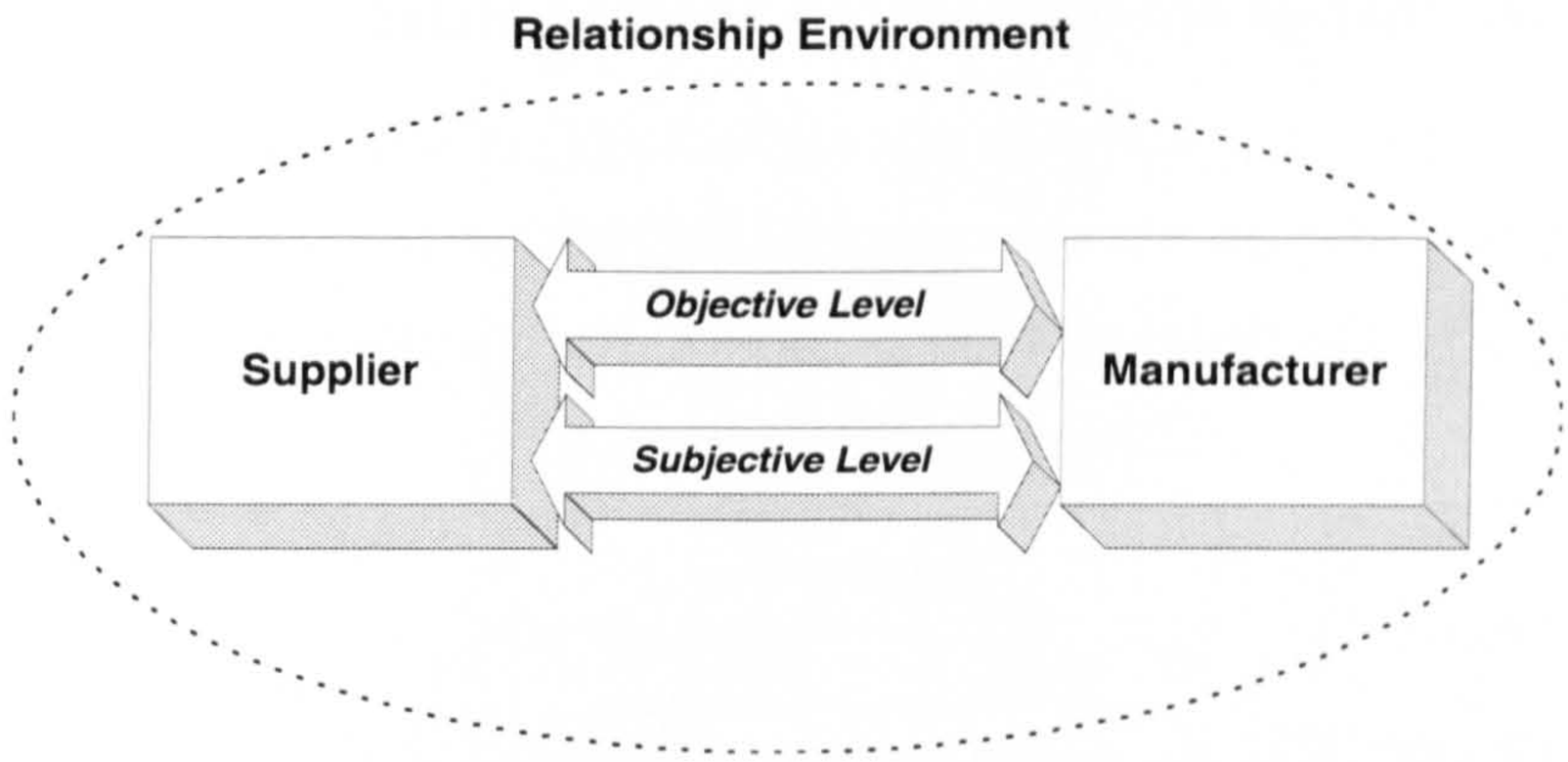


Figure 5-7: The Nature of Supplier-Manufacturer Relationships

The figure shows the supplier-manufacturer relationship embedded in an environment. The environment stands for a vision that aims at a long-term relationship, which is capable of generating the required outcome or performance. In short, the environment is the motivation for keeping the relationship alive. *"Our relationship aims at generating profit"* as a purchasing manager in electronics states and a purchasing manager in engineering confirms, *"the relationship is for the long-term and goal-directed, hence, it is result oriented."*

The relationship itself exists on two levels – the objective and the subjective. Another purchasing manager in engineering points out *"we are cooperative and this on the objective as well as the human level."* The arrows of the two levels point to both parties, signaling that a relationship is a bilateral encounter. The objective level governs factors that are measurable performance indicators (i.e., *quality*, *price*, *delivery*) and here the exchange of products and money takes place. The subjective level contains all the intangible factors, such as *trust* and *openness* and this level supports or assists the objective side. The model presenting the nature of supplier-manufacturer relationships is able to accommodate the relationship characteristics of Table 5-7. Unfortunately, the telephone interviews were not suitable to uncover all the factors explaining the subjective level, which is the reason why the figure had to be kept fairly general at this point.

5.6.4 The Change of Supplier-Manufacturer Relationships

In the interviews, respondents described the change of relationships in three ways: the triggers of change, the change itself, and the outcome of their relationships with suppliers. The figure below displays the connection between the three issues:

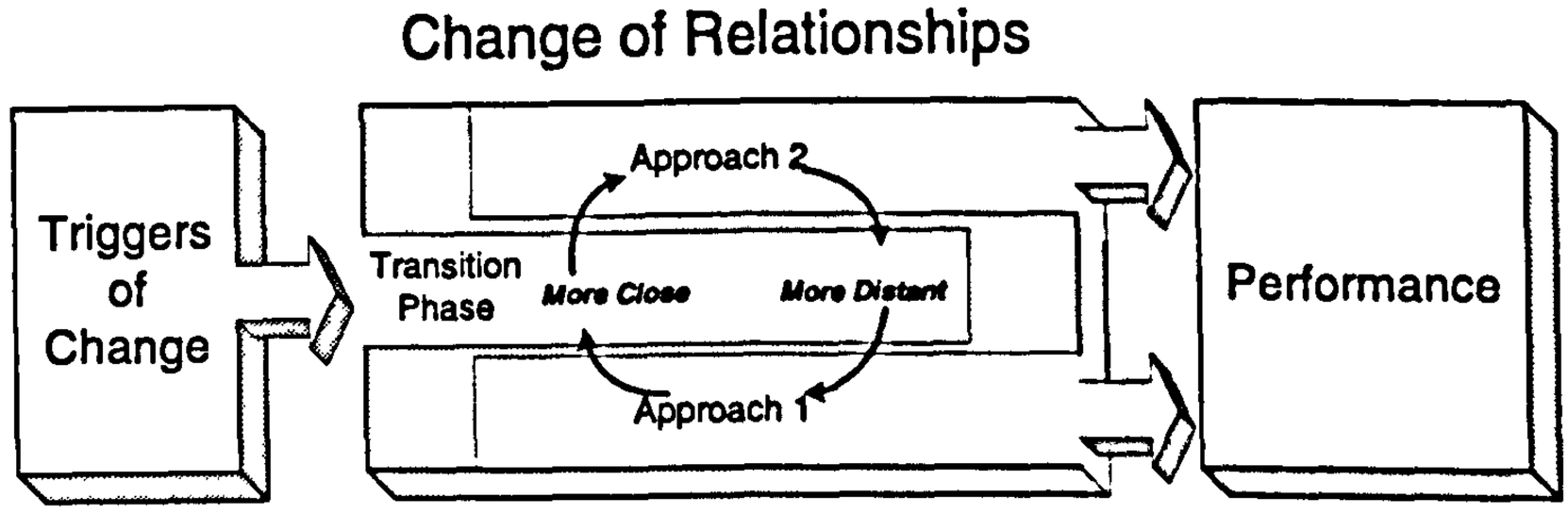


Figure 5-8: The Change of Supplier-Manufacturer Relationships

As displayed in Figure 5-8, certain triggers initiate changes in supplier-manufacturer relationships. The triggers can be market pressures, political changes, and other occurrences. *"Due to the increased pressure by our competitors, the human side to the suppliers deteriorated, unfortunately; we do not work as closely as we used to"* as an MD in engineering notes. A logistics executive in Electronics echoes the point just made, *"in the past, the contacts to the suppliers were closer; but today, everybody has less time for keeping it that way."* By contrast, an MD in Engineering argues, *"today, I can ring the supplier directly at home. Before 'the wall came down' [i.e., the reunification of Germany], relationships could not be built, but after the reunification everything changed. The more we got used to working with each other, the more responsibility we gave the supplier to do special tasks. Now, we work together on several levels."*

The main change has been described as working 'closer' or 'at a greater distance' with the supplier. Interestingly, manufacturers deal with the 'triggers of change' in two opposing styles, indicated as Approach 1 and Approach 2 in the figure above. However, no matter what approach has been taken, manufacturers aim at achieving performance and in turn, profit. The telephone interview could not uncover why some manufacturers chose one approach over the other nor how successful they are in achieving their goals.

5.7 Discussion of Findings Against the Body of Knowledge

The results of the telephone survey are interesting for the following reasons: Firstly, it is evident that supplier management is critical to manufacturers today and quite likely to remain so for some time to come. Managers confirmed that the importance of managing suppliers was increasing, being *very important* today. Many German writers have acknowledged the importance of supplier management (Homburg, 1995; Wehrli and Wirtz, 1996; Nachtweh, 1998). The explanation is that effective supplier management can take costs out of the supply chain (Christopher, 1997). In many industries, the management of suppliers can account for as much as 60% and 80% of manufacturing costs (Asmus and Griffin, 1993). Other potential benefits include on-going improvements in product and service quality by employing just-in-time delivery systems (Christopher, 1998), electronic data interchange (Wang and Seidmann, 1995) and quality improvement programmes (Kolarik, 1995) and easier know-how transfer (Lemke et al., 2000c). Furthermore, involving selected suppliers in new product development can enhance product and process design (Ragatz et. al., 1997). Interestingly, a German Delphi-Panel of experts made the prognosis for the years 2001-2005 that suppliers will become responsible for a major part of R&D activities, whereas manufacturers will predominantly focus on their core competencies (Cuhls et al., 1998). Thus, supplier management is becoming increasingly critical.

Secondly, the functions typically involved in supplier selection are purchasing, quality management, and R&D. Yet, the marketing function is often excluded from the sourcing team. Recently, Homburg et al.'s (1999) empirical work in German and US manufacturing indicates that marketing is a highly influential function in its classic tasks (e.g., advertising messages or measuring customer satisfaction levels) as well as to a lesser extent in decisions about strategic business issues. This, together with the results of the present investigation, suggests that marketing still takes a predominately *downstream perspective* in the supply chain. In other words, while it is actively involved in managing the manufacturer-customer relationship, it is not involved in the supplier-manufacturer interface in Germany.

Thirdly, commonalties exist with regard to the steps taken in the selection procedure itself (Table 5-5 on page 108), which can be described as a bidding process. It typically starts with a) an idea from in-house technical departments, or b) with a specific customer order. Then, the purchasing manager solicits offers from potential suppliers and the procedure continues with various evaluation stages. The cross-functional sourcing team, which often consists of three functions, selects the supplier together as the final step and the purchasing manager places the order. Recently, De Boer et al. (2001) conceptualised the selection process as outlined in Figure 5-9.

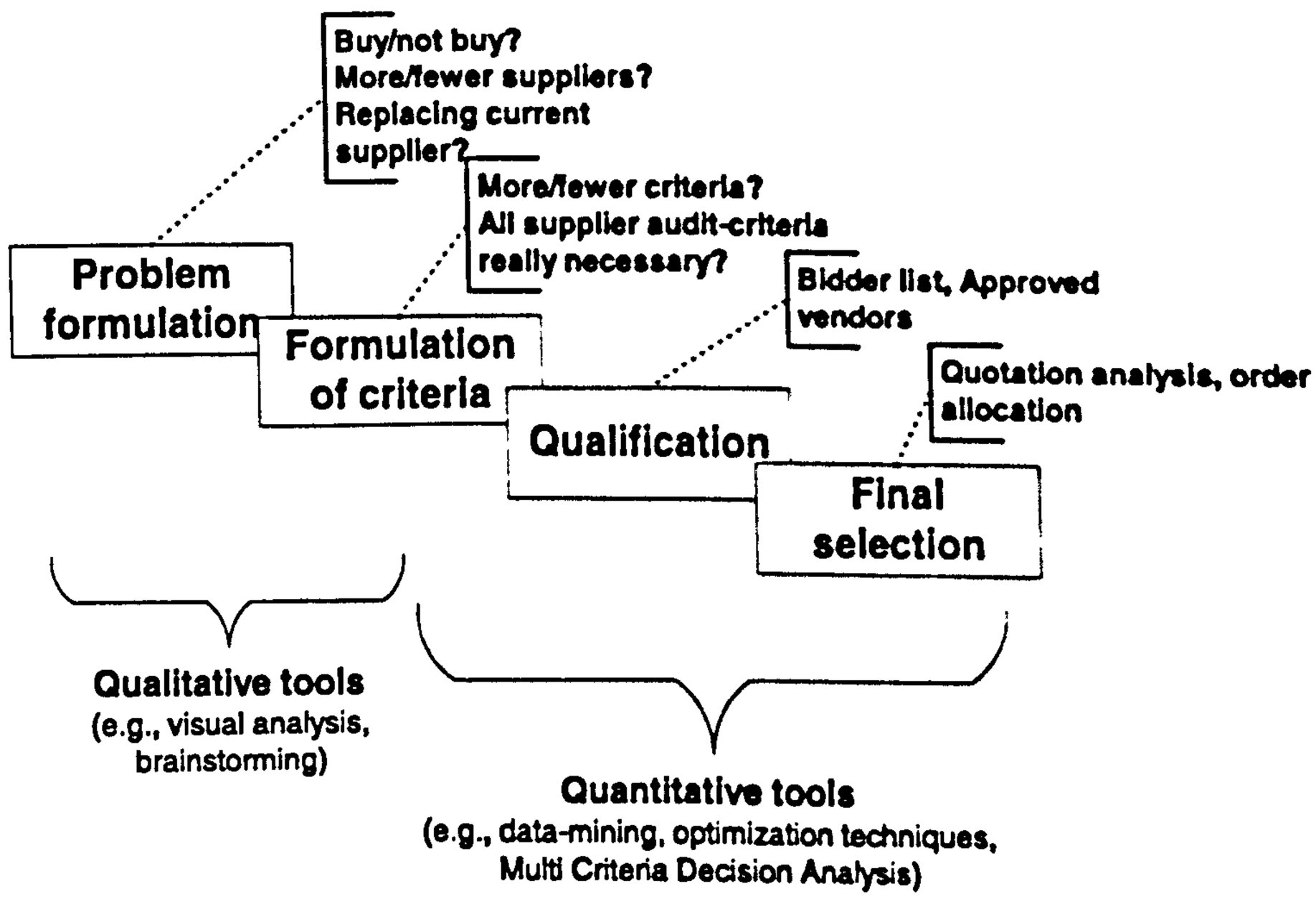


Figure 5-9: Rough Positioning of Decision Methods in Supplier Selection
Source: De Boer et al. (2001: 79).

The figure shows four steps in the selection process, starting from problem formulation and ending in the final selection. Interestingly, the authors indicate two sets of analytical tools. At the onset, qualitative tools dominate (e.g., brainstorming) and quantitative tools (e.g., multi criteria decision analysis) take over. In many respects, the figure above is consistent with the findings of Stage I (refer to Figure 5-6 on page 109). However, the 'Five-Step Supplier Selection Process,' as outlined by this study, recognises that the selection of suppliers is a repeating process that can be triggered off by an in-house idea or a specific

customer order. Moreover, the model of this study not only recognises several evaluation steps leading up to the final choice, but it also differentiates two different approaches to supplier selection. Unfortunately, at this point of the research it is unclear when one approach will be favoured over the other. The selection process ends by the execution of the decision and the order will be placed. This step comes after the sourcing team has made the final choice.

Fourthly, Stage I shows that the selection criteria put forward by the literature (price, quality and delivery; refer to 2.7.2 on page 65) are still the most popular ones for selecting suppliers among the managers interviewed. Interestingly, the importance of price became less over time. The change of importance among the classic criteria confirms the trend in America described by Wilson (1994). Also, quality has replaced price in terms of importance in supplier selection processes in the U.S. This condition may be understood as a first phase, before aspects of the business relationship become critical differentiators in the selection decision (cf. Choi and Hartley, 1996). Does German manufacturing follow in taking softer relationship criteria into account when selecting suppliers? Stage I of this investigation cannot answer this question.

Fifthly, there are two main dimensions in supplier relationships. Whereas the objective level holds the tangible assets of an offer, the subjective level incorporates the intangible characteristics (see Table 5-7 and Figure 5-7). In this respect More and Cunningham (1999: 107) conclude "firms will attempt to maximise economic value by selecting partners who have a reputation for exhibiting cooperative and trusting behaviour." It is worth noting that every respondent had some difficulties expressing views on supplier relationships; many were even surprised at being asked the question directly. The hesitation typically resulted in short answers. This might highlight the fact that supplier-manufacturer relationships are not that often talked about, on the one hand. Friedrich et al. (1995) explain that relationships, and in particular partnerships, are underdeveloped in Germany today. On the other, the answers illustrate the point that a diversity of relationship perspectives exists. Interestingly, research has shown that managers perceive partnerships with their suppliers differently (cf. New and Payne, 1995). Relationships are driven by deeply held personal

perceptions and unfortunately, the telephone interviews did not allow the researchers to explore this issue at the subconscious level to explain the apparent differences.

Sixthly, supplier relationships have changed. Whereas some respondents perceive it to be closer (which accords with the view of Hessenberger, 1991; Matthyssens and Bulte, 1994; Goffin et al., 1997; refer also to 2.3.3.3 on page 35), others describe it as more distant. The study was able to lay open the process of relationship change, consisting of the triggers, the transition phase, and the desired performance outcome. Unfortunately, Stage I could not provide more detailed information, exploring the reasons why some supplier relationships became closer while others became more distant. This point leads into the limitations of Stage I that will be addressed next.

5.8 Limitations of Stage I

Despite the insights gained, Stage I can be criticised at this point:

1. Although this part of the study was able to show that differences exist in terms of the perception of supplier relationships, the telephone interviews could not adequately explain them.
2. The quality of relationships could not be explored – soft/intangible factors have been mentioned infrequently. To explore this aspect, the personal constructs of individual managers, which explain the quality of relationships, have to be uncovered. Stage I could not go beyond the surface level.
3. While softer relationship factors might impact on the selection of suppliers, it became obvious that manufacturers have not included these into the official selection criteria list. A reason for this might be that companies are not clear about how to measure these aspects or that these aspects do not influence the selection of suppliers at all. Again, Stage I could not shed light on either of the two possibilities.
4. The focus was not on a specific purchasing situation, but on purchasing in general. This limitation allowed a great degree of variance.

5. Although the emerging models (i.e., visualising the nature and changes in relationships as well as the supplier selection process), are generic, they also appear too general. Three questions are left unanswered. First, do the models represent the three topics comprehensively, albeit on a general level? Second, what are the factors explaining the basic dimensions of the models (e.g., the subjective and objective level of the relationship in Figure 5-7)? Third, how are the three models related to each other? In order to find the answers to these questions, the researcher will need to present the models to managers in the field so that their views can be captured. This has not been done in Stage I, although the observation made seems to carry theoretical promise in the subsequent stages.
6. In order to fully understand supplier relationships – particularly the perceived quality of those – and selection processes, all key managers that deal with suppliers have to be interviewed (typically three are involved in the selection process, refer to Table 5-4). A key informant cannot represent all possible perceptions in terms of *what the quality of relationships consists of*, let alone how *relationship quality is connected to the selection of suppliers* in turn.
7. The process sector (n=4) is too small to see the wider implications for this specific sector and is negligible when conducting Stage II and III.

5.9 Summary and Conclusions

In Stage I, the survey research strategy was followed and 34 telephone interviews were conducted with senior managers in three German industry sectors: engineering, electronics, and process (this represents a response rate of 68%). All managers were responsible for supplier management.

The researcher set out to fulfil three goals: 1) determining the importance of supplier management, 2) investigate the supplier selection process, and 3) exploring supplier relationships. The three issues not only shed light on whether the research question is suitable to pursue further, but also to sense whether practitioners are motivated to take part in the subsequent research stages.

The data analysis is conducted based on detailed transcripts of the interviews (supplemented by brief contact summary sheets). Two coding techniques helped in sorting and analysing the qualitative data with the computer programme *NVivo*: initial first-level coding and pattern coding.

The results of Stage I indicate: Firstly, managing suppliers is a critical issue in German manufacturing industry. Secondly, purchasing, quality management, and R&D are the three functions typically involved in selecting suppliers. Thirdly, a Five-Step Supplier Selection Process model has been developed highlighting two different selection approaches. Fourthly, price, quality, and delivery are the official criteria when describing the selection process. However, some manufacturers mentioned intangible aspects when selecting suppliers. Fifthly, managers perceive various degrees of relationships with their suppliers and often the term 'partnership' has been used to describe them (see Table 5-7 on page 111). Furthermore, a tangible objective and an intangible subjective relationship level became apparent. Sixthly, a model has been developed indicating the change that has taken place in supplier relationships.

Lastly, but importantly, managers are sympathetic towards the proposed research project, which encourages the commencement of Stage II. This means that the research question is not only theoretically sound, but it is also relevant to practice. Unfortunately, Stage I was unable to explain either RQ or a potential RQ-Loyalty link. The speculative nature of this link demands a more detailed subsequent research stage. Stage I suffered from several limitations and Stage II had to address and overcome them.

CHAPTER SIX

6 STAGE II: EXPLORING THE QUALITY OF SUPPLIER-MANUFACTURER RELATIONSHIPS 121

6.1 INTRODUCTION 122
6.2 RESEARCH STRATEGY: CASE STUDY 122
6.3 METHODOLOGY (QUALITATIVE) – IN-DEPTH INTERVIEWING, DOCUMENTS, PLANT VISIT 123
6.4 SAMPLE AND UNIT OF ANALYSIS 142
6.5 DATA ANALYSIS 150
6.6 FINDINGS 162
6.7 DISCUSSION OF FINDINGS AGAINST THE BODY OF KNOWLEDGE 184
6.8 LIMITATIONS OF STAGE II 189
6.9 SUMMARY AND CONCLUSIONS 192

6 Stage II: Exploring The Quality of Supplier-Manufacturer Relationships

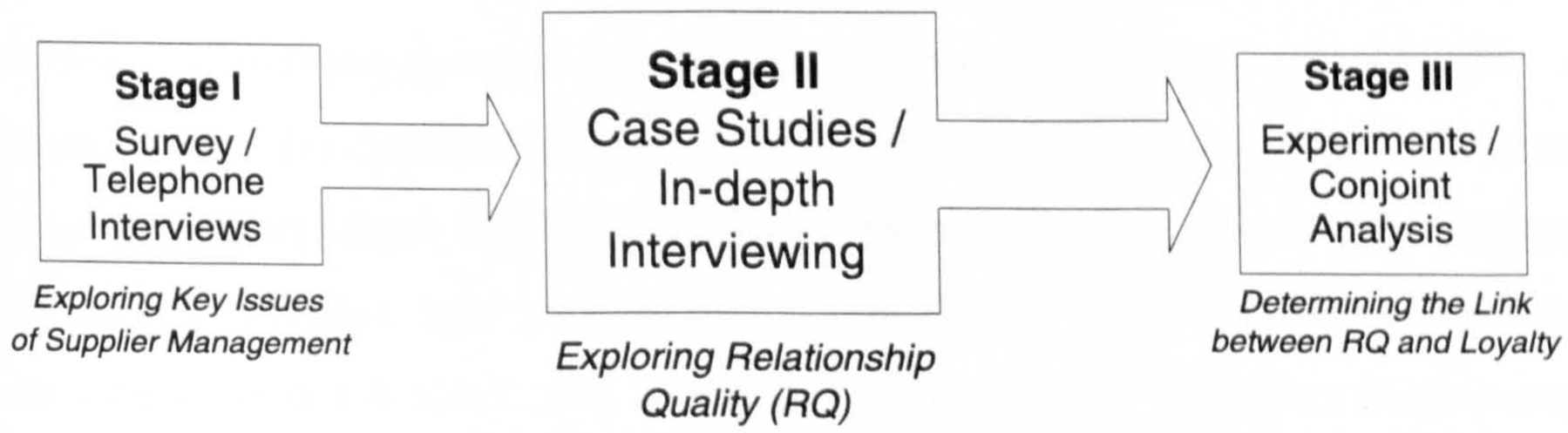


Figure 6-1: Stage II of the Research

6.1 Introduction

Stage II strove to examine the constructs of the quality of supplier relationships. In order to meet the research objective, case studies have been carried out. The main methodologies, which were used in the case studies, are (short) fully structured interviews, the repertory grid technique (i.e., a method suitable for guiding unstructured interviews) and subsequently, semi-structured interviews. This chapter will discuss Stage II of the research in detail, starting by outlining the research strategy.

6.2 Research Strategy: Case Study

In addition to the telephone survey in Stage I, case studies were conducted among a number of questionnaire respondents. The strategy was appropriate not only to clarify and expand on the data they supplied in the previous stage, but even more so to explore the relationship quality concept in-depth.

A case can be understood as a bounded system, which is determined by *place* and *time* and concerned with a *particular research problem* (Creswell, 1998). Put differently, the case study strategy sets the boundaries in which a phenomenon becomes investigated. Clearly defined boundaries allow cross-comparisons of findings between cases in order to learn the most about the research problem.

The case study strategy is well-suited when the research phenomenon rests in a new research area (Hartley, 1994; Eisenhardt, 1989) and this circumstance explains why case studies are often associated with an exploratory qualitative research paradigm. Yet, "case studies can include, and even be limited to, quantitative evidence," according to Yin (1994: 14). Table 6-1 depicts how the data is typically collected in this type of research strategy.

Data Collection Activity	Case Study
What is traditionally studied (site/individual[s])?	*A bounded system such as a process, activity, event, program, or multiple individuals*
What are typical access and rapport issues?	*Gaining access through gatekeeper, gaining confidence of participants*
How does one select sites or individuals to study (purposeful sampling strategies)?	*Finding a "case" or "cases," an "atypical" case, or a "maximum variation" or "extreme" case*
What type of information is typically collected (forms of data)?	*Extensive forms such as documents and records, interviews, observation, and physical artifacts*
How is information recorded?	*Field notes, interview and observational protocols*
What are common data collection issues?	*Interviewing and observing issues*
How is information typically stored?	*Fieldnotes, transcriptions, computer files*

Table 6-1: Data Collection Activities and the Case Study Research Strategy

Source: Based on Creswell (1998: 112-113).

The table above characterises case studies in terms of the general data collection activities. The typical kind of information, as well as how it is actually collected (i.e., methods) is highlighted in grey. Interviews and observations are commonly employed methods, which, in Yin's (1994: 13) words, characterise "the case study as a research strategy comprises an all-encompassing method – with the logic of design incorporating specific approaches to data collection and to data analysis."

The case study approach is an appropriate research strategy to investigate in the quality of supplier relationships, because of its explorative character (cf. Eisenhardt, 1989; Yin, 1993, 1994). The particular methods used will be introduced next.

6.3 Methodology (Qualitative) – In-depth Interviewing, Documents, Plant Visit

The second stage of the study was concerned with the exploration of the 'quality of relationships as perceived by customers' [i.e., manufacturers] and the

methodology of Stage II has recently been published by Lemke et al. (forthcoming).

Creswell (1998: 16-17) recommends a qualitative approach, when the researcher is willing to do the following:

- Commit to extensive time in the field;
- Engage in the complex, time-consuming process of data-analysis – the ambitious task of sorting through large amounts of data and reducing them to a few themes or categories;
- Write long passages, because the evidence must substantiate claims and the writer needs to show multiple perspectives; and
- Participate in a form of social and human science research that does not have firm guidelines or specific procedures and is evolving and changing constantly.

After the researcher committed himself to a qualitative approach in Stage II, two options became available to shed light on the research question: a) assessing the appropriateness of general qualitative research methods; and b) evaluating the suitability of particular qualitative methods used for eliciting personal constructs. Table 6-2 displays the potential options:

General Research Methods for Exploring Qualitative Phenomena	Specific Research Methods for Exploring Personal Constructs
• Participation in the setting (or participant observation) • Direct observation • Analysing documents and material culture	• ABC • Self-characterisation • Drawings
• In-depth interviewing	• Repertory Grid

Table 6-2: Potential Qualitative Research Methods for Exploring Personal Constructs

Source: Based on Marshall and Rossman (1999) and Tindall (1994).

In qualitative research, four primary research methods can be applied for developing a theory, according to Marshall and Rossman (1999), and these are displayed in Table 6-2 on the left-hand side. Besides, one can find many other supplementary techniques – Marshall and Rossman (1999) referred to these as

'secondary methods.' The repertory grid technique is one approach to explore personal constructs, as Tindall (1994) points out, and it is a 'secondary method' of in-depth interviewing on the right-hand side in the table. The connection is visually indicated in grey and will become more obvious in the discussion that follows. After careful consideration of all options (refer to Appendix 4 on page 326 for a discussion on the rejected techniques), it was decided to adopt the in-depth interviewing method including the repertory grid technique to unmask the personal constructs of participating managers. This approach to theory building represents a more inductive, inferential process based on the notion that individual practitioners develop personal rules of action that can be codified into a theory. In this vein, Partington (1998: 3) highlights the fact, "there is a persistent call from a significant minority of writers for more inductive, *theory-building* studies, using empirical data to build theories which are useful and relevant." In this spirit, in-depth interviewing was conducted.

6.3.1 In-depth Interviewing

Within the case study research strategy, the interview method is often employed (Kvale, 1996; Yin, 1994). An interview is "a conversation with a purpose" (Kahn and Cannell, 1957: 149, as cited in Marshall and Rossman, 1999: 108); so, any form of verbal conversation can be categorised as an interview as long as a pre-defined aim is addressed. Three forms of this method exist:

- Telephone interview;
- Focus group interview; and
- One-on-one / face-to-face interview.

Although *telephone interviews* have many advantages (as discussed earlier), the downside is that the communication 'from the distance' hinders the researcher in investigating a psychological topic in-depth. This drawback was one limitation of Stage I. Stage II needed to go beyond the surface level and the interview by telephone was little suited to exploring the personal relationship quality constructs any further.

Focus group interviews are particularly advantageous "when the interaction among interviewees will likely yield the best information, when interviewees are similar and co-operative with each other, when time to collect information is limited, and when individuals interviewed one on one may be hesitant to provide information" (Creswell, 1998: 124). The risk in Stage II was that the group setting suppresses personal constructs of individuals. This could happen through the psychological problem of 'groupthink' (Janis, 1982), for instance, or other intragroup processes and group structures. The drawback holds especially true, if one takes the hierarchical differences of participants into account (e.g., MD vs. purchasing function). Focus group interviews were deemed inappropriate for exploring the psychological research issue, as not all respondents would be open and honest in a group environment.

One-on-one interviews or *face-to-face interviews* were best suited, as they permit the researcher to explore the personal attributes of relationship quality of individual managers. Three forms of structuring this particular interview procedure can be differentiated (based on Robson, 1996: 230-231):

- *Fully structured interview*, with predetermined set questions asked, and the responses recorded on a standardised schedule;
- *Unstructured (completely informal) interview*, where the interviewer has a general area of interest and concern, but lets the conversation develop within this area;
- *Semi-structured interview*, rests between the fully structured and unstructured modes, as the researcher has worked out a set of questions in advance, but is free to modify the order of the questions as well as to leave out inappropriate ones or to include additional ones.

Whereas the fully structured interview requires a thoroughly prepared interview schedule in a standardised format, the other two options allow the researcher a higher degree of freedom for adapting the interview process to the particular situation. Overall, all three modes of interview are appropriate research techniques within this case study strategy, as they will serve different purposes in the second stage of the investigation. The interview methods will subsequently be described.

6.3.1.1 Fully structured Interview

The fully structured interview requires the investigator to have a complete understanding of the particular part of the investigation. Although the fully structured interview shows little applicability to exploring the issue of relationship quality, it was suitable for collecting background information about the managers in terms of:

- Function;
- Area of responsibility; and
- Experience in managing suppliers.

The fully structured interview was brief. The purpose was to ensure that the respondent was a key-informant and to obtain background information from all managers for statistical purposes. For exploring the quality of supplier relationships, however, this mode of interviewing was too formal and too structured. The unstructured interview technique appeared to be a better option under the guidelines of the repertory grid technique.

To start with, the fully structured interview not only aimed to retrieve the background information, but also to quickly establish a rapport with the interviewee without influencing the participant before entering the repertory grid exercise.

6.3.1.2 Unstructured/Informal Interview Technique Conducted in the Form of Repertory Grids

The term *unstructured interview* (also called 'unstandardised interview' by Kvale, 1996; and 'intensive interviewing' by Lofland and Lofland, 1995) gives the impression that the conversation between interviewer and interviewee is uncontrollable and it quickly slides out of hand. Yet, even this type of interview procedure, as Kvale (1996: 85) explains, "tends to be a rather standardised affair." Lofland and Lofland (1995: 18) echoes Kvale's point and even define an unstructured interview as "a guided conversation whose goal is to elicit from the interviewee,..., rich detailed materials that can be used in qualitative analysis."

This situation prompts the question of how to guide the unstructured interview process without imposing the researcher's opinion on the respondents.

The repertory grid technique can be understood as one guideline of informal interviews, as the structure of the interview is inherent in the exercise. It has been established as a scientifically respectable technique, where the researcher does not bias the answers. We must bear in mind that relationships are a relatively complex topic. So, it is crucial to probe their meaning and move beyond managers' views that are based on clichés, such as "high-quality relationships are established with our best suppliers." The technique is particularly useful for exploring topics where interviewees find it hard to articulate their opinions and experiences with clarity (Hussey and Hussey, 1997; Goffin, 2002). Thus, it is one way of giving the respondents the opportunity to express their own view on a particular subject (Brown and Detoy, 1988). Burr and Butt (1992: 121) support this impression in saying that "language is often both ambiguous and inadequate at describing our meanings. A more satisfactory way of approaching meaning is by investigating relationships between constructs, and their implications for each other. It was for this purpose that the repertory grid was devised." Overall, the technique is particularly appropriate when respondents are unable to articulate complex or emerging issues and when tacit knowledge cannot be conveyed directly (i.e., the respondent knows the answer indirectly).

Kelly (1955a, 1955b, 1963) was a mathematician by training who later qualified and worked as a clinical psychologist; he developed the repertory grid technique in the 1950s. It is based on his central belief that everyone, consciously or sub-consciously, develops categories to explain all of the situations they face. The technique enables such categorisations to be identified during an interview. The name 'repertory grid' does not come from 'repetition,' but from the fact that the technique will probe an individual's 'repertoire' of categorisations for the range of situations, physical entities, etc. that they have encountered. This repertoire is captured in a grid, which will be briefly introduced at this point (see Figure 6-2); but the thesis will return to it in greater detail later.

Originally, the technique was used to explore how patients viewed their relationships with friends and their families and it "is an attempt to stand in

others' shoes, to see their world as they see it" (Fransella and Bannister, 1977: 5). According to the Personal Construct Psychology (PCP) on which the technique is based, two individuals have similar psychological processes in the research context, if they construe events similarly. The technique can ideally be used as a diagnostic tool, providing a mix of qualitative and quantitative data. Visually, the repertory grid presents a matrix format, as outlined below:

	Elements						
	Self	Mother	Best friend	A person I admire	Someone I dislike	Spouse	
Constructs (+)							*Constructs (-)*
Sensitive							Insensitive
Strong							Weak
Adventurous							Not a risk taker
Attractive							Unattractive
Neat							Untidy

Figure 6-2: The Repertory Grid Matrix

Source: Based on Burr and Butt (1992: 121).

Figure 6-2 displays the two dimensions of the repertory grid, the elements (i.e., on top of the matrix) and the constructs (i.e., the first and the last column). In order to arrive at a completed repertory grid matrix, three steps need to be performed, according to Gammack and Stephens (1994):

1. Elicitation of elements – identifying the entities in the area of construing to be investigated;
2. Elicitation of constructs – identifying the distinctions which can be applied amongst theses elements; and
3. Construction of a matrix (grid) – evaluating the elements for each construct.

Before outlining the individual stages of the technique and their applicability to the present investigation, it might be helpful to clarify the relationship of the key terms used in personal construct psychology (PCP) first, as they are often confused with each other.

A concept, according to Burr and Butt (1992: 14), is "a kind of category into which things are (metaphorically) put." Construing, on the other hand, "is how we use concepts" (ibid.: 14). Thus, constructs are "questions we pose ourselves in

order to make sense of our experience.,..., Constructs, unlike concepts, always have an opposite end to them, that is they are bipolar," as the authors (ibid.: 15) point out. This biplarity can be seen as a *similarity-difference dimension* (Tindall, 1994). Finally, the subject of people's experience – or 'the question' as it is sometimes referred to – can be described as an 'event.' Burr and Butt (ibid.: 15) used the event-term to refer to "any object of a construal or question." Visually, the connection of the four key terms can be displayed as follows:

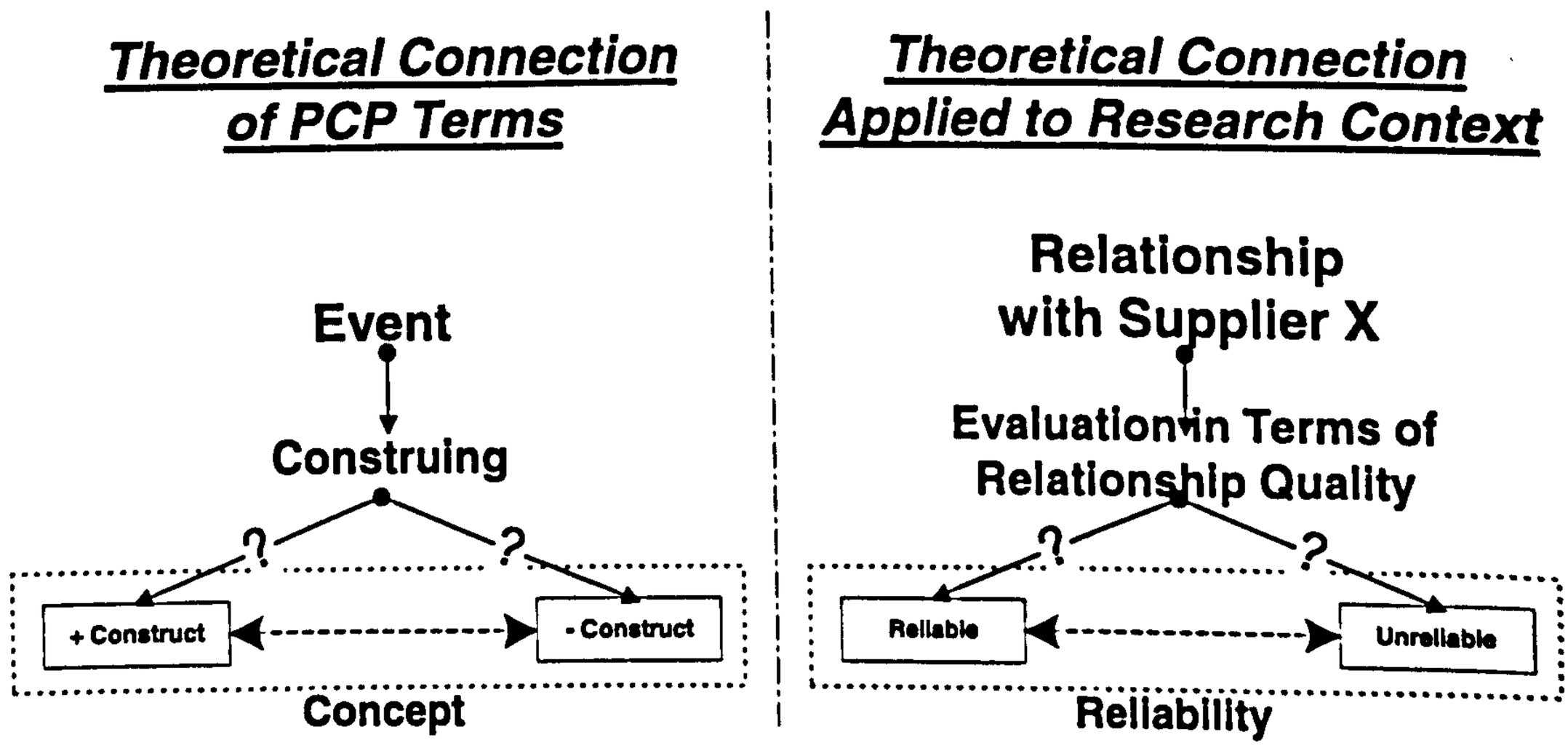


Figure 6-3: Constructs, Concepts, Construing and Events in Theory and Applied to the Research Context

Figure 6-3 portrays the relationship of the four PCP terms in theory (on the left-hand side) as well as in the research context (on the right-hand side). Events (i.e., 'supplier relationships' in the present study) can be construed in a number of ways, depending on the individual's construct system. Construing is done in terms of the quality of relationship the respondent has with the supplier. The '+ construct pole' is used, if the event is interpreted as being similar to the construct in the construing process (e.g., 'supplier X is more reliable than unreliable in the relationship'). Conversely, if the event is interpreted as being different to the construct, the '- construct pole' is used. The '- construct' side is therefore also referred to as the *contrast pole*. Construct and contrast poles can be found on a dichotomous dimension, which circumscribes a single concept (e.g., reliability) of the individual's construct system (i.e., the subconscious connection of all mental

concepts explaining the quality of supplier relationships in this study). In other words, concepts are "facts of consciousness,..., [which] are associated with representations of linguistic signs or sound patterns by means of which they may be expressed," according to Saussure ([1972] 1983: 11-12). This is the reason why the repertory grid technique can easily be used in an unstructured interview format. The objective is to tease out the underlying constructs and the technique focuses the interview on this task. The primary question, which PCP addresses, might thus be *'How do individuals construe events into concepts consisting of bipolar constructs?'* It is due to the PCP-focus that the repertory grid technique originated in the world of therapy.

Attention can now turn to the elicitation of elements as well as to the elicitation of constructs and the subsequent evaluation stage (refer to Appendix 5 on page 331 for the guidelines used in the fieldwork).

6.3.1.2.1 Elicitation of Elements

Elements "define which particular bit of a person's world is being examined" (Brown and Detoy, 1988: 427). They are used as a means of extracting all the relevant constructs and are "dictated by the research question" (Smith, 1995b: 176). The elements would thus be 'existing suppliers associated with a certain quality level of the relationship.' Although the researcher could provide the elements in abstract terms, such as 'the highest supplier relationship quality,' 'high supplier relationship quality,' 'the lowest supplier relationship quality,' etc., the elements need to vary on important dimensions from the participant's standpoint (Tindall, 1994). It is doubtful whether such abstract descriptions of elements provided by the researcher are meaningful enough for the individual managers to go beyond mere superficial descriptions of relationship qualities. Given the lack of the researcher's insight into the actual composition of a given supply base, the elements should be elicited from the respondents so that the differences and similarities of relationship qualities can be identified.

Furthermore, it would be possible to ask the respondent to nominate suppliers with the highest quality of relationships only. Yet, the similarities would outweigh the differences, as the suppliers would be in the same 'relationship quality class.'

Consequently, a contrast of elements needs to be integrated in the research design. One can draw from this discussion that a grading of the quality of supplier relationships is better suited for exploring the issue at hand. In order to elicit the important elements, the respondent has to name a number of suppliers identified with distinct relationship quality classes. Recent research has shown that managers can clearly distinguish between 'good' and 'poor' relationships in a supply chain context (Naudé and Buttle, 2000), for instance. So, managers are generally able to differentiate relationship qualities and for this particular piece of research, three basic options are available to achieve the aim:

1. Listing a number of suppliers on a continuum ranging from 'the best relationship quality' to 'the worst relationship quality;'
2. Nominating suppliers inherent in the two extreme relationship quality classes, for example, 'best' and 'worst;' and
3. Naming a number of suppliers identified with distinct relationship quality classes, in terms of 'the best relationship quality,' 'average relationship quality' and 'worst relationship quality.'

The first option would be problematic for the participant to carry out, as every element would represent a relationship quality class in its own right. Separating the 'best relationship quality' from the 'second best,' for instance, appears an inconclusive judgement.

As the purpose of the study is to decompose the quality of supplier relationship on bipolar *similarity-difference dimensions*, it could be argued that suppliers in the extreme 'relationship quality classes' are best suited to meet the objective (i.e., Option 2). Yet, the polarisation of relationship quality classes might force 'extreme' constructs, misrepresenting the emerging picture of relationship quality. For this reason, the third option is favoured as it covers the full spectrum of supplier relationship qualities, while not asking the respondent to grade suppliers to an unrealistically detailed degree.

The important point to keep in mind is that individuals on the manufacturer's side have to be able to clearly differentiate between the three classes of

relationship qualities and, furthermore, these classes have to be perceived as relevant to the business context.

Finally, the overall-number of elements needs to be determined. Although there is no strict guideline, researchers typically work with 6-10 elements – more than 10 are typically unmanageable (Tindall, 1994). It was decided to work with 9 elements; i.e., the respondent's first task was to name 3 suppliers per 'relationship quality class' before the elicitation of constructs could begin.

6.3.1.2.2 Elicitation of Constructs

Constructs are bipolar dimensions, consisting of two opposing poles. These are defined by the research participants themselves (Brown and Detoy, 1988), as they are criteria by which individuals look at situations. In this vein, Levy and Dugan (1956: 53) define a construct as "a way in which two or more things are alike and at the same time different from one or more other things." Although Brown and Detoy's (ibid.) definition might imply that constructs are always elicited, it is worth mentioning that the researcher has the opportunity to provide constructs instead. This is a crucial decision to be made in the initial phase of the research process and no definite evidence exists as to why 'provided constructs' should not be used.

Due to the novelty of the research phenomenon, the literature cannot offer sufficient constructs. Consequently, the elicitation of constructs is the preferred mode in this respect and is in line with the theoretical basis of the repertory grid technique – personal construct psychology – which emphasises individuality.

Kelly (1955a) presents the *triadic method* where the researcher systematically presents three element cards (i.e., labelled with one supplier name on each) to the respondent. In this triadic way, the respondent is asked *in what way are two of the three suppliers similar to each other and different from the third in terms of the quality of the relationship*. The triad is thus used to stimulate the generation of constructs. Note how the procedure reflects the definition of a construct by Levy and Dugan (1956) above.

The construct can be expressed in a word or a phrase. This is attempting to help the respondent to draw on his own categorising scheme and it is possible to

elicit the construct pole (e.g., reliability). Afterwards, the researcher has to recognise the symmetry of the construct. Levy and Dugan (1956: 53) recommend that the respondent is "then asked to indicate what he feels to be the opposite of the construct he has just listed." In other words, the respondent is asked to name the opposite of the construct pole and so the contrast pole will be elicited (e.g., unreliability).

It is vital to be clear about the individual's meaning given to each pole, as some constructs are more intangible than others. Presenting the constructs back to the respondents in Stage III should be meaningful to the individuals, rather than merely to the researcher. Charmaz (1995: 36) argues, "paying close attention to respondents' language can help you bridge your research participants' lived experience with your research questions. To do so, you should avoid taking for granted that you share the same meanings as the respondent." So, by probing questions around the respondents' meanings of the elicited construct (e.g., supplier's reliability), it is possible to capture the individuals' meaning for the construct. Harré and Gillett (1994: 21) emphasise "the experimenter or observer has to enter into a discourse with the people being studied and try to appreciate the shape of the subject's cognitive world." This process has been described as *intersubjectivity*, which "refers to the production and maintenance of mutual understanding in dialogue, of mutual intelligibility between participants" (Drew, 1995: 77).

The next step allows a variation, as, for instance, the triad of cards can be replaced with three new cards or only one card could be replaced by another each time. The latter approach is termed the 'sequential form' (Fransella and Bannister, 1977). It is a systematic ongoing process, where the fourth card replaces the first card and then the second card is exchanged for the fifth, etc. The risk is that the new card might not influence the relationship between the other two cards and the newly elicited construct may not be so important. The participant might provide a new construct only to avoid repeating the previous one. It is advisable to select only card combinations where at least two elements will be changed between each triad, as this is important to obtain meaningful constructs (Bender, 1974). The common approach, however, is to present a new randomised set of three cards

until all possible combinations have been covered and this tradition was followed in the present investigation.

A great number of triads could be presented. Theoretically, 84 combinations of triad would have been possible, as shown in the table below.[11]

Elements	Combinations of Triads
3	1
4	4
5	10
6	20
7	35
8	56
9	84
10	120
11	165
12	220

Table 6-3: Triad Combinations by Number of Elements

The table brings to mind that the number of card combinations is dependent on the number of elements – this relationship is over-proportional. In terms of the required quantity of constructs elicited in a single repertory grid session, Tindall (1994: 76) recommends that "ten to fifteen constructs often provide a useful picture.,..., [Furthermore, it] is assumed that the constructs are permeable, i.e., they can and will be applied to new elements." Therefore, only a maximum of 20 triads was used. It was deemed unlikely that a respondent would have exceeded 20 constructs and the exercise could be stopped before reaching the maximum. In this approach, Tindall's recommendations have been followed, on the one hand. Of course, a limited number of triads reduces the risk of fatiguing the respondent, which is an advantageous side effect. In the case of not reaching the construct number, on the other hand, a time limit of one hour was predetermined in order to avoid exhaustion of the participant.

The selected triads were randomised and the requirements were a) one of the elements has to be shown at least once in the session; b) triads are sufficiently different in terms of the contrast of supplier groups; and c) at least 2 elements will

[11] Goffin (2002) explains that the number of card combinations *C* is based on the mathematical formula of *y* elements (y = 3 for triads) that can be selected from a total of *x* elements. This results in the following formula: $C = x! / [y!(x-y)!]$; where x! (called 'x factorial') = $9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$, if x = 9.

need to be changed per triad in order to achieve a higher contrast. In short, the selected triads are the most varied in order to identify the most important constructs. Figure 6-4 shows the triad combination used.

No. of Triad	Construct	Suppliers								
		1	2	3	4	5	6	7	8	9
1)		*	*	*						
2)					*	*	*			
3)								*	*	*
4)		*			*			*		
5)			*			*			*	
6)				*			*			*
7)			*		*		*			
8)				*		*		*		
9)					*		*		*	
10)						*		*		*
11)		*		*		*				
12)			*			*			*	
13)				*			*			*
14)		*			*				*	
15)			*			*				*
16)		*	*						*	
17)		*				*		*		
18)			*				*			*
19)				*				*		*
20)			*		*				*	

Figure 6-4: Order of Triads

In the figure, the nine elements of the technique are shown across the top of the grid. The cards were in a random number sequence and the researcher presented triads in a systematic way. Before starting with the fieldwork, the researcher randomised the element numbers from 1-9 to 1, 5, 8, 4, 6, 9, 2, 3, and 7. The randomised elements were then classed as 1, 5, 8 for high quality relationships, elements 4, 6, 9 for average quality relationships, and elements 2, 3, 7 for low quality relationships. The number was written on the back of each card, indicating to the researcher to which RQ-class the supplier-card belongs. This means that the supplier names of high-quality relationships were written on cards 1, 5, and 8 etc. In the grid, however, the supplier names are noted from 1 to 9, which mixes the quality classes up again. Down the side of the grid are the constructs elicited during the interview. The randomly selected first triad consisted of Elements 1 (i.e., high quality class), 2, and 3 (i.e., both represent low quality supplier relationships) and this is indicated with asterisks in the grid. The next triad

consisted of elements 4, 5, and 6 and so forth. Interestingly, one can assume that the explicit knowledge will be elicited early on in the process (see figure below).

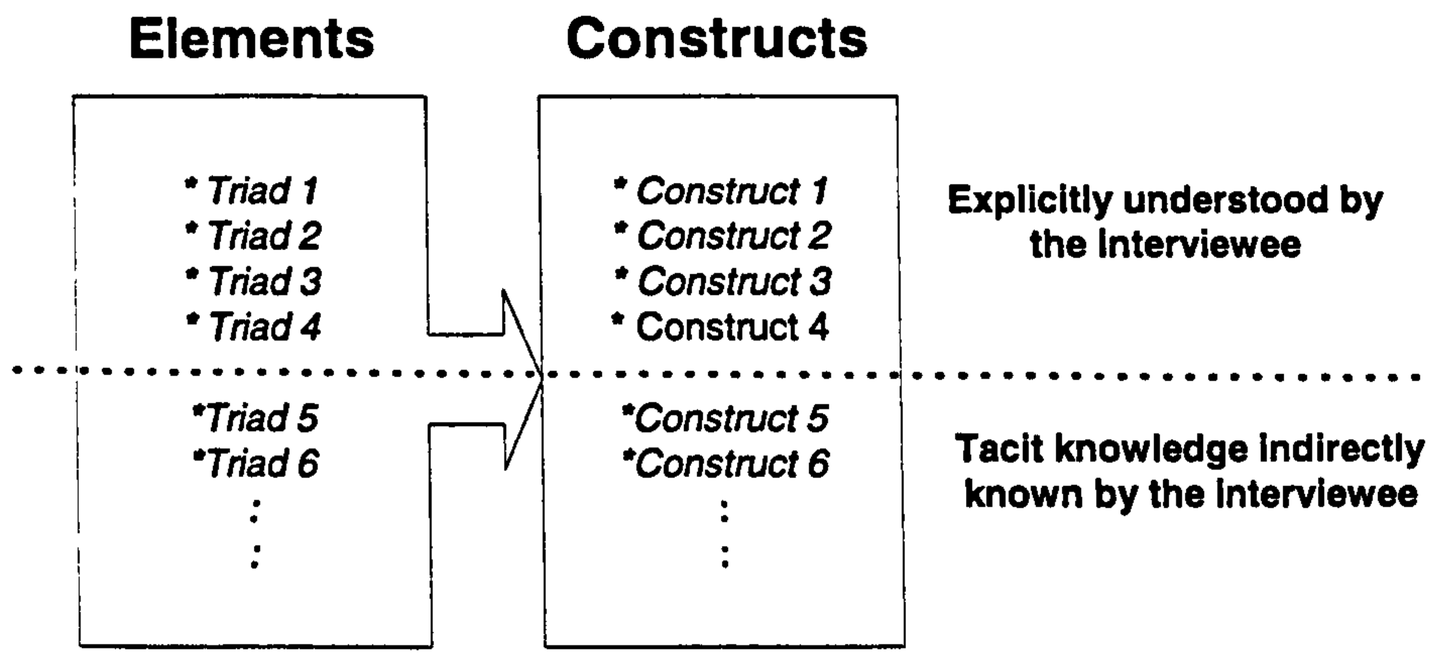


Figure 6-5: Explicit and Tacit Knowledge and the Repertory Grid Technique

The interviewee is not allowed to repeat a construct and so each new triad elicits at least one new construct, which forces the interviewee to think deeply about supplier relationships. Figure 6-5 indicates that respondents tend to reveal their tacit knowledge about a topic after the explicit constructs have been mentioned in the repertory grid exercise. Therefore, at this stage of the exercise, the more insightful constructs are bound to emerge. The point when the researcher is able to tap into the tacit knowledge, however, varies from respondent to respondent.

After the constructs have been elicited, the repertory grid method has to proceed with its last step – the evaluation of the grid.

6.3.1.2.3 Construction of the Matrix (Grid)

The *grid* consists of a cross-tabulation of constructs against elements, as described earlier. The concluding step is to rate each element (i.e., all supplier relationships within the three quality classes) on the elicited constructs. At this stage, the construct is still fresh in the respondent's mind and the interviewee does not need to revisit its meaning. The outcome is quantitative data on a perceptional scale. Although the constructs may be measured on bipoloar 2-point scales or other means up to 11-point construct scales, Tindall (1994: 77) recommends, "each element [should be] rated by the participant, on each construct, on a scale of 1-3, 1-5 or 1-7, whichever seems most suitable." Gammack and Stephens (1994) confirm that a 5-point or 7-point Likert scale is typically used.

The point to bear in mind is, that the scale should neither be too wide nor too narrow, as it has to adequately present the respondents' standpoints. Fransella and Bannister (1977) argue that respondents tend to ignore values 2 and 6 on a 1-7 scale; thus, effectively reducing the scale to 5 points. A 7-point scale places more burden on the respondent compared to a 5-point scale, partly explaining Fransella and Bannister's observation. In other words, scales that go beyond the 5-point scale in order to rate into finer categories do not often add much to the usefulness of the ratings. So, a 5-point scale was used in the study and scale anchors were the *construct pole* (+2), *indifferent* (0) and the *contrast pole* (-2). The rating exercise indicates the relative importance of constructs while explaining the quality of supplier relationships. It could be that some constructs cannot be evaluated for certain elements/suppliers, i.e., not every construct might be applicable to all elements from the respondents' point of view. The researcher will still need to note these cases for keeping the option open to analyse them later if required, as Kelly (1963) points out.

It goes without saying that tape recording the repertory grid exercise is vital for subsequently interpreting construct meanings. The analysis of the grids and the interpretation of the results represent the next two steps of the repertory grid method (Smith, 1986a) and will be presented in the appropriate section dealing with the analysis of findings later.

6.3.1.2.4 The Meaning of Constructs

With regard to the meaning of personal constructs, one point is particularly worth noting: Kelly (1955) argues that every construct has a 'range of convenience.' In this range, the meaning of a construct is most applicable and meaningful; if a construct is used beyond its range of convenience, the meaning alters, assumes another meaning, or might become meaningless altogether. For instance, the construct 'cold' when describing the weather has got another meaning when describing the supplier relationship – the meaning has changed its character. Thus, Parker (1994: 10) argues, "all meaning is indexical, which means that it will change as the occasion changes and as it is used in different ways." This potential problem has been addressed in a philosophical sense by poststructuralism, which

points to the situation where words have different meanings depending on the context in which they are used (Burr, 1995).[12] Tindall (1994: 88) echoes the point just made by saying "personally relevant constructs applied in a specific context are not necessarily applied in other settings." To find the answer to the question of 'what is a context,' Lemke, J. (1995: 173-174) argues "what matters is *when* and *for what* it is a context, when and for what it is relevant to constructing/construing the meaning.,..., All meaning is relational. Nothing has meaning in and of itself. Something has meaning only in terms of how we relate it to other things, how we contextualize it."

From the discussion on construct meaning it follows that the research boundaries have to be clearly defined. Baker and Jenkins (1993) sound a cautionary note about the operationalisation of a specific research context and note that it has to be capable of dealing with this potential problem. This point will be re-addressed in greater detail later. Now, the semi-structured interview technique that followed the repertory grid exercise will be discussed.

6.3.1.3 Semi-structured Interview Technique

After the repertory grid exercise had been completed, the researcher had the opportunity to ask follow-up questions. As questions needed to be addressed about the supplier selection process, it was critical to conduct the semi-structured interview after the repertory grid exercise. As a result, the researcher avoided introducing an ordering-effect, which could potentially bias the elicited relationship quality constructs towards the selection of suppliers in the repertory grid session. The semi-structured interview process allowed the researcher to ask probing questions along the lines of the research interest (refer to Appendix 6 on page 334 where the semi-structured interview is outlined in more detail). The interview technique was able to unmask and clarify issues related to supplier relationships not easily discernible from the telephone interview data of Stage I.

[12] Poststructuralism, according to Burr (1995: 105), "points out that the meaning of signifiers (such as words) is constantly changing, is context-dependent and not fixed. Words mean different things in different circumstances, depending upon who is using them, when, on what occasion, and upon the context of the rest of their talk."

A probe can be understood as "a device to get the interviewee to expand on a response when you intuit that she or he has more to give" (Robson, 1996: 234). In other words, the probing process can be expanded to follow up the participant's responses to more specific concerns. This 'path of questioning' could be seen as a rhetorical funnel, which "starts with a broad question and progressively narrows down to the important specific point or points" (Kerlinger, 1992: 443). Smith (1995b) describes this part of an interview process directly as the *funnelling technique*. The researcher concentrated on three main areas in the semi-structured interview:

- *Exploring the nature of supplier relationships* (completion of Stage II).
- *Exploring supplier selection processes* (preparation of Stage III).
- *Discussing the results of the telephone survey* (validation of Stage I).

The purpose of the semi-structured interview was not only to explore the supplier relationship qualities issue further, but even more to obtain information for the preparation of Stage III. Like Hitt and Middlemist (1979), the researcher used the face-to-face interviews to validate the results discovered in the previous research stage. Presenting the models about the *content of supplier relationships*, *the changes in those relationships* as well as *the steps of the selection process* to the decision makers added to the face validity of Stage I. The questions concerning the three research areas were therefore vital to arrive at a fuller picture of the research phenomenon (cf. Henry, 1998).

6.3.2 Document Analysis

Although the 'document analysis method' was little suited to exploring the quality of supplier relationships, it had potential to collect documented evidence about how suppliers are being selected, the selection criteria used, and who is involved in the process. In short, the respondent's description of the selection procedure becomes validated. The method was used to this end in the investigation. The documents were, for instance, official guidelines illustrating the routines of selecting suppliers and forms showing the official selection criteria.

The researcher recorded these documents in a 'document summary form' as suggested by Miles and Huberman (1994). Although the authors recommended using such a form for every individual document, the researcher used one per company. In this form, only documents directly related to the research question were stored, rather than company brochures, product catalogues etc. An illustration of the summary form used is given below:

Company Code: Date of Visit: Number of Documents:

Documents provided by whom?

Documents provided in interview or sent via mail?

□ Interview □ Mail – when? __.__.00

Name/Description of documents:

•

•

•

Significance/Importance of documents:

Brief summary of contents:

Figure 6-6: The Document Summary Form

The document summary form (outlined in Figure 6-6) contains key points of the documents provided by a given company and were ideal for organising written evidence collected during the plant visit.

6.3.3 Plant Visit

After the in-depth interviews, the researcher got the opportunity to visit the manufacturing site. Due to the medium size of companies, the researcher gained a good overview of the management as well as the production process. In terms of how suppliers are selected, the researcher saw the system in place, i.e., conference rooms, flipcharts comparing options, PC analysis programmes of supplier performance. Moreover, the researcher presented the outcome of Stage I in the form of a report for participants and the researcher also formally had the opportunity to present the conclusions to the study firms during the visit. The interactive presentations in Stage II were used further to refine some details of Stage III. This kind of feedback to respondents is recommended by Miles and Huberman (1994), for checking the validity of results and to learn more about a case.

6.4 Sample and Unit of Analysis

6.4.1 Sample

Case studies, as with any other research strategy, need careful preparation. Harvey and MacDonald's (1993: 224) advice is "to carry out a *pilot* study first, as you would when doing a questionnaire or scheduled interview." Often, authors are vague in outlining what specific issues are important for designing a pilot study. For example, Janesick (1994: 42) argues that a "pilot study allows the researcher to focus on particular areas that may have been unclear previously." Fortunately, Hunt et al. (1982: 269) point to five fundamental questions for pre-testing purposes:

1. What specific items should be pretested?
2. What method should be used to conduct the pretest?
3. Who should do the pretesting?
4. Who should be the subjects in the pretest?
5. How large a sample is needed for the pretest?

The researcher tested all three interview techniques in the pilot phase (question 1 listed above) and this, as 'real' as possible (question 2). With regard to question 3 – *Who should do the pretesting?* – the pretest had to be carried out by the researcher in order to gain research experience first-hand as well as to evaluate the suitability of the methodology for the study.

In terms of *who should be the subjects in the pilot stage* (i.e., question 4), the research differentiated between the *pre-pilot study* and the *pilot study*. The term pre-pilot study is used to indicate that the interviews were held with respondents outside the research context and that the findings have not been considered other than to modify the methodology of Stage II. Friends and colleagues are ideal subjects to pre-pilot the research methods. For the actual pilot study, however, the researcher had to focus on subjects that are directly involved in managing suppliers and ideally within the specific research context.

Finally, the sample size of the pilot phase (i.e., question 5) could not be pre-determined, as the purpose was to improve the methodology as much as possible with the pre-pilot subjects, so that a 'final test run' could be conducted with an actual pilot manufacturing company in Germany.

The researcher drew on the convenience sampling technique in order to check the methodology of Stage II – subjects were colleagues and friends. The research question had been translated into the end-consumer context[13] so that every subject was able to relate reasonably well to the research problem. Table 6-4 provides an overview of the convenience sample.

Sex	Age	Subject-Class
1. Male	36	Colleague: *Administration Staff*
2. Female	22	Colleague: *Specialist in methodology and attitude research*
3. Male	42	Friend: *Business Consultant*
4. Female	46	Friend: *Senior Lecturer at Business School*

Table 6-4: Sample Structure of Pre-Pilots (Convenience Sample)

[13] The first part of the original research question has been formulated as follows: *In commercial relationships, what is relationship quality (RQ) to superstores from the customer's perspective?*

Although the sample is biased towards the academic side, it is neutral in terms of sex as well as with respect to the subject-classes 'colleagues' and 'friends.' It cannot be stressed enough, however, that the pre-pilot convenience sample is outside the research context and due to the initial testing objective, no attempt was made to conduct a scientifically sound pre-pilot sampling pool.

It is worth mentioning that the four pre-pilot tests were not only taken seriously by the researcher but also by all participants, meaning that:

- all subjects were briefed about the upcoming task as well as its purpose – an appointment of approximately 2 hours was scheduled in advance;
- all three interview steps (i.e., structured, unstructured/repertory grid, semi-structured) had been translated into the end-consumer market context;
- the researcher made notes immediately after each pre-pilot and highlighted the lessons learned in terms of the influence on the actual study;
- all conversations were tape-recorded, transcribed, analysed and interpreted;
- all findings (analysis and interpretation) were discussed with subjects on an individual basis on the following day – it was important to confirm whether the researcher captured the precise meaning of each construct;
- all subjects had the impression that the pre-pilot task represented the actual study – although subjects were subsequently informed that this would not be the case.

The shortest pre-pilot interview was 45 minutes (subject two), whereas the longest pre-pilot needed 2 hours for completion (subject 1); the average time was about 75 minutes. In addition, the first pre-pilot interview was the most experimental – the remaining three pre-pilots led to minor amendments. As a result, the initial repertory grid model (refer to Appendix 7 on page 337) was re-designed several times leading to a unique research instrument, shown in the two figures on the next page.

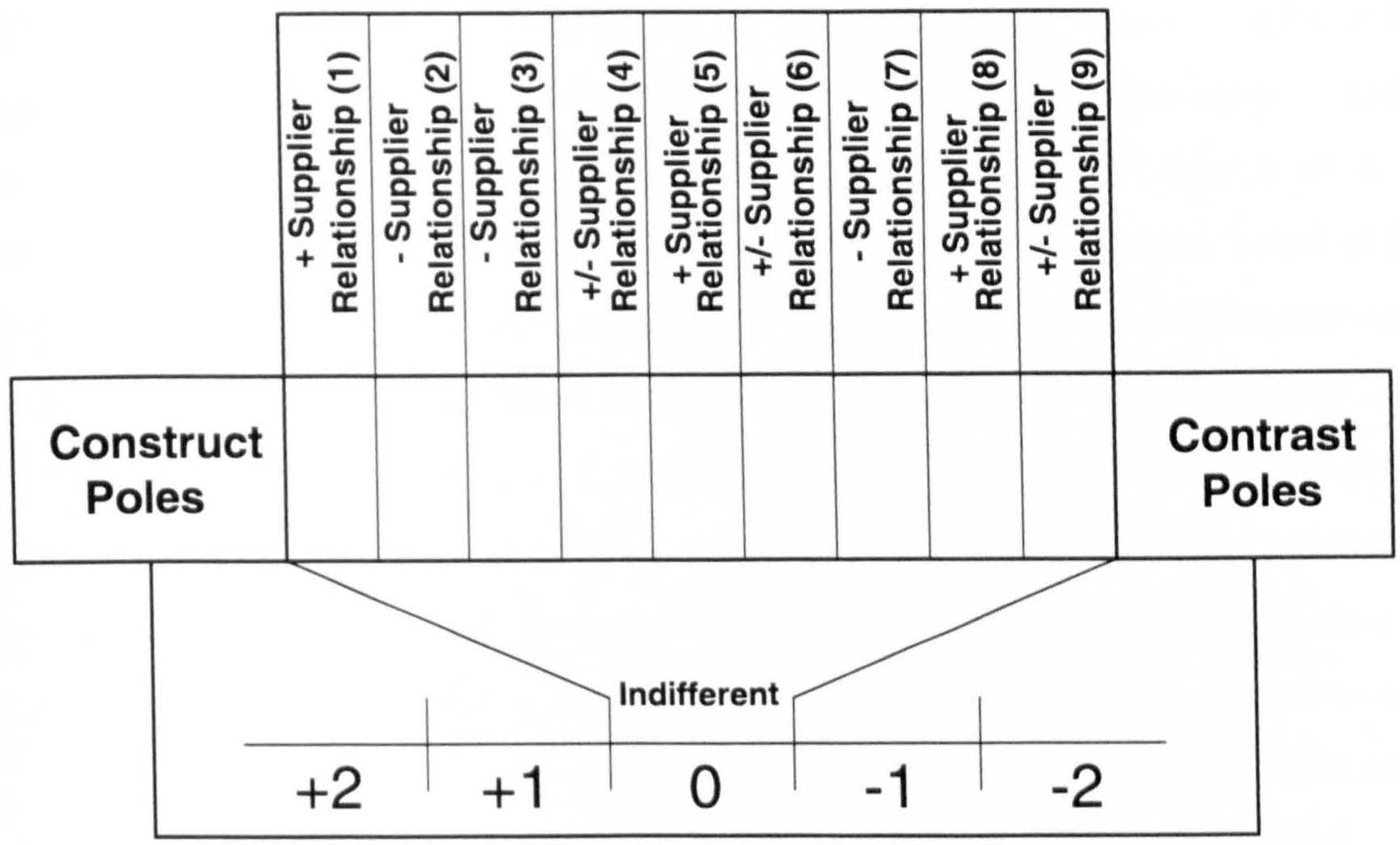


Figure 6-7: Repertory Grid Instrument - Top View

The specific design of the repertory grid research instrument was developed in the initial four pre-pilot interviews and is displayed in Figure 6-7 above and Figure 6-8 below. Note that the suppliers representing the three quality classes are in randomised order (i.e., High RQ = 1, 5, 8; Average RQ = 4, 6, 9; and Low RQ = 2, 3, 7), as described earlier. The side view provides a better angle to see how the instrument works:

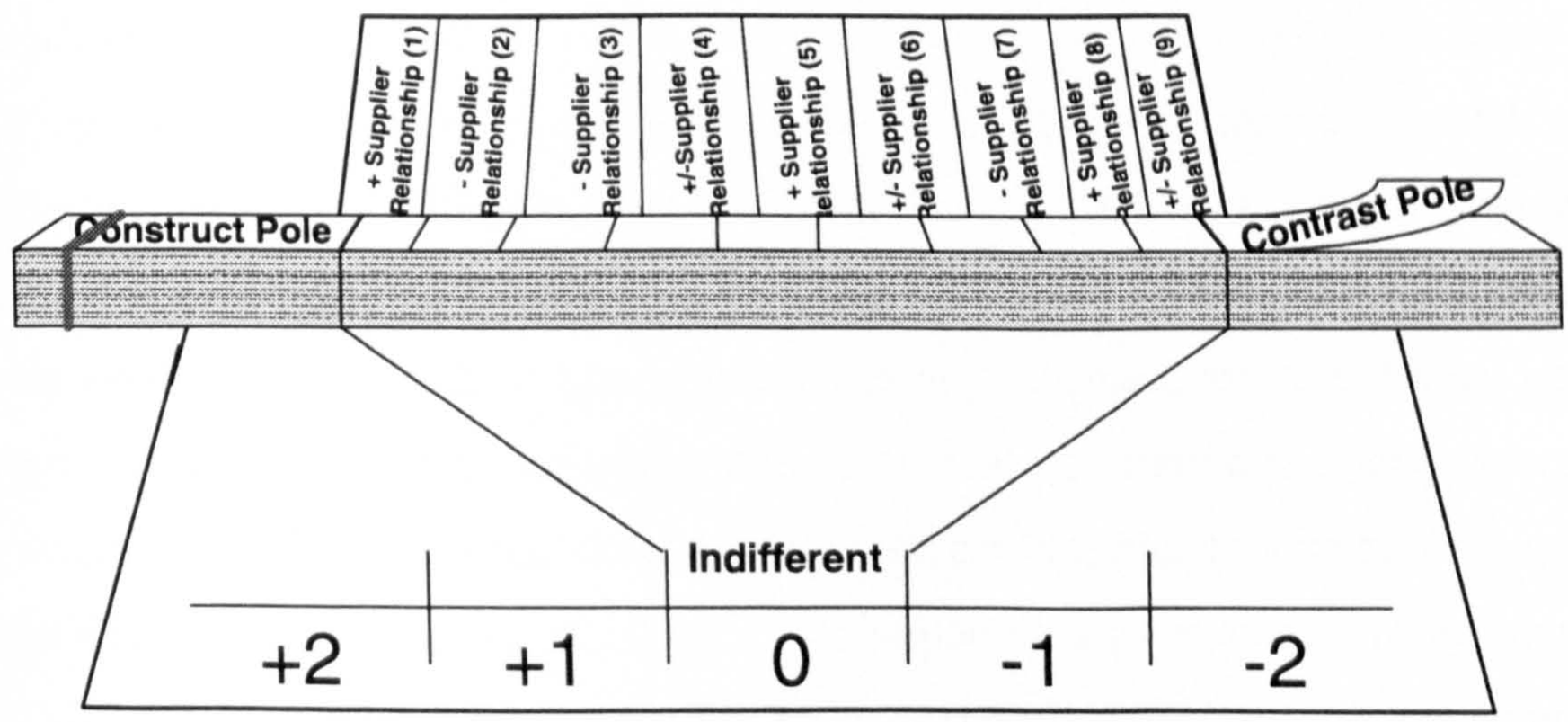


Figure 6-8: Repertory Grid Instrument - Side View

The original matrix form was modified in that the individual construct rows of the matrix were cut and stacked on top of each other. The stack of construct stripes can be found in the centre of the instrument. On top of the research tool, the researcher noted the names of the suppliers from 1 - 9. At the bottom of the instrument, the measurement scale was printed, indicating that the construct pole is associated with +2, while the contrast pole represents -2. The researcher noted both poles during the repertory grid session. The two figures above indicate the 'construct pole' and 'contrast pole' at the outlying fields of the stripe. This unique repertory grid design allowed the researcher to ask the participant to consider one construct at a time, folding over each construct stripe after the respondent had rated all suppliers in succession.

Focussing on one construct was recommended by Levy and Dugan (1956), as it reduces the potential halo effect. However, no published research employed a design that was able to address the usual halo effect directly. The research tool presented in this thesis had the potential to do so, while appreciating the classic and established design.

After the pre-piloting phase, a stratified sample with a random start of the database population of the 98 German organisations that entered the IBFA-D in 1997 was created (i.e., the sample pool of 110 organisations of Stage I, excluding the 12 process companies). The number of conducted cases varies in research, as it depends on the methods involved. In this particular piece of research, 37 companies were selected to be contacted and all organisations were sent an initial letter (as in the previous research stage). The letter explained the research project and gave the information that the researcher would contact them by telephone a few days later in order to discuss the research in greater detail. The letter not only explained the nature and importance of the research, but it also offered a summary report of the findings on completion of the study. In the case of the participating companies of Stage I, the 'first contact' was the former respondent; in the case of companies, which did not participate in the previous research stage, the 'first contact' was taken from the IBFA-D database (typically the Managing Director/*Geschäftsführer*). In this conversation, the researcher aimed at

discovering other DMU members before proceeding with the project introduction and the arrangement of a plant visit appointment.

The first company was treated as a pilot study and the researcher made a comprehensive test of the methodology in the real research context. As no further modifications of the research instrument resulted from the interviews, the case was included in the analysis. In all, 48 interviews under assurances of confidentiality were conducted and the sample breakdown by function is shown below:

Function of Interviewee	Proportion
Senior Purchasing Manager	*20 (42%)*
Managing Director	*11 (23%)*
Quality Manager	*9 (19%)*
Other	*8 (17%)*

Table 6-5: Structure of Sample by Interviewee Function

The researcher conducted interviews with purchasing managers as well as with managing directors and quality managers. The remaining eight managers had unique roles, such as 'Supply Chain Manager' or 'Technology Manager' and they are classed as *other* in the table above. All managers were responsible for managing and selecting suppliers and they had about fourteen years of experience on average in this discipline (see table below).

Experience in years	Number of Interviewees	% of Interviewees
Less than one year	*1*	*2*
1-5 years	*6*	*12*
6-10 years	*14*	*29*
11-20 years	*18*	*38*
Over 20 years	*9*	*19*
Total	**48**	**100.0**

Table 6-6: Experience in Managing and Selecting Suppliers

The sample breakdown by industry is shown below:

Industry Sector	Companies Contacted	Case Studies Conducted	Response Rate
Electronics	*8*	*7*	*88%*
Engineering	*29*	*15*	*52%*
Total	**n = 37**	**n = 22**	**59%**

Table 6-7: Structure of Sample by Industry Sector

From the 37 companies contacted, 22 case studies were conducted, resulting in a response rate of 59%. Most of the case studies were engineering companies as the sampling pool was biased towards the engineering sector in general.

Unfortunately, the number of respondents necessary to apply the repertory grid technique is not addressed in the literature. As the study is exploratory in nature, sampling took place 'purposefully' (Strauss and Corbin, 1990: 186) to, among other things, "maximize opportunities to elicit data regarding variations along dimensions of categories." Strauss and Corbin (ibid.) explain, "the seeking of different sites, subjects, or documents is not the real issue. You have been concerned with sampling on the basis of theoretically relevant concepts." Rather than a representative sample, the researcher conducted a theoretical sampling approach where respondents were selected to maximise theoretical development of the relationship quality concept. Sampling ends when theoretical saturation is reached and in this sense, the sampling size is not pre-determined. Theoretical saturation is the point "when no new analytical insights are forthcoming from a given situation" (Arber, 1993: 74).

The rule of thumb is about 10 respondents. As the topic of the study is neatly defined, the number of actual respondents (i.e., 48 managers in 22 companies) was deemed sufficient for Stage II of the research. As the researcher completed 48 interviews, about 2 interviews have been performed per plant on average.

An in-depth interview took about 95 minutes per respondent, the fully structured part was about 9 minutes, the unstructured part took 52 minutes, and finally, about 34 minutes were needed to go through the semi-structured questions.

6.4.2 Unit of Analysis

The study focussed on the individual decision makers in their decision making units (DMUs). Basically, this is another way of saying that the individual members of the DMU are the embedded units of analysis or embedded case studies. In illustrating embedded case studies, Yin (1994: 41) argues, "the same case study may involve more than one unit of analysis. This occurs when, within a single case, attention is also given to a subunit or subunits." In the current study, the 'subunits' are the individual decision makers of a given company (i.e., a case). The researcher thus focussed on individuals.

Support for this approach comes from Tanner (1999: 250) who argues "organisational buying involves many people who are not professional purchasing agents, particularly when strategic partnerships are formed and communication must be extended between all functional areas of both firms. These factors concerning strategic relationships increase the need for individual level research."

Since the methodology had to be capable of identifying and surveying the membership of the DMU, it was necessary to know what characteristics constitute a 'DMU member.' Spekman and Stern (1979: 56) define membership in a DMU as "a purposive involvement in the procurement process." 'Purposive involvement' in turn, has been defined as "organisation members who perceive themselves to be active in a particular buying group" (ibid.: 56). An appropriate way to identify all DMU members is the snowball sampling technique. Moriarty and Bateson (1982) advocate *exhaustive snowballing*, which is a multiple-stage variation where the researcher can only stop when no new DMU member is generated by the respondents. The researcher identified a portion of the DMU members in Stage I as well as in the introduction per telephone in Stage II and finalised the sampling in the plant visit itself.

6.5 Data Analysis

For analysing case studies, Miles and Huberman (1994) outlined nine options that can be used in combination, as explained earlier:

1. **Contact Summary Sheet;**
2. **Codes and Coding;**
3. **Pattern Coding;**
4. **Memoing;**
5. **Case Analysis Meeting;**
6. Interim Case Summary;
7. Vignettes;
8. **Prestuctured Case;** and
9. Sequential Analysis.

In Stage II, options 1-5 and option 8 were chosen. As the repertory grid technique was used as a guide for the unstructured interview procedure, a special section will deal with the analysis of repertory grids as well as document analysis and the plant tour. All analytical techniques will be described in the remainder of this chapter.

6.5.1 Transcribing

Since the interviews were exploratory in nature, recording the conversation on tape was beneficial (Oppenheim, 1992). This procedure was followed in all 48 cases, after obtaining the respondent's consent at the start of the interview. In addition, notes were taken during the interview process and all interviews were transcribed afterwards.

The transcription process took place under the same principles as already described for Stage I (refer to 5.5.1 on page 99). The researcher transcribed the fully structured part of the interview as well as the unstructured part guided by the repertory grid technique in full, so that the meaning of the constructs could be compared among respondents. In addition, the analysis was based on the German raw data in order to preserve the meaning of the constructs. The semi-structured

part was transcribed selectively, which is a typical approach in a qualitative research design (cf. Strauss und Corbin, 1990).

6.5.2 Analysis of Qualitative Data

6.5.2.1 Contact Summary Sheet

Immediately after a company visit, short notes were made on the contact summary sheet. The summary sheet was for each company rather than for each respondent. The contact sheet is similar to the one used for Stage I and the figure below displays its outline:

Internal Number/Code:	
Organisation:	
Sector:	
Status:	
Date:	
Number of interviews:	
Duration of Interviews (three parts):	
Position/Function of interviewees:	
Area of Activities:	
Years of experience:	
Documents supplied?	
Relationship Quality – Key points:	
Relationships – Key points:	
Supplier Selection – Key points:	
Validation of Models – Key points:	
	Useful Quotes in Context
Context	*Quote*

Figure 6-9: Contact Summary Sheet of Stage II

Figure 6-9 illustrates the contact summary sheet, starting with the internal number of the respondent. All respondents have been anonymized and the analysis was exclusively based on the function and answers given. The researcher recorded important information in the summary sheet immediately after each company visit. After the interview had been transcribed, the contact summary sheet was complemented with original quotes and it was saved in the computer system. A quote, which was deemed particularly useful for demonstration purposes, was noted in its particular context (e.g., 'Supplier Selection – Key points') on the bottom of the contact sheet. This approach had previously been taken in Stage I and a typical summary was not longer than two A4 pages. The sheets were helpful as they provided an up-to-date overview of the case studies.

6.5.2.2 Codes and Coding and Pattern Coding

Coding, as also done in Stage I, was performed on the original interview text in German. The coding technique was essentially the same as already explained for the previous stage. In Stage II, however, the challenge was to capture the meaning of the relationship quality constructs resulting from the unstructured interview part. These constructs represented the codes and based on the transcripts, operational definitions of the codes were developed. For the coding procedure, the Windows-based computer programme *NVivo 1.0* was used, which enabled the researcher to retrieve and to compare explanations given by all respondents. Within a case company, triangulation was used and answers of different respondents were crosschecked one against the other. Moreover, an independent expert in the field (a native speaker) separately coded the transcripts with 'pen and paper.' The results of this interpretation were then triangulated and combined to give the coding results (i.e., constructs and meaning) at the end.

6.5.2.3 Memoing

After each company visit, the researcher recorded a brief summary on tape in memo form. These memos contained general impressions, questions, and new insights as well as a more detailed picture of the plant visit. Miles and Huberman (1994: 72) argue, "memos are primarily conceptual in intent. They don't just

report data; they tie together different pieces of data into a recognizable cluster, often to show that those data are instances of a general concept,..., You are writing memos to *yourself*, secondarily to colleagues." The authors explain further that memos could, for instance, be written:

- On what is intensely puzzling or surprising about a case;
- As alternative hypotheses in response to someone else's memo;
- To propose a specific new pattern code;
- To integrate a set of marginal or reflective remarks already made on field notes;
- When the analyst does not have a clear concept in mind but is struggling to clarify one; and
- Around a general theme or metaphor that pulls together discrete observations.

The need to write memos arises in the course of data analysis. Together with the company documentation supplied, the memos particularly helped in understanding the supplier relationships as well as the selection process.

6.5.2.4 Case Analysis Meeting

Miles and Huberman (1994: 76) point out that "at a case analysis meeting, the field-worker most conversant with a case meets with one or more people – a critical friend, a colleague, or co-researchers – to summarise the current status of the case." In this study, case analysis meetings between the researcher and his supervisor were important after the first four interviews in order to present an overview of the type of data and the techniques of analysis being used. The discussions were helpful in determining whether any refinements needed to be taken for the remaining part of the survey.

6.5.2.5 Prestructured Case

A prestructured case follows a specified outline – Miles and Huberman (1994: 84) describe this outline as a shell and "the field-worker, knowing what the case has to look like, collects the data needed to fill the shell." The case outline is particularly influenced by the research question, which in turn provides a sharper focus when collecting the data. Figure 6-10 contrasts the processes of conducting a traditional case and a prestructured case as well as the approach taken in this study:

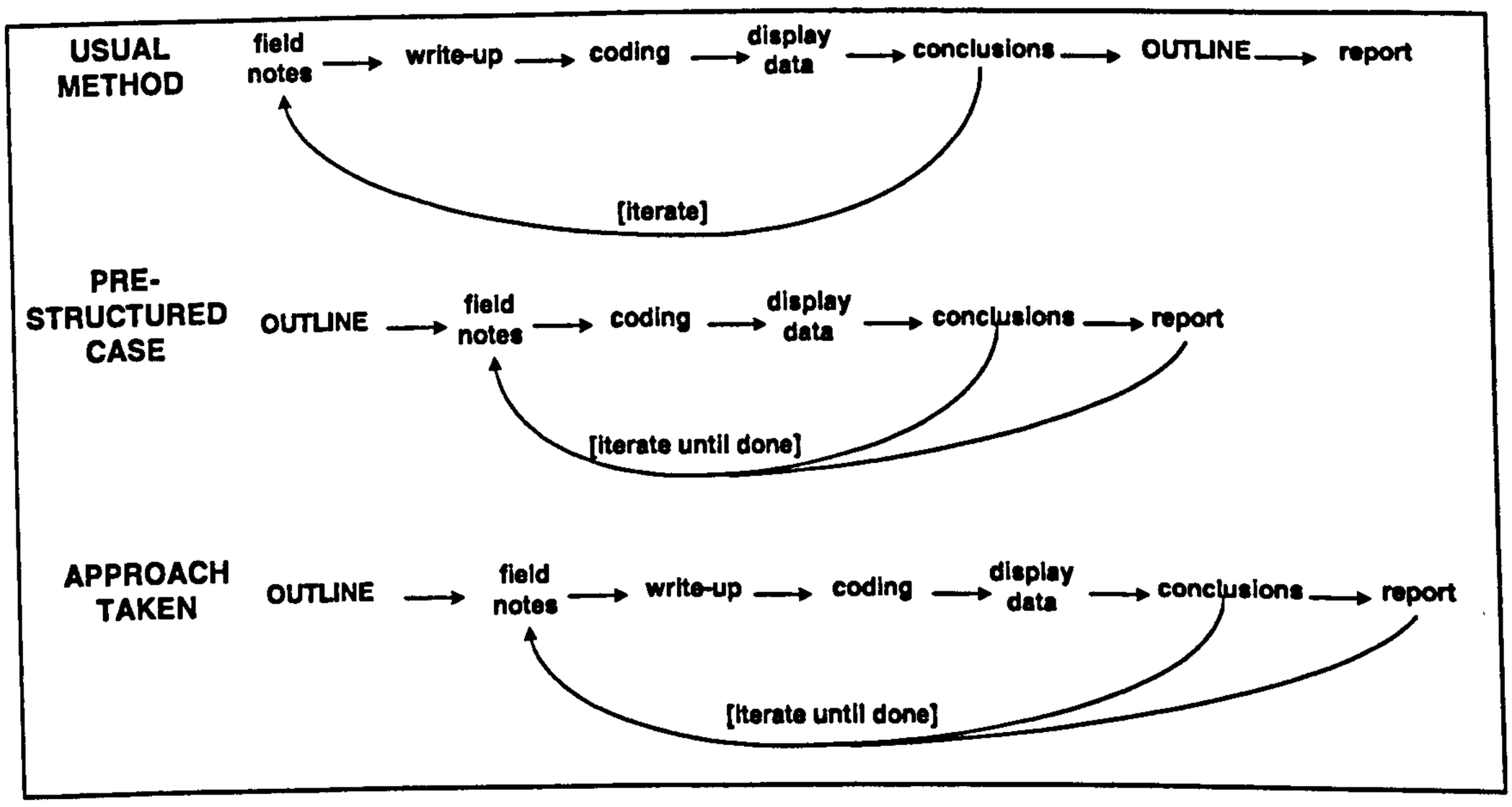


Figure 6-10: Traditional Analysis Sequence Compared with Prestructured Case

Source: Based on Miles and Huberman (1994: 85).

As indicated in the figure above, the main difference between the usual method and the pre-structured case is that the pre-structured case is driven by the case outline as well as the emerging conclusions and the final report draft – coding is based on the field notes rather than the write-up. The pre-structured case is more focussed. The focus rests to a greater extent on the research question, which conveys "a constant sense of being on top of the data, and [the researcher] remains open to checking and extending findings," as Miles and Huberman (ibid.: 85) report. In contrast, the usual method aims at gathering the findings of the case study into an outline, leading to the final report.

Note, that the pure form of the pre-structured case approach is best suited for experienced researchers, as the coding is done on the field notes alone. The

researcher followed the focussed approach of the pre-structured case method in principle. However, the coding could not be completed solely on the field notes due to the the researcher's lack of experience. It was necessary to refer to the transcripts as a follow-on step and to complete the coding before the data could be displayed for further discussion and interpretation. In short, the researcher's approach represents a hybrid of the usual method and the pre-structured case.

6.5.2.6 Repertory Grid Analysis

Having reviewed computerised repertory grid software programs, Sewell et al. (1992) conclude that these will impact on the development of personal construct psychology. In particular, they (ibid.: 19) argue, "as personal computers become more available and user friendly, the impact of developments in this area is certain to be a major influence in shaping the future of research in personal construct psychology." Software packages for analysing repertory grids were very helpful in this research. The following two have been used for statistical purposes: *FlexiGrid 6* (a dos-based programme) and *WebGrid II* (an Internet-based programme that was developed by Brian Gaines and Mildred Shaw). Both programmes are very strong at analysing individual grids and both tools are useful for the elicitation of tacit structures; a printout of the results typically exceeds 30 A4-pages in each software package.

For conducting the analysis with software programs, the researcher translated the rating scale of +2 – -2 (that makes sense to respondents) into a 1 – 5 scale (that makes sense to software programmes). The programmes were not capable of computing 0, -1, and -2 values and a conversion was necessary. The following figure displays the principle visually:

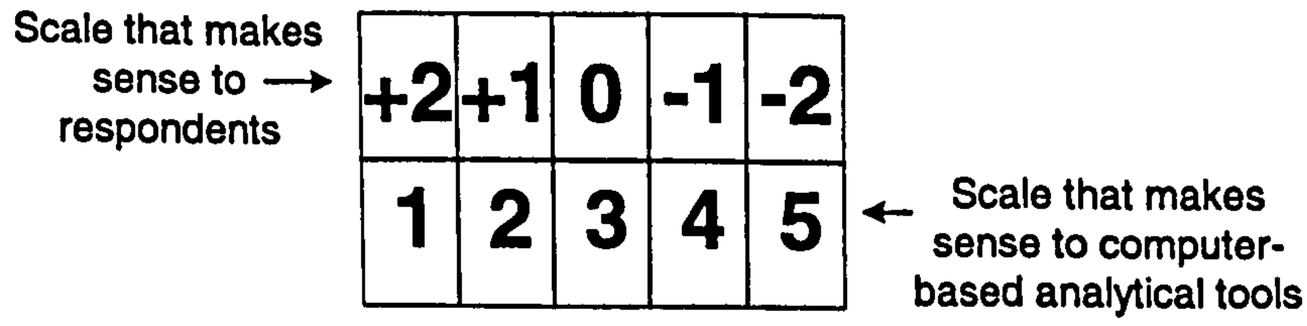


Figure 6-11: 5-Point Scales – The Scale used for Data Collection and The Scale used for Data Analysis

Figure 6-11 shows how the scale for data collection and the scale for data analysis are related. Both scales are Likert scales, which are typically regarded as interval data (cf. Novack et al., 1994; Novack et al., 1995; Monczka et al., 1995; Dutta et al., 1995; Verma and Pullman, 1998) and hence, they can be compared as measures of perceived relative importance of supplier attributes (cf. Verma and Pullman, 1998; Flynn et al, 1994). In fact, the well-established computer programme *SPSS* treats any Likert scale as interval data in order to compute its analysis. This implies that the intervals are the same between units. As one can see, both scales represent the same evaluative distance between the two construct poles and the difference of '1' between 2 marks is kept the same (e.g., the difference of 1 mark is the same between -1 and -2 as it is between 4 and 5).

To gain a first overview, the Principle Component Analysis (PCA) output of FlexiGrid was checked, as shown in Figure 6-12.

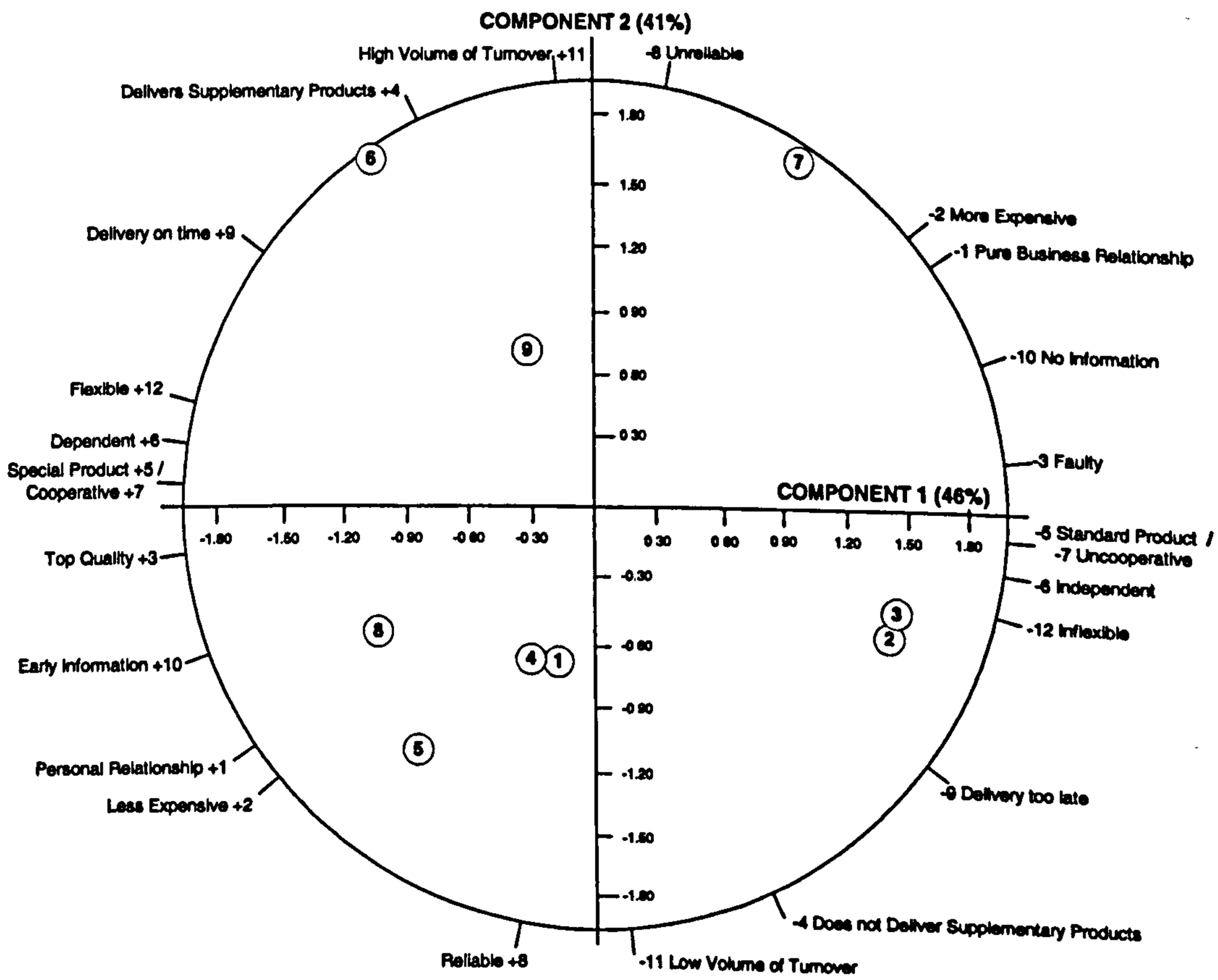


Figure 6-12: FlexiGrid Principle Component Analysis of a Managing Director in Electronics

The PCA, as shown in the figure, maps out the personal constructs of a given respondent (a MD in Electronics in this case). The constructs differentiate between the three relationship quality classes in two-dimensional component space. This space consists of two axes (termed 'components'), which is based on the correlations between elements (i.e., suppliers) and constructs (i.e., relationship attributes). These correlations are often referred to as 'factor loadings' and PCA visualises to what degree a given construct loads on or correlates with a given component. Put differently, the level of correlation is indicated by how closely the construct poles on the outer-circle are located to the component axes.

The example in Figure 6-12 shows that Component 1 and Component 2 result from the 11 constructs provided and the circle is annotated with the poles of the respondent's constructs. The constructs 'Special Product,'[14] 'Cooperative'[15] and 'Quality,'[16] (numbers 5, 7 and 3) have very strong correlation with Component 1, whereas 'Reliability'[17] (construct 8) and 'Volume of Turnover'[18] (construct 11) strongly correlate with Component 2. The PCA shows that the interviewee's perception of supplier relationship is largely explained by the five constructs related to these two components. It furthermore illustrates, for example, that the level of 'Cooperation' (construct 7) and 'Special Product' (construct 5) are closely associated with each other from the respondent's viewpoint.

The two components explain 87% of the total variance, i.e., Component 1 explains 46% and Component 2 41%. The axes of the two components serve as coordinates when locating the nine suppliers in relation to all constructs. Remember that suppliers 2, 3, and 7 represent the low relationship quality class and they can be found on the right-hand side of the figure. Suppliers 4, 6, and 9 symbolize the average RQ class (refer to the left-hand side), and 1, 5, and 8 the high RQ group (bottom-left quadrant). For example, the high quality relationship supplier 8 is characterised by delivering *top quality* and is *less expensive.* Furthermore, he provides *early information* based on the *personal relationship* he

[14] The construct 'Special Product' represents to what degree the supplier's product is tailor-made to the manufacturer's requirements.
[15] 'Cooperative' has the two poles *Cooperative* and *Uncooperative.*
[16] The two poles of the construct 'Quality' are *Top Product Quality* and *Faulty Product.*
[17] The two poles of the construct 'Reliability' are *Reliable* and *Unreliable.*

has with the respondent. By contrast, the participant describes a low quality supplier relationship, for instance supplier 3, as an *inflexible* supplier who is *independent* and delivers his products *too late*. The figure shows that the provided constructs represent a good snapshot of how this respondent views supplier relationships.

WebGrid's advantage over *FlexiGrid* is the colour-coded visual presentation of the results; the following figure displays the Principal Component Analysis (PCA) of one respondent as an example:

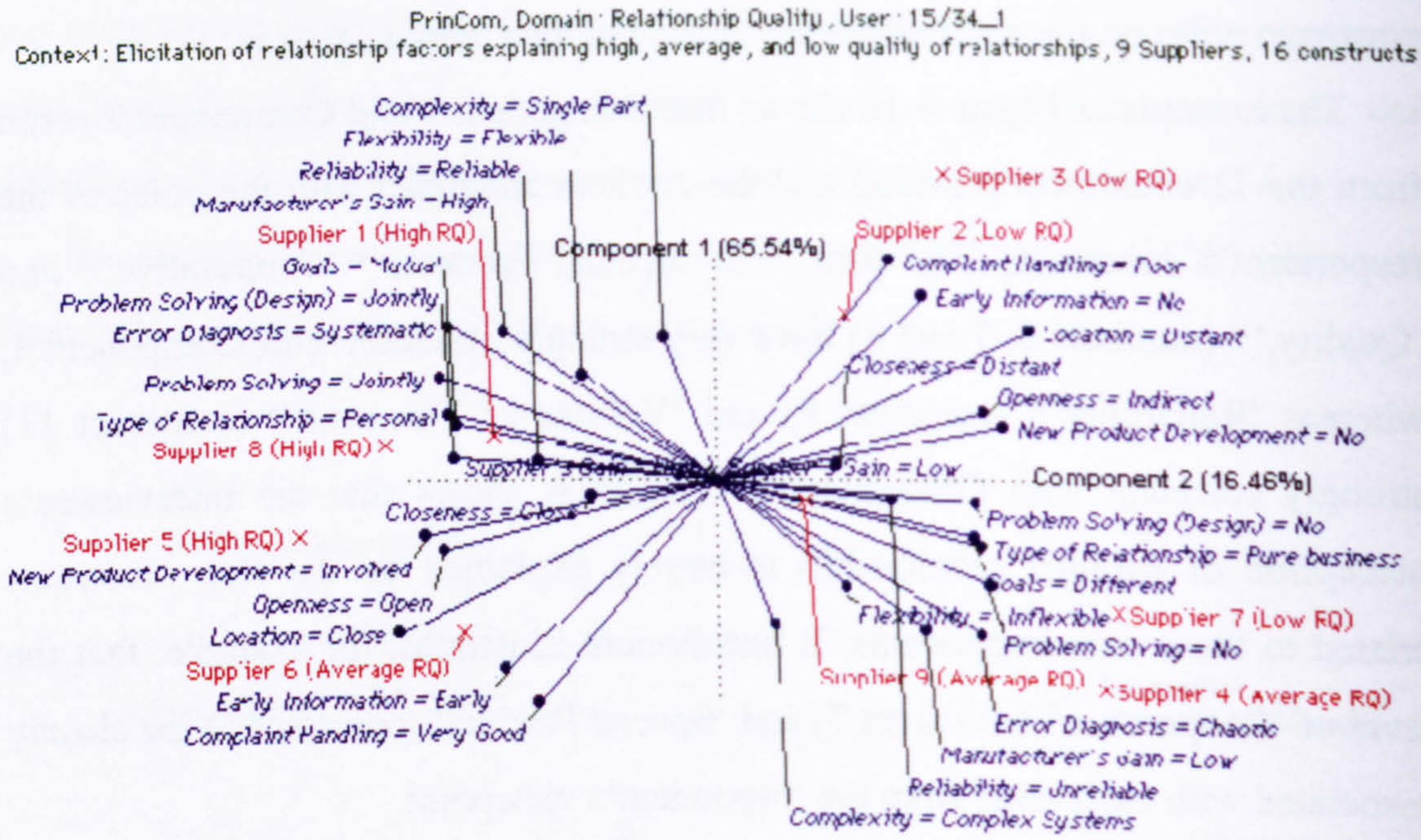


Figure 6-13: WebGrid II Principle Component Analysis of a Purchasing Manager in Electronics

Figure 6-13 provides a snapshot of how a purchasing manager in the electronics industry differentiates suppliers on the basis of relationship quality. It can be seen that the 'high relationship quality class' (i.e., red supplier numbers 1, 5, 8 on the left-hand side of the figure) differs greatly from 'low relationship quality suppliers' (i.e., 2, 3, and 7 on the right-hand side). The 'average relationship quality suppliers' (i.e., 4, 6, 9) are between these two extremes and are able to fulfil certain aspects of the other two classes. The low RQ class is associated with poor complaint handing, distant location, no involvement in new product

[18] The two poles of the construct 'Volume of Turnover' are *High Volume of Turnover* and *Low Volume of Turnover*.

development besides other issues. The high relationship quality group is related to attributes like openness, personal relationship, joint problem solving etc.

The relationship quality grouping is visible on the PCA map, which is an indication that the constructs elicited were meaningful to the respondent in explaining the similarities and differences of relationship quality classes. As in FlexiGrid, WebGrid illustrates the PCA map in two-component space. In this case, 82% of the variance is explained by components 1 and 2 together. Component 1 has greater explanatory power than component 2 for this particular respondent (65.54% vs. 16.46%).

An additional visual indication is provided by *WebGrid*. Note that the displayed lengths of constructs differ. This is to signal that construct poles that are located nearer to the mid-point map might be less important when differentiating the elements than construct poles that are mapped out on the outside. For instance, the construct 'Complexity' has less power in terms of relationship differentiation than the construct 'Problem Solving.'

In the example above, the total variance of 100% can be explained by 8 components (not displayed in the figure, as only 2 components can be displayed). *WebGrid* calculates the percentage explained by all components as follows: component 1 (65.54%), component 2 (16.46%) – both are shown in the figure; component 3 (9.27%), component 4 (4.60%), component 5 (1.75%), component 6 (1.61%), component 7 (0.47%), and component 8 (0.29%). If constructs had not correlated at all, the total variance would have been explained by 16 components (i.e., one construct would represent one component). However, as some components correlate better with some than with others, 8 components are needed to explain the variance of 100%. Unfortunately, PCA can only display two components at a time and typically, the two components with the most explanatory power are chosen (i.e., components 1 and 2).

This brief description helps explain why repertory grids cannot be summarised via PCA. Although the suppliers 1-9 that represent three relationship quality classes are comparable across all respondents, and each PCA map consists of two axes, some of the constructs provided by all respondents differ while others are the same. Each component axis is a composite of many individual factors.

Furthermore, the evaluations of all suppliers on each construct are dissimilar and so is the basis of the components needed to explain the total variance. In short, there is no established and rigorous way to summarise the PCAs between two respondents, let alone across a larger population. However, PCAs are very useful when focussing on individual-level analysis and can be helpful when conducting a follow-up interview. The researcher did not discuss PCA output with respondents and this mode of analysis was only used for getting a first visual overview of whether the research generated well-substantiated and valid results.

Another mode of analysis that shows whether the constructs differentiate relationship quality groups well is called 'FOCUS Analysis.' In this type of analysis, elements and constructs are reorganised by the *WebGrid* programme according to the correlations among elements and constructs. Lines indicate similarities, and scales signal the degree of correlation – this includes changing the construct poles if needed:

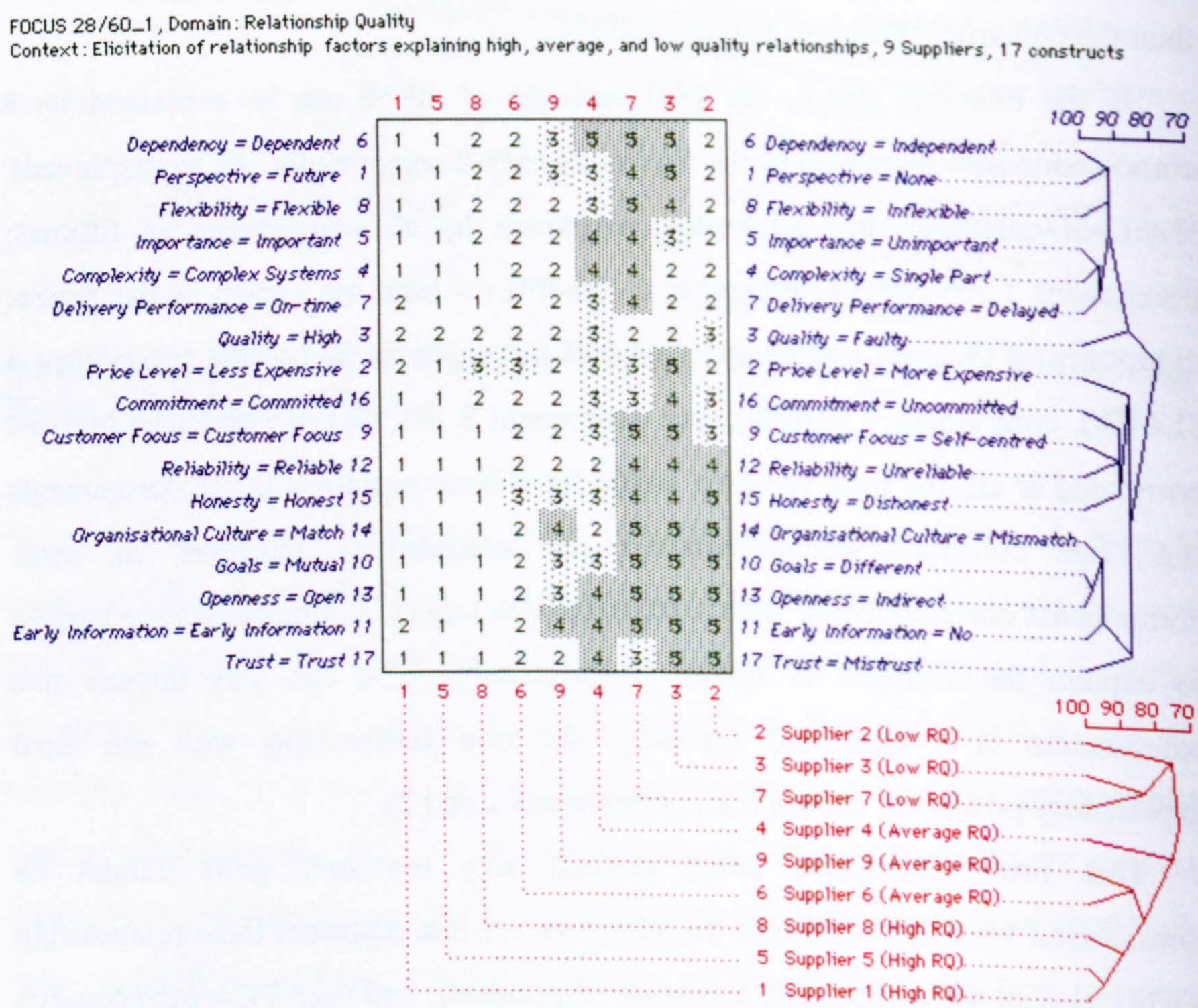


Figure 6-14: WebGrid II FOCUS Analysis of a Repertory Grid (Materials Manager in Engineering in German)

As illustrated by the dendogram in Figure 6-14, WebGrid rearranged suppliers 1-9 (marked in red) according to their degree of correlation to 1, 5, 8, 6, 9, 4, 7, 3, 2. Therefore, in the FOCUS analysis, the grouping of the three relationship quality classes is apparent. The programme also gives an overview of the construct correlations, which have been reordered from 1-17 to 6, 1, 8,..., 11, 17. Certain constructs, like 6, 1, 8 and 14, 10, 13, 11 correlate highly while others do not, e.g., construct 3 does not directly correlate with construct 2. This illustrates that not only are suppliers in a given RQ class associated with each other, but the respondent also sees a connection between certain constructs.

The colour-coded evaluation from 1-5 (i.e., in the centre of the grid) helps in recognising patterns. If a supplier has been evaluated 1 or 2 against a construct, the mark is left white, evaluation 3 is coloured in light green, and marks 4 and 5 are displayed in dark green. The closer the 'evaluation patches' have been grouped together by the programme, the greater the correlations among supplier classes and between constructs. Overall, WebGrid has only been used to produce a quick overview of whether the constructs divide the relationship quality classes reasonably well.

Unfortunately, repertory grid computer programmes are not designed for analysing multiple grids for reasons explained earlier – this is true for WebGrid, FlexiGrid, and any other current programme. The focus of the analysis is always on the individual and there is no straightforward way to compare one grid with another. Moreover, the literature does not give any suggestions as to how to go about the problem. Based on other studies, four ways of analysis have been used in combination and will be introduced in the discussion of findings (refer to section 6.6 overleaf).

To analyse the constructs' meanings, the researcher settled again for *NVivo 1.0* that takes the original transcripts as a starting point for interpretation. Therefore, this approach was based on the actual communication and this "technique provides a means of reproducing each individual's personal coding scheme" (Levy and Dugan, 1956: 57). The researcher translated the findings from German into English for presentation purposes only. The analysis was exclusively

based on the original German data in order to preserve the meaning in its raw form.

6.5.2.7 Document Analysis

Company documents were used to check the internal validity of the interview data with regard to the way suppliers are selected and the official criteria used. The company documentation together with the detailed qualitative information of the interviews helped in reconstructing the selection process and to prepare the experiment of Stage III.

6.5.2.8 Plant Tour

Plant tours were useful to get a better understanding of how manufacturers deal with their suppliers. The researcher saw, for instance, conference rooms for meetings, materials delivered, quality control, and the process of evaluating supplier performance using a PC system. The plant tour helped in grasping the general nature of the manufacturing industry and in seeing the importance that product quality, delivery performance etc. plays in the two industry sectors.

6.6 Findings

The in-depth interviews consisted of three parts. The first fully structured part led to the overview of the sample as reported at the beginning of this chapter (refer back to Table 6-5, Table 6-6, and Table 6-7 on page 147). The unstructured part and semi-structured parts were concerned with the quality of relationships and the selection of suppliers and both will be discussed next.

6.6.1 Important Relationship Quality Constructs

From the 48 in-depth interviews, 96 constructs emerged that are concerned with the quality of the relationships. In order to identify the most important ones, it was crucial to ensure that the construct meaning was clearly identified. As a result of probing questions, the researcher uncovered the construct meaning in the

interview process. Based on the interview transcripts, the meaning of all constructs was compared among respondents and the qualitative data allowed a detailed understanding of each construct to be obtained. By drawing all views on one construct together (with the aid of the software *NVivo*), the researcher was able to conduct an overall-check and to derive a more standardised construct explanation. All construct definitions are supported by original quotes from the interviews and the researcher fed back the more standardised explanations to the respective individuals for a 'sense-check.' For example, the construct 'Quality' was mentioned by 34 respondents (see Table 6-8 below) and so, the quality definition, as used in the research context, was reviewed by the 34 managers concerned. The same approach was taken for verifying the remaining construct definitions in addition to the original transcripts.

Although the construct explanations might have lost some of their richness – a danger highlighted in the research domain of personal values by Baker and Jenkins (1993) – the researcher performed a sensitive standardisation when comparing all cases. This procedure ensured that the short definitions were accurate and the researcher was comparing 'like-with-like' in the aggregation of constructs. Overall, the constructs are fairly discrete and do not overlap. The construct meaning of the finally selected constructs will be described in section 6.6.2 on page 172. The table below, however, displays all constructs in the order of their frequency count:

Construct (Translated into English)	**Konstrukt (Original in German)**	**Frequency**
1. Quality	Qualität	34
2. Commitment	Engagement	31
3. Flexibility	Flexibilität	30
4. Reliability	Zuverlässigkeit	29
5. Delivery performance	Liefertreue	29
6. Problem solving	Problemlösungserarbeitung	28
7. Type of relationship	Beziehungsart	27
8. Openness	Offenheit	27
9. Complaint handling	Reklamationsverhalten	25
10. Feedback	Feedback	21
11. Location	Sitz des Lieferanten	20
12. Dependence	Abhängigkeit	19
13. Customer Oriented	Kundenorientiert	19
14. Price level	Preisniveau	18

Construct (Translated into English)	Konstrukt (Original in German)	Frequency
15. Organisational size	Unternehmensgröße	17
16. Trust	Vertrauen	17
17. Duration of relationship*	Beziehungsdauer	17
18. Competence	Kompetenz	17
19. Special product	Spezialprodukt	16
20. Volume of turnover*	Umsatzvolumen	16
21. Direct contact	Direkte Ansprechpartner	14
22. New Product Development	Neue Produktentwicklung	14
23. Early information	Frühzeitige Information	13
24. Honesty	Ehrlichkeit	12
25. Closeness	Enge	12
26. Organisational culture	Unternehmenskultur	12
27. Relationship maintenance	Beziehungspflege	9
28. Classification as a customer	Einstufung als Kunde	8
29. Mutual benefit	Gegenseitiger Nutzen	8
30. Innovative	Innovativ	7
31. Ratio of dependency	Abhängigkeitsverhältnis	7
32. Effort to deliver faultless goods	Bemüht fehlerfreie Ware zu liefern	7
33. Perspective	Perspektive	7
34. Sympathy	Sympathie	7
35. Understanding	Verständnis	7
36. Complexity	Komplexität	6
37. Takes buyer seriously	Nimmt Abnehmer ernst	6
38. Structure	Struktur	6
39. Bureaucracy	Bürokratie	5
40. Cooperation	Kooperation	5
41. Transfer of technological know-how	Technologischer Know-how Transfer	5
42. Aims	Ziele	5
43. Designated contact	Festgelegte Ansprechpartner	4
44. Helpfulness	Hilfsbereitschaft	4
45. Cross trade	Kompensationsgeschäft	4
46. Type of supplier	Lieferantenart	4
47. Supplier completes his tasks independently	Eigenständig	3
48. Selection	Auswahl	3
49. Implementation of ideas	Ideenumsetzung	3
50. Interested	Interessiert	3
51. Constructive	Konstruktiv	3
52. Price movement	Preisbewegung	3
53. Price performance ratio	Preis-Leistungsverhältnis	3

Construct (Translated into English)	Konstrukt (Original in German)	Frequency
54. Stability of operational processes performance	Prozesssicherheit	3
55. 'Overcapacity Supplier' produces the parts if orders go beyond the manufacturer's capacity level	Verlängerte Werkbank	3
56. Importance	Wichtigkeit	3
57. Additional services	Zusatzservice	3
58. Additional know-how	Zusätzliches Know-how	3
59. Buyer is direct customer	Abnehmer als Direktkunde	2
60. Accepting recommendations	Aufgreifen von Vorschlägen	2
61. Inspection	Einsichtnahme	2
62. Original manufactured product	Erstmarke	2
63. Necessity of contact	Kontaktnotwendigkeit	2
64. Obliging	Kulanz	2
65. Private conversations	Private Gespräche	2
66. Realistic prices	Realistische Preisbildung	2
67. Respect	Respekt	2
68. Seriousness	Seriosität	2
69. Language	Sprache	2
70. Manners	Umgang	2
71. Organisational benefit	Unternehmensnutzen	2
72. Kinsman like relationship	Verwandtschaftlich verbunden	2
73. Age	Alter	1
74. Does not supply direct competitors	Beliefert nicht direkte Konkurrenten	1
75. Kind of attendance	Betreuungsart	1
76. Flexibility of relationship	Beziehungsflexibilität	1
77. Documentation	Dokumentation	1
78. Self-manufacturing	Eigenfertigung	1
79. Expected delivery time	Eingeplante Lieferzeit	1
80. Decisions on the spot	Entscheidungsfreudig	1
81. Authority for decisions	Entscheidungskompetenz	1
82. Contactability	Erreichbarkeit	1
83. Manufacturing options	Fertigungsmöglichkeiten	1
84. Supplier is personally known	Lieferant ist persönlich bekannt	1
85. Delivery frequency	Lieferhäufigkeit	1
86. Logistics	Logistik	1
87. Market knowledge	Marktkenntnis	1
88. Organised	Organisiert	1

Construct (Translated into English)	Konstrukt (Original in German)	Frequency
89. Frictionless processes	Reibungsloser Ablauf	1
90. Usage of resources	Ressourcennutzung	1
91. Sharing the risk	Risikobeteiligung	1
92. Self-assertive open-mindedness	Selbstbewusste Aufgeschlossenheit	1
93. Specialist	Spezialist	1
94. Systematic elimination of errors	Systematische Fehlerbehebung	1
95. Team member	Teammitglied	1
96. Number of parts	Teileanzahl	1
97. Preparation of negotiation	Verhandlungsvorbereitung	1

** Construct has been excluded from further analysis.*

Table 6-8: Relationship Quality Constructs in Frequency Order (English and German)

In the 48 repertory grid sessions, 96 relationship quality constructs have been elicited, which indicates a high degree of differentiation, collectively. Yet, not all are equally important in explaining the issue at hand. As can be seen, some constructs are idiosyncratic in nature (i.e., constructs 73-97); others are common constructs that are shared by a large number of respondents; and others are between these two groups. Unfortunately, the degree of commonality necessary to classify a construct as being a 'common construct' has not been defined by the literature. The repertory grids have been compared to see where the consensus is. In this research, it has been assumed that a construct mentioned by more than 25% of respondents (i.e., 13 nominations or more) carries sufficient importance when explaining the quality or relationships. Therefore, the Top-23 constructs have been selected for further analysis and these are highlighted in grey in the table. By contrast, constructs 24-97 have not been chosen for Stage III as they have not been mentioned by an adequate number of respondents.

Despite the sufficient frequency count, however, construct 17 'Duration of relationship' was excluded from further analysis early on. Based on the construct meaning, the duration of the relationship does not appear to be a relationship quality construct itself, but could be a potential RQ-outcome instead. In other words, the large number of 17 nominations might illustrate that a high level of relationship quality can only be achieved over time. This notion touches on the

second part of the research question where the link between RQ and Loyalty is explored. Construct 20 'Volume of turnover' falls within the same line of argument and it too appears as an eventual relationship outcome. Both constructs are irrelevant in explaining the quality of a relationship and have not been considered in any of the analysis of Stage II, leaving 21 constructs for further exploration.

The frequency count of constructs is a good first indication of importance. However, it does not expose the relative importance of the constructs to the subjects as it ignores the values of the repertory grids. It simply shows that these constructs have been mentioned by a certain number of respondents. This means that in the frequency table, common constructs are included which do not have the power to differentiate between the various relationship quality degrees. The importance can further be quantified by a factor, called the variability of the construct. The variability of a construct is a measure of the spread of the ratings in the evaluation process, compared to all constructs. The higher the variability, the greater the importance of that construct to the subject. There is an exception to this rule, as Smith (1986a) cautions, as it does not apply if the rating has been used crudely (a dichotomous selection; e.g., only ratings 1 and 5 are used on a scale from 1 to 5). Therefore, the usage of the rating scale was assessed first. Afterwards, the variability of constructs was checked to ensure that no important construct was overlooked. All 21 selected constructs were considered suitable for further analysis.

Concentrating on the Top-21 constructs only, entails a risk of overlooking a low frequency construct with a high variability. The researcher checked this possibility also, but no other construct was found that could be considered important despite its low number of nominations.

The variability of the 21 constructs was then calculated by *FlexiGrid 6* in terms of the percentage of the total variance for each respondent. In order to arrive at a comparable basis across all respondents, the variability of each construct was weighted by the average number of constructs. This approach was taken by Goffin (1992) as the variability of any construct is dependent on the number of constructs produced by a respondent. This means that the variability among 5 constructs, for

example, is higher than among 10, although the same ratings were used. In simple terms, a given construct in a pool of 5 has to 'compete' against fewer constructs and so its explanatory power when separating RQ classes is greater than in a set of 10. Due to this procedure, the variability values were normalised to 16, as if they came from a grid with an average number of constructs.[19] The average number of 16 constructs thus became the weighting factor in the table below:

Construct	Weighted Variability
1. Dependence	8.031151316
2. Trust	7.196764706
3. New Product Development	7.118392857
4. Location	7.04690625
5. Feedback	6.815208333
6. Type of relationship	6.770810185
7. Complaint handling	6.676175
8. Commitment	6.605625
9. Customer Oriented	6.463159722
10. Organisational size	6.434400735
11. Direct contact	6.370982143
12. Early information	6.36
13. Special product	6.359414063
14. Problem solving	6.357165179
15. Openness	6.259189815
16. Reliability	5.860172414
17. Flexibility	5.819708333
18. Delivery performance	5.567090517
19. Price level	5.357986111
20. Competence	5.14375
21. Quality	4.632261029

Table 6-9: Relationship Quality Constructs in Variability Order

Assuming 16 constructs as the standard per interviewee, the average variability is 6.25 (i.e., 100 / 16). As displayed in Table 6-9, the Top-14 most mentioned constructs are above average in terms of importance and they have been highlighted in grey. The constructs from *Reliability* to *Quality* are below average, indicating less importance when explaining the quality of supplier relationships.

Both the frequency as well as the variability of constructs are deemed as determinants of construct importance when used in combination. This approach

[19] In Table 6-8, the total number of frequency of 744 is divided by the total number of 48 respondents and

... *continued on next page...*

was taken by Goffin (1992) when exploring the "customer engineers' perceptions of support for medical products." Even though the variability is an indicator of the spread of the ratings in the evaluation process, compared to all constructs, it does not explain whether the spread corresponds to the three element classes. For example, the variability value of the trust-construct does not show whether the construct pole 'trust' has been associated with the three high quality relationships and 'mistrust' with the three low quality relationships. It basically shows that the evaluation of the construct 'trust' varies across all nine elements regardless to which relationship quality group they belong to.

In order to assess whether constructs do explain the relationship quality classes, the aggregated mean values of the constructs were compared between the high relationship quality and low relationship quality elements. A similar approach was taken by Khan (1993) when determining the importance of service quality attributes in the airfreight industry.

FlexiGrid calculates the mean values of the constructs for each subject only. These individual mean values can be summed up and divided by the number of occurrences in order to compute the aggregate mean value. Table 6-10 below shows all 21 constructs and their mean values in terms of the high and low relationship quality classes. The mean differences between the two extreme classes are displayed also.

equals 16 (in round numbers).

Construct	Mean of High RQ Class	Mean of Low RQ Class	Mean Difference
1. Trust	1.273529412	3.960588235	2.687058823
2. Feedback	1.587142857	4.127142857	2.54
3. Openness	1.430740741	3.743076923	2.312336182
4. Early information	1.64	3.923076923	2.283076923
5. Problem solving	1.392142857	3.666071429	2.273928572
6. Reliability	1.435862069	3.677931034	2.242068965
7. Complaint handling	1.6792	3.8672	2.188
8. Type of relationship	1.591851852	3.642222222	2.05037037
9. Customer Oriented	1.691052632	3.666315789	1.975263157
10. Commitment	1.50483871	3.464193548	1.959354838
11. Flexibility	1.544	3.379655172	1.835655172
12. Direct contact	1.523571429	3.286428571	1.762857142
13. Competence	1.49	3.20875	1.71875
14. Delivery performance	1.861724138	3.562758621	1.701034483
15. Quality	1.588529412	3.244411765	1.655882353
16. New Product Development	1.785714286	3.380714286	1.595
17. Price level	2.185	3.204444444	1.019444444
18. Location	2.184	2.9995	0.8155
19. Special product	1.85375	2.510666667	0.656916667
20. Dependence	3.122631579	2.964736842	0.157894737
21. Organisational size	3.177647059	3.125	0.052647059

Table 6-10: The Aggregate Mean Values of the Relationship Quality Constructs with Regard to the High and Low RQ Classes

The table above depicts all 21 constructs in terms of their mean differences. On the 5-point measurement scale used, the top 16 constructs discriminate a high quality relationship from a low quality relationship by at least 2 marks on the interval scale (in round numbers, i.e., ≥1.5) and are highlighted in grey. *Trust* and *Feedback* are the most important relationship quality constructs and this has been highlighted by their mean difference of about 3 marks. Interestingly, although the frequency count and the variability values of the constructs *Location*, *Special Product*, *Dependence*, and *Organisational Size* are acceptable, only the mean differences reveal that they do not differentiate sufficiently enough between the two extreme relationship quality groups.

In order to summarise the outcome of the 4 analytical steps, the following table provides an overview of the 21 original constructs and indicates the ones that were finally found suitable for designing the experiments in Stage III:

Construct	1. Frequency	2. Rating scale used crudely?	3. Weighted Variability	4. Mean Difference	Selected for Stage III?
1. Trust	**18**	**No**	**7.196764706**	**2.687058823**	**Yes**
2. Feedback	**21**	**No**	**6.815208333**	**2.54**	**Yes**
3. Openness	**27**	**No**	**6.259189815**	**2.312336182**	**Yes**
4. Early information	**13**	**No**	**6.36**	**2.283076923**	**Yes**
5. Problem solving	**28**	**No**	**6.265200893**	**2.273928572**	**Yes**
6. Reliability	29	No	5.860172414	2.242068965	No
7. Complaint handling	**27**	**No**	**6.676175**	**2.188**	**Yes**
8. Type of relationship	**28**	**No**	**6.770810185**	**2.05037037**	**Yes**
9. Customer oriented	19	No	6.463159722	1.975263157	No
10. Commitment	31	No	6.605625	1.959354838	No
11. Flexibility	31	No	5.819708333	1.835655172	No
12. Direct contact	14	No	6.370982143	1.762857142	No
13. Competence	16	No	5.14375	1.71875	No
14. Delivery performance	28	No	5.567090517	1.701034483	No
15. Quality	34	No	4.632261029	1.655882353	No
16. New Product Development	14	No	7.118392857	1.595	No
17. Price level	18	No	5.357986111	1.019444444	No
18. Location	20	No	7.04690625	0.8155	No
19. Special product	17	No	6.359414063	0.656916667	No
20. Dependence	19	No	8.031151316	0.157894737	No
21. Organisational size	18	No	6.434400735	0.052647059	No

Table 6-11: The Original 21 RQ Constructs - Overview

In Table 6-11, the ten constructs that fulfil all four modes of analysis have been highlighted in grey. The frequency count, the variability of constructs as well as the mean differences are left open to the researcher's interpretation and one method of analysis cannot be chosen over the other. However, the researcher considered that the mean differences as more important, as they directly illustrate to what extent a construct polarises the two extreme relationship quality groups. Therefore, the constructs have been ordered according to their mean differences in the table above.

In this study, seven constructs have been chosen that fulfil all four steps of analysis. These are highlighted in grey and the construct rows are emphasised in bold in the table. Whether they are considered for Stage III is indicated in the last column also. For instance, construct 6 (i.e., reliability) has not been selected, as the weighted variability index does not fulfil the basic requirement (refer to Table

6-9 on page 168). In particular, *trust, feedback, openness, early information, problem solving, complaint handling,* and *the type of the relationship* have been mentioned by a sufficient number of respondents and they are most powerful in discriminating the relationship degree. The cut-off point at seven constructs has not been suggested by the literature but has been deliberately taken, as the number of constructs for Stage III had to be kept at a manageable level. The meaning of the most important constructs will be explored next.

6.6.2 The Meaning of the Most Important Relationship Quality Constructs

The determination of the meaning of the constructs was crucial and the qualitative data of the interviews allowed a detailed understanding of each construct to be obtained. In the following, the most important selected constructs will be explained in alphabetical order and their construct poles are underlined:

Complaint handling: Good handling of complaints – The supplier accepts faults in a product, reacts quickly, and eliminates the fault once and for all. *"If we have got a faulty part, I ring up the supplier and he will send out a replacement immediately. He leaves the detection of the fault for later and by the next delivery the problems with the part are resolved"* (purchasing manager in Electronics). Poor handling of complaints – The manufacturer has to convince the supplier that the product is faulty. He reacts slowly and supposedly eliminated faults reappear in the future.

Early information: Early Information – The supplier informs the manufacturer in time about upcoming problems or other important issues. *"The supplier informs us in time about problems. For instance, if he cannot keep to the scheduled delivery times, or he temporarily won't be able to keep the quality level, or he intends to use different materials for his parts in the future, he will let us know so that we will be able to react to it"* (quality manager in engineering). Therefore, the manufacturer is prepared and is able to react in a preventive manner before the problem occurs. Absence of Information – The supplier does not inform the

manufacturer about upcoming problems and is ready to have a discussion when the problem is present or he leaves the discussion for afterwards. He does not inform the manufacturer about product modifications or other important issues. *"Some suppliers don't inform us if they cannot keep their promise to deliver. In this situation, I haven't got any option but to find an alternative source in time and will have to wait"* (purchasing manager in engineering).

Feedback: Fast Feedback – the conversational supplier replies to all enquiries of the manufacturer promptly. No Feedback – there is a 'silent atmosphere' between the supplier and manufacturer and the supplier does not reply to the manufacturer's enquiries. The manufacturer has to 'run after' the supplier; *"the supplier,"* on the other hand, *"aims at surprising us with ready-made solutions and doesn't reply to our questions"* (Quality Manager in Engineering).

Openness: Open Communication – The manufacturer is able to address any aspect of the relationship with the supplier in a quick and direct way. The supplier is an active communicator. *"Openness means that the communication is robust, quick and straightforward. You can address all issues directly over the phone, if you like; and you don't have to watch your words. The supplier is as direct with us"* (MD in Engineering). Moreover, the supplier informs the manufacturer about various issues, such as market trends and activities of the competitor. Indirect communication – The supplier covers up his activities and does not communicate with the manufacturer directly. The manufacturer has to address his points in a diplomatic manner.

Problem solving: Joint Problem Solving – The supplier makes 'the impossible possible.' The supplier has got a highly developed understanding about the manufacturer's problems; he takes any problems of the manufacturer seriously, and problems are jointly overcome by mutually developed solutions. The supplier is a 'troubleshooter.' No Problem Solving – The supplier does not take the manufacturer's problems seriously and the manufacturer has to solve his problems alone. *"Some suppliers dispute that there is a problem. Still, a few of them get to*

realize that there is one, but it takes a very long time to get them there. By then, we have solved the problem already" (MD in engineering). On the one hand, the supplier might not have the competence to solve the manufacturer's problems; on the other, the supplier might not have the sense to see the problems at all.

Trust: Trust – The supplier has the tendency to keep all information about the manufacturer relationship to himself. He does not use his detailed knowledge about the manufacturer to his advantage and, for instance, he does not supply the customer of the manufacturer with his own parts directly. *"A supplier can be trusted if he doesn't give any information away. In our business we usually find out whether a supplier keeps information to himself or not.,..., In extreme cases, suppliers cut us out and deliver their parts directly to our customers. These suppliers cannot be trusted and one has to be careful about what to say"* (Managing Director in Engineering). Mistrust – The supplier reports to the competitors of the manufacturer about the details of the relationship. He uses his knowledge about the manufacturer to his advantage and acts like a competitor himself by delivering his parts to the manufacturer's customers.

Type of relationship: Personal – There exists an intensive and close contact between the supplier and manufacturer on a 'human level.' Both parties have an interest in establishing the personal relationship further and to keep it that way. Business – The relationship between the supplier and manufacturer is formal, impersonal and superficial and purely aims at processing orders. *"Some suppliers don't want a personal relationship; other times, I don't want it. This has a lot to do with the person 'at the other end.' With some suppliers, I play tennis or we have dinner together or, in exceptional cases, we go on holiday with our partners [i.e., families] together. Not everybody likes to mix private with business life and quite frankly, it does not always work out, despite good intentions"* (Purchasing Manager Electronics).

Having introduced the construct meaning, it should be noted that the validity of the qualitative data and the interpretation of the researcher are always a major concern in qualitative research. First, by means of probing questions, the researcher uncovered the meaning of constructs rather than taking a shared meaning for granted. Second, the repertory grid technique is one way of capturing the voice of the respondent without introducing any potential bias of the researcher. Gammack and Stephens (1994: 85) explain, "the value of the repertory grid, by not prescribing the content, lies in offering a structure in which the inquiry can proceed in the subjects' own terms.,...., The fact that the structure is not imposed, as in a questionnaire, but represents the subject's own construction, makes it more ecologically valid." Finally, the researcher sent back the definitions to individual respondents and discussed them over the phone. Based on the original quotes and subsequent feedback of the respondents, it is safe to assert that the researcher obtained constructs that are clear, meaningful, relevant, and ready for use in the subsequent conjoint analysis in Stage III.

6.6.3 The Nature of Supplier-Manufacturer Relationships

The researcher discussed with the respondents the model that resulted from Stage I (refer to Figure 5-7 on page 113). This figure was modified in the following way:

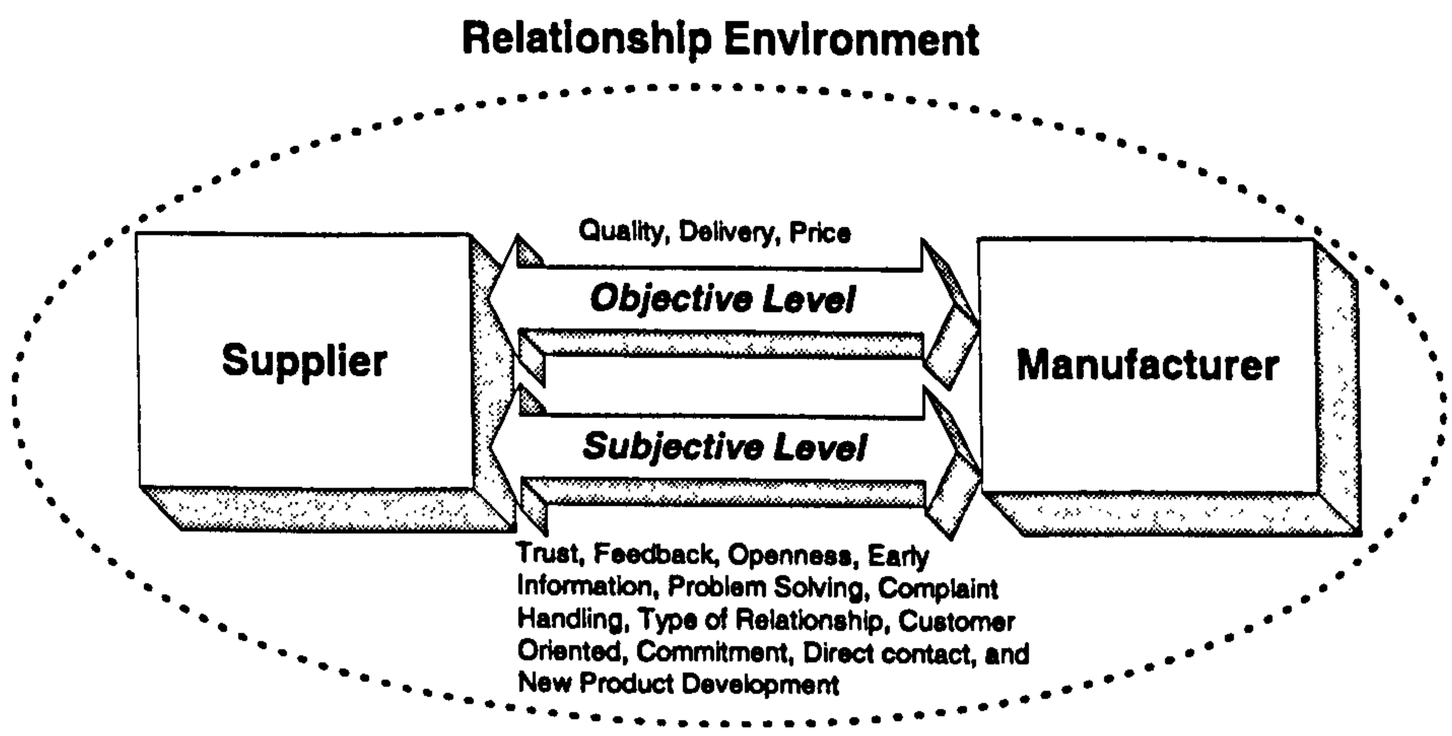


Figure 6-15: The Nature of Supplier-Manufacturer Relationships – Discussion in Stage II

Figure 6-15 indicates that supplier relationships are embedded in a business context and are aimed at fulfilling a mutual purpose. *"The relationship is performance oriented and aims at achieving profit; this is important to us as well as to the supplier and should be the priority of the relationship,..., the relationship is mutual; it works in both ways"* (MD in electronics). The relationship is a facet of a wider picture, often described as the supply chain. The figure above summarises the 'purpose' and 'supply chain' issues in the circle, labelled *relationship environment.*

All respondents confirmed that the relationship is made up of two dimensions. *"The relationship picture is accurate. We are all human beings and if we were served by an electronic system, the relationship would be based on the objective level alone; no human interaction would take place. But the fact is, that human beings are involved, although one might have been trained to ignore this point"* (Purchasing Manager in Engineering). Interestingly, the objective dimension is the dominating one and is the basis of the relationship. In particular, the dimension comprises *quality*, *delivery*, and *price* and the aim is to process orders. If the relationship is merely kept on the objective level, the relationship is of a transactional character that does not go any deeper than the physical exchange of products for money. The researcher obtained company documents illustrating the importance of all three issues – they represent the supplier's performance and are the official basis of the selection process. An MD in engineering argues, *"our relationship is very formal; it is on a working level."* Putting it the other way, without the objective level, the relationship between supplier and manufacturer would not exist. However, a purchasing manager in the same industry sector explains, *"the relationship could be seen as a connection between two organizations; this is the way it should be seen. Yet, the subjective level cannot be ignored if one is really honest.,..., So, the relationship is between two organisations as well as between people and the importance of the subjective level must not be underestimated."* In the same vein, a purchasing manager in electronics confirms, *"both levels are present as shown in the picture [i.e., Figure 6-15] and if you asked me which level is more important, I would even say that both are of equal importance."*

Although the subjective level can be seen as equally important as the objective level, three respondents attribute more importance to the subjective level. So, the weight of the two relationship levels is unclear and might depend on personal preferences. However, it can be said that, if only the subjective level were present, the relationship would have to be described as a friendship without any business purpose at all. This level represents the softer side of the relationship and has been expressed by the intangible relationship quality attributes. The 10 most important factors have been included in the model: *trust*, *feedback*, *openness*, *early information*, *problem solving*, *complaint handling*, *type of relationship*, *customer oriented*, *commitment*, and *direct contact* (refer also to Table 6-11). In practice, the objective level is a given as it is the basis of the business relationship. Yet, the subjective level makes the difference in supplier-manufacturer relationships – this is so because human beings have different personalities and act in their own particular ways.

The objective level is represented on a 'company level', so the supplier is seen in abstract and measurable terms. The subjective level stands for the individuals involved on the supplier side. Here, the relationship becomes personal and factors are difficult to grasp. *"Seeing the relationship, the organization makes up the background and the representative is in the foreground – he is our direct contact. This contact is colored by the personality of the person and the better the contact, the better the supplier overall"* (Purchasing Manager in Engineering).

6.6.4 The Change of Supplier-Manufacturer Relationships

The following model was used as a basis to discuss recent changes of relationships:

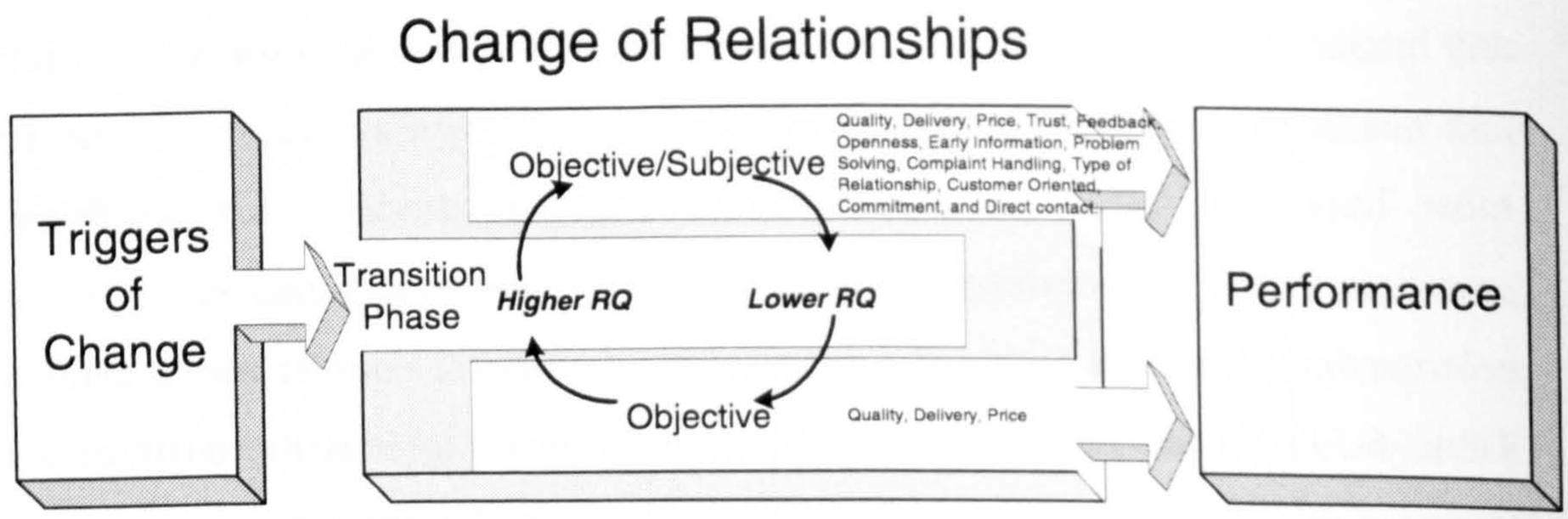


Figure 6-16: The Change of Supplier-Manufacturer Relationships – Discussion in Stage II

Figure 6-16 indicates that general triggers force a relationship to change. The triggers can be *changes in the market environment*, *political changes*, and *changes of the specifics of a product*. The relationship changes in order to adjust to a new situation so that performance can be achieved as the goal of the relationship. Where the triggers and the desired outcome of supplier relationships were concerned, no changes to the original model of Stage I were necessary. Nonetheless, the researcher interpreted relationship changes in terms of *closeness* in Stage I (refer to Figure 5-8 on page 114) and a number of respondents used this expression directly as an example for expressing their views in the telephone interviews. In the face-to-face interviews, however, the respondents were more sensitive to the topic and the discussion in the final interview part hinged on the preceding repertory grid session where the foundation of relationships had been laid open. Twelve respondents used the construct 'closeness' to differentiate supplier relationship qualities (refer to Table 6-8 on page 166) and the initial model was modified in order to accommodate the wider spectrum of relationship quality.

This does not necessarily mean that the original model was wrong. Yet, the telephone interview was not capable of capturing the precise meaning of

relationship changes, and focussing on *closeness* alone was misleading. Respondents argued that the quality of "relationship ingredients" is changing and this has been noted in the adapted model.

Interestingly, respondents were in agreement with one specific trigger: if a company replaces a personal contact – be it the purchasing manager on the manufacturer's side or the sales representative on the supplier's side – the relationship will most likely change. A purchasing manager in electronics explains *"as soon as individuals change within the relationship, be it the salesman or the purchaser, the relationship is bound to change; this is absolutely clear."* This statement highlights the significance of the human factor in supplier relationships.

In the amended model, the *Objective* level replaced Approach 1 whereas the *Objective/Subjective* level was used instead of Approach 2. As soon as an individual leaves a company, the supplier-manufacturer relationship changes from the *Objective/Subjective* level to the mere *Objective* level. The issues that were untouched by the replacement are the objective criteria (i.e., quality, price, delivery). Conversely, the subjective level needs time to become re-established with the fresh representative, initiating another change in the relationship where higher levels of relationship quality can be achieved over time again. This is another way of saying that a business relationship is past-dependent, shaped by the personalities and actions of the individuals involved.

In a given supply base, both relationship approaches exist. The question is not which manufacturer settles for the one or the other approach – rather, the question is 'which purchasing situation makes the *Objective* level more suitable over the *Objective/Subjective* level?' It has been emphasised by the respondents that both approaches make sense when applied in certain situations and that more time is needed for nurturing high quality relationships. For this reason, the manufacturer selects certain suppliers for keeping a high quality relationship, while managing other suppliers on the objective level alone.

6.6.5 Supplier Selection: Individuals Involved, Process, and Criteria

In a supply base, relationships range from a solely objective level up to relationships where the subjective level is fully developed. The co-existence of such a variety of relationship structures was explained by the nature of the purchasing situation. Straight re-buy situations do not require the establishment of a subjective level. A modified re-buy situation (e.g., new product development) requires a certain degree of subjectivity. In a new task buy, the subjective level gains more weight due to the lack of objective measures. The Five-Step Supplier Selection Process Model of Stage I was therefore refined and used to discuss the selection process in Stage II (see Figure 6-17).

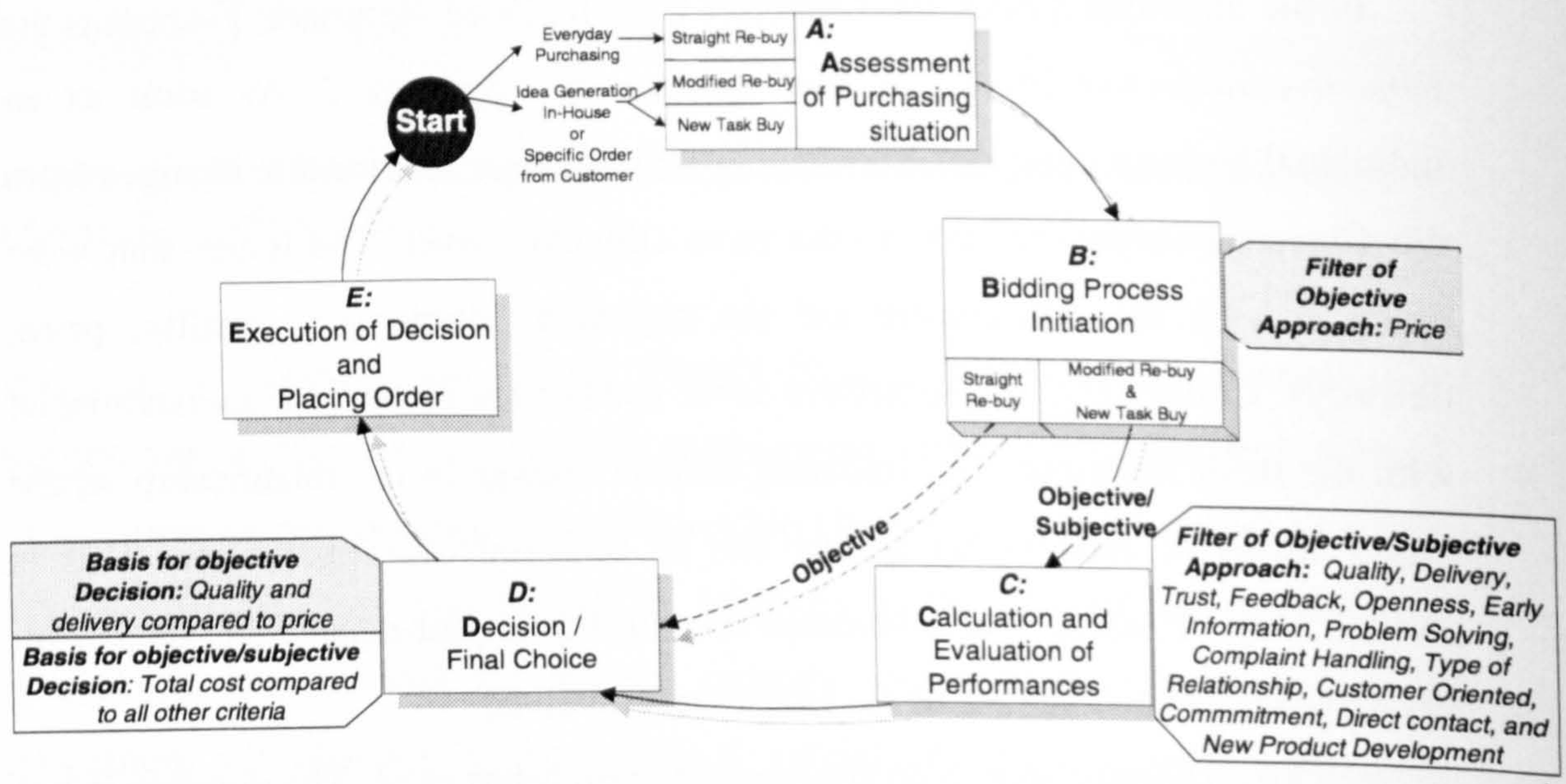


Figure 6-17: A Five-Step Supplier Selection Process – Stage II

Source: Based on Lemke et al. (1999b: 7).

The selection model above is based on the one developed in Stage I (refer to Figure 5-6 on page 109). Five changes became necessary: Firstly, *Everyday Purchasing* was overlooked as a common buying situation – Stage I was unable to cover this rather general aspect of purchasing that leads to a straight re-buy. Secondly, Step A was originally described as *All-inclusive Definition of Purchasing Problem*. Respondents found that the description of Step A was labelled in overly negative terms, as purchasing does not have to be a 'problem' per se. Instead, Step A has to do with the assessment of the purchasing situation

and the label has been changed accordingly (i.e., *Assessment of Purchasing Situation*). Thirdly, the content of Step C had a speculative character initially, as the intangible factors were virtually unknown in Stage I. The Top-11 important relationship quality constructs replaced the factors of the original model, as respondents frequently referred to 'their matrix factors' in the semi-structured interview part. Fourthly, the *Objective* level replaced Approach 1 and Approach 2 was swapped with the *Objective/Subjective* level. Last but not least, the three basic purchasing situations have supplemented the selection model in Steps A and B.

In the discussions, it became obvious that a manufacturer does not follow either the *Objective* approach or the *Objective/Subjective* approach – in fact, both are in use. A purchasing manager in engineering argues, *"in an everyday purchasing situation, I check the market price and I follow Approach 1 [i.e., Objective in the figure above]. What I mean is that I can make a quick decision as I have the experience to purchase the same parts over and over again. But if we develop new products and require tailored parts, we are not willing to take more risks than necessary. We follow Approach 2 [i.e., Objective/Subjective in the figure] in cases like these."* In other words, the purchasing situation, as assessed in Step A, influences the selection approach taken in Step B; a straight re-buy situation is dealt with in the *Objective* approach, whereas in a modified re-buy and a new task situation the manufacturer needs to evaluate objective and subjective measures. However, the manufacturer has hardly any objective measures in a new task situation and he relies on the supplier's know-how to a great extent. The modified re-buy scenario might be more balanced in the set of selection factors required.

Regardless of the approach taken, *quality* and *delivery* enjoy a high priority in the selection process. The researcher gained a better understanding of how crucial it is that the supplier delivers top quality material on time, explaining the physical proximity between the interface where the supplier delivers his goods, incoming goods inspection, and the final production line in the plant visit. The quality manager is typically located near the place where the incoming goods are inspected.

Whereas the supplier selection in a straight re-buy situation can be taken by one individual (typically the purchasing manager), modified re-buy and new task situations require a team approach. The managers usually involved are the *purchasing manager*, *quality management*, *R&D* and *other functions* – confirming the structure of the DMU of Stage I (refer to Table 5-4 on page 107). Just before the decision point, a list of all potential suppliers is typically developed, with the most suitable supplier at the top of the list, cascading down to the least preferred. In other words, the list is the outcome of several trade-off decisions and the final choice is taken in Step D. The researcher obtained copies of such lists, where the supplier names have been blanked out.

Although the respondents agreed that the *price* would be replaced by the *total costs* in the *Objective/Subjective* approach in Step D, a general financial evaluation cannot be made before the supplier has been selected. Put differently, the principle of taking the *total costs* into account is what managers aim for in this approach, but in practice the *price* is used as a first guideline that will be refined after the relationship to a certain supplier has been established. For this reason, the *price* should be the factor in Stage III rather than *total costs* that cannot be generalised across purchasing scenarios in the experiment.

As suggested in Stage I, and also confirmed in the Stage II interviews, the three official selection factors are *quality*, *delivery*, and *price*. These factors have been well documented and the researcher obtained the official guidelines outlining specific sub-factors depending on the part to be ordered (e.g., quality specifications of a given component or typical rebates, subject to volume).

It is interesting to note at this point that virtually all information about a supplier is stored in a computer system – providing that historic data are available. This system usually allows access to all managers concerned, depending on the user/security level. The researcher is aware that evaluating supplier performance normally happens on a computer; sometimes, background information of a new supplier is initially acquired via the Internet. Delayed deliveries, product faults, prices etc. are kept in paper form to provide evidence if needed later.

On the basis of the three official measures, a score is computed to help to sort each supplier into either the 'A-Category,' B-' or 'C-Category.' However, the

paper work merely serves as a backup, while the evaluation (i.e., Steps B-D in Figure 6-17) is executed on a computer system and printouts for group discussions are taken if required.

Finally, the location of the supplier is not listed as an official selection criterion (a point that arose when discussing the findings of Stage I, see page 110) nor are any intangible relationship quality aspects considered. Thus, officially the quality of relationships does not influence the supplier selection process. Unofficially, however, it might be a different matter. At this point in the investigation, the influence of relationship quality factors on the supplier selection decision is ambiguous.

6.6.6 Defining the Modified Re-buy Scenario

The requirements of the modified re-buy scenario and the reasons why the researcher focussed on this particular purchasing situation were explained earlier (refer to section 2.7.3 on page 69). In this regard, the researcher asked the respondents about purchasing situations that require additional information about the product and the supplier. Moreover, the selection will not be decided by one individual alone and generally, a discussion is necessary between all DMU members at some point in the decision process. The situation would fall between a routine buy (e.g., ordering standard bolts) and a new task, which is a novel situation for all decision makers involved, as originally suggested by Robinson et al. (1967). Moreover, the situation should allow 'out-suppliers,' that are not in the current supply base, to take part in the bidding process.

Almost without exception, the 'new product development' situation was mentioned by the managers (41 nominations). A Quality Manager in Engineering replies, *"this situation is represented by a new product development case. For instance, if we wanted to replace an existing product with a modified product, we would have to change the construction. Hence, we will need modified parts and we usually don't know exactly what type of parts would suit the project.,..., Last spring, we selected a new supplier and the old supplier got replaced – we haven't got any preference in this respect."* In the same industry sector, an MD confirms

this view *"as soon as we need to purchase something where we lack know-how, for instance, if we have to develop a new spring gasket set, then we will need more information about the product and the supplier and we will select the right option in the team."*

In the scenario described, certain elements are well-known while others are new to the manufacturer and additional information is needed to base the selection decision on. Finally, this type of purchasing scenario occurs frequently in practice and it is not a one-off selection decision.

Selecting a supplier for new product development purposes will represent a suitable scenario for the experiment in Stage III, as it is a team decision rather than dependent on one individual alone. All managers in both industry sectors can relate to this type of modified re-buy scenario, which ensures comparability. It would be interesting to see how the soft RQ factors compete against the hard and official selection criteria.

6.7 Discussion of Findings Against the Body of Knowledge

The findings of the case study approach revealed that the quality of supplier relationships is associated with a great number of constructs (refer to Table 6-8 on page 166). Some of these are idiosyncratic, meaning that only individual managers differentiate the quality of supplier relationships in particular aspects. Other constructs are shared by many respondents and are consequently regarded as 'common constructs.' This set of constructs can be generalised across the sample and they are also suitable to be contrasted with the literature (see Figure 6-18).

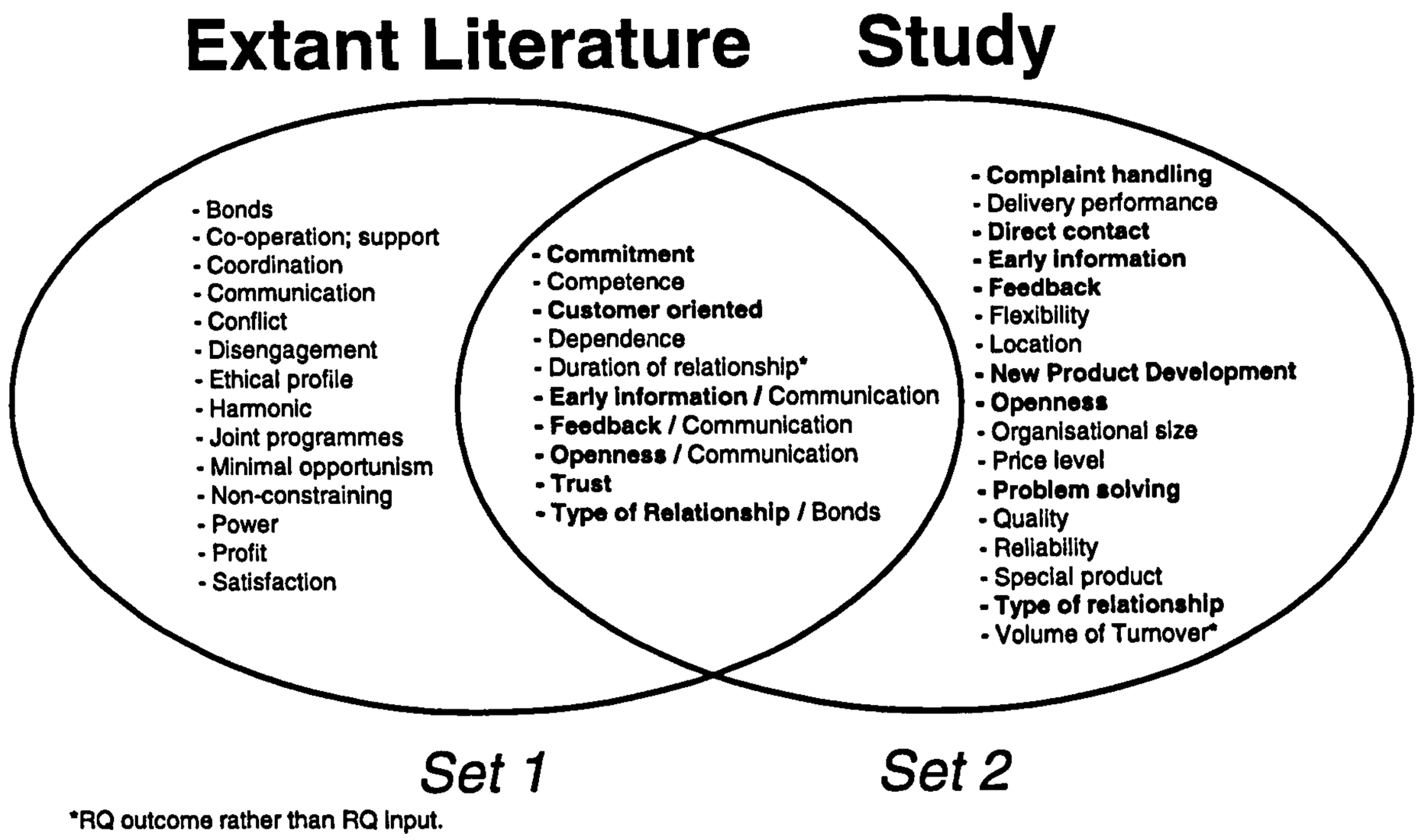


Figure 6-18: Venn Diagram of the Constructs of the Quality of Supplier Relationships

In the figure above, Set 2 contains all of the common constructs of the quality of supplier relationships that were empirically identified by Stage II, for example, *Location, Quality, Price level.* Set 2 exposes some constructs that have not been discussed in the literature dealing with relationship quality, such as *Complaint handling* and *Problem solving*. Some of these had already been anecdotally identified in the extant literature (see overlap of Set 1 and 2). However, certain factors, such as *Coordination* and *Ethical profile*, were mentioned in the literature (refer to Table 2-8 on page 42), but were not verified in this empirical study (see Set 1). Two constructs, *Duration of relationship* and *Volume of turnover*, might be a potential outcome of high-quality supplier relationships rather than an input and the asterisk sign by the construct labels indicates this.

It is interesting to note that the literature identified the rather general *Communication* construct as an RQ ingredient. For instance, although Smith (1998) views *Communication* and *Cooperation* as key determinants of relationship quality, the author understands both issues as one and the same construct, termed *Communication/Cooperation*. Due to its broad spectrum, the

communication construct of the literature touches on three specific constructs identified by Stage II, i.e., *Early information*, *Feedback*, and *Openness*. These three constructs not only contain communication aspects, but other issues also. Therefore, the three factors, together with *Communication*, cannot only be found in the intersection of Sets 1 and 2 but also in their respective Sets. The same can be said for *Bonds* (literature construct) and *Type of Relationship* (Stage II finding). Turnbull and Wilson (1989), for instance, explain that structural bonds and social bonds exist. Structural bonds, according to the authors (ibid.: 233), exist when "the two parties make investments that cannot be retrieved when the relationship ends, or when it is difficult to end the relationship due to the complexity and cost of changing sources." Later, Wilson (1995: 339) defines social bonds as "the degree of mutual personal friendship and liking shared by the buyer and seller." Again, the constructs *Bonds* and *Types of Relationship* share similarities but clearly, neither necessarily encapsulate an identical meaning (refer to section 6.6.2, starting on page 172). Both constructs can be found in the intersection as well as in their respective sets of the Venn Diagram.

It is worth noting that the lists of constructs in the figure are in alphabetical order. The analysis revealed the specific importance that is attached to each of them in terms of differentiating high-quality supplier relationships from low-quality ones. The most important constructs are highlighted in bold. *Trust* and *Commitment*, for example, are two of the most important RQ constructs. In both, consumer and industrial market settings, central to the measurement of the magnitude of a relationship between a customer/buyer and service personnel/provider/seller, are the constructs trust and commitment.

Stage II also explored the nature of supplier relationships, and the model shown in Figure 6-15 (on page 175) accommodates the two elementary dimensions: the objective level and the subjective level. Metcalf et al.'s (1992) identified some general elements of exchanges (product/service, information, sociality and money), but the model put forward in this thesis goes beyond the basic elements. Instead, the perspective accounts for economic as well as non-economic aspects and represents two major classes, which were recently put forward for understanding relationships in the supply chain (Geyskens, 1999). The

objective level was termed 'transaction contract' by Macneil (1985, as cited by Sydow, 1997) and simply as 'written contracts' by Rousseau (1995). Discussing the supplier relationship model with key informants has shown that the factors *Quality*, *Delivery*, and *Price* are the constructs that represent the objective level of supplier relationships. By contrast, the subjective level has been referred to as 'relational contract' by Macneil (ibid.), and as 'psychological contract' by Rosseau (ibid.). This level captures the softer relationship quality constructs of *Trust*, *Openness*, *Commitment* etc. that are brought to light by this study.

The two-level schematisation of the model enabled the separation of all constructs in terms of their objective and subjective characters. The two levels are terms, which are used artificially to divide what might be perceived as a whole by the buyer's side. Indeed, Stage II has shown that manufacturers describe supplier relationships across both dimensions.

It has to be pointed out that a relationship would even exist on the subjective level alone. Yet, as respondents emphasised, in business-to-business relationships the objective level is the main purpose of the supplier relationship. The subjective level is more 'beneath the surface' and hence, shoulders the objective exchange. In doing so, subjective elements strengthen the supplier relationship overall, as both levels symbolise complementary and interwoven processes. Relationships, so construed, admit of degrees of the perceived relationship quality. When describing the differences between social and economic exchange, Blau ([1964] 1992: 94) rationalizes that "only social exchange tends to engender feelings of personal obligation, gratitude, and trust; purely economic exchange as such does not." This explains that relationships based on an objective level only (i.e., quality, price, and delivery) have lower levels of relationship quality, whereas when a subjective dimension is involved in the supplier relationship, the manufacturer perceives the quality of the relationship as being higher. It also explains that respondents describe the changes of relationship in terms of higher and lower relationship quality levels (refer to Figure 6-16 on page 178). Interorganisational exchange theory suggests that successful relationships rely heavily on social exchange behaviour such as trust and commitment (e.g., Blau, [1964] 1992, Williamson, 1975; Ring and Van de Ven, 1994). Trust and commitment are built on a personal

level. Blau ([1964] 1992: 35), for instance, argues, "deep intrinsic attachments fundamentally alter the social transactions in interpersonal relations." The intrinsic – or subjective – level of the supplier relationship represents a social bond and consequently, it shapes a particular 'type of relationship' (which is one RQ construct, i.e., 'personal' vs. 'business'). Weitz and Jap (1995: 316), for instance, refer to the growing body of evidence that "personal relationships have been found to shape economic outcomes in interorganisational exchange." This train of thought poses the question of whether the quality of relationships has an influence on the supplier selection process and with it, on the manufacturer's loyalty.

As a consequence, the next issue to explore was the way suppliers are selected in terms of the functions involved, the process, and the criteria used. Stage II has shown that the three purchasing scenarios have a great influence on the selection process and criteria used. A straight re-buy scenario is based on the official selection criteria and hence, only the objective supplier relationship level will be assessed. In short, only quality, delivery, and price are evaluated. The modified re-buy and new task scenarios are evaluated with regard to subjective measures in addition. These are not codified in any way and the manufacturer tries to objectify them in team discussions. Certainly, in these scenarios the subjective relationship level seems to have an impact on supplier selection, but it is unclear to what extent. In addition, how the subjective relationship quality level 'competes' against the official measures is unknown.

To the knowledge of the researcher, no previous study has deliberately taken the three purchasing scenarios into account and measured the differences in terms of the criteria used in supplier selection. To this end, the Five-Step Supplier Selection Process, suggested in Figure 6-17 (on page 180), might present a good basis to start from. However, Stage III has to concentrate on one purchasing scenario only and the modified re-buy scenario appears as the most suitable one, given the likely mix of tangible and intangible factors (as discussed earlier).

The research discovered that a modified re-buy always takes place when new products need to be developed. In the literature, the introduction of a new product or service is the purchasing situation when manufacturers select new suppliers or

develop existing suppliers. Birch (2001b: 37) argues "discussions with potential suppliers should take place as early as possible, allowing them to contribute their expertise and knowledge to the introduction of the new product or service,..., new suppliers are vital for all businesses because they drive competition and competence." By describing new product development, Birch highlights some of the major aspects of a modified re-buy scenario (refer also to section 2.7.3 on page 69, where this aspect has been explained in greater detail). It became apparent in the interviews that both industry sectors associate the new product development scenario with the modified re-buy.

6.8 Limitations of Stage II

Stage II aimed especially at exploring the concept of relationship quality and certain limitations have to be mentioned:

1. The Repertory Grid Technique, which is the major feature of the research design of Stage II, was developed on the basis of personal construct psychology (PCP) and constructivist philosophy. Hence, not all of what the analysis of the repertory grids offers is suitable to compare across a sample. The focus typically rests on the individual participant, not on a number of respondents. Principle Component Analysis (PCA) is one case in point because representing 'reality' in two-dimensional space is problematic and the output has to be interpreted with caution. Moreover, comparing PCAs across a sample with a scientific rigorous and established approach is impossible. However, it provides useful insights into the ways high-quality relationships differ from low-quality ones. Therefore, the PCA outputs were only used as a sense-check mechanism. Typically, this mode of analysis is mostly employed as a device for follow-up conversations with respondents and typically, the results are discussed on an individual level only (e.g., in personal counselling). The researcher did not integrate this part in Stage II, as PCA of respondents cannot be aggregated or compared in any way. As a consequence, other potential findings resulting from the repertory grid technique could not be compared

across respondents and had been excluded from further analysis. Follow-up interviews might have provided even more useful qualitative information.

2. Not all constructs are equally important when explaining the quality of supplier relationships. Without paying particular attention to the numbers of the repertory grids (i.e., the evaluations by respondents), the inequality of constructs can easily be overlooked. The researcher took the frequency count and the weighted variability index into consideration, which, in combination, can be interpreted as a measure of construct importance. This approach is in line with Goffin (1992), Khan (1993), and Lemke et al. (forthcoming). In addition, the researcher also paid attention to the mean differences between the high quality supplier relationships and low quality relationships. Analysing constructs from different angles ensured that no important construct was overlooked and the relative important was determined. On this basis, the seven most important constructs were selected, although eleven constructs fulfil the 'requirements of importance.'
3. The pure numbers of the repertory grids can be meaningless, if the constructs are not fully understood. The researcher probed deeply into the meaning of constructs when applying the repertory grid technique. The aim was therefore to get enough qualitative information to match the quantitative data. Some of the construct explanations represent rich qualitative material. In order to conduct the analysis, construct definitions needed to be standardised. However, the researcher based the construct definitions on original quotes of the respondents. The standardisation process pursued two aims: firstly, the definitions should be meaningful to the respondents; and secondly, the definitions should reflect the shared meaning across the sample. To this end, in addition to the researcher's coding, an expert in the supplier management field (a native speaker) coded the transcripts. By comparing the coding and discussing the differences, standardised definitions based on the qualitative data were created. Afterwards, the researcher sent these definitions to the

respondents for a sense-check. The field validation confirmed that the definitions are meaningful and valid in this particular research context. However, in this procedure, the construct explanations lost some of their richness.

4. The constructs are valid within a 'range of convenience,' as Kelly (1963) terms it. Gammack and Stephens (1994: 84) attribute this range to the basic character of the repertory grid technique, as "applying the method constructively, and (following Kelly) assuming humans to be meaning-constructors, implies that the product of the research must be understood by reference to the individuals in the social world it concerns." This implies that the meaning of a given construct (e.g., flexibility) holds best when explaining supplier relationships. The more one moves away from the research context, the more likely it becomes that the meaning of the construct changes. The range of convenience also means that the findings of this study become less valid the more one tries to generalise them beyond the selected industry sectors of the present investigation.
5. The research of Smith (1998) showed that certain relationship constellations in terms of sex (i.e., male-male, male-female, and female-female) had some effect on relationship quality in certain cases in Canada. This PhD research was not designed to capture this possibility. In addition, the overwhelming majority – all but two of the respondents – were male.
6. Overall, Stage II came closer to detecting a link between RQ and Loyalty. For instance, selecting suppliers in a 'straight re-buy' seems to be purely based on the objective relationship level – quality, delivery, and price are the selection factors. A 'new task buy' might be more based on subjective measures than objective ones. The 'modified re-buy' scenario requires a mixture of objective and subjective factors to be evaluated (refer to Figure 6-17 on page 180). Still, the probable influence of the subjective relationship level on selecting suppliers is highly speculative at this point. The next stage has to exclusively investigate the potential connection.

6.9 Summary and Conclusions

Stage I had a number of limitations and Stage II aimed at overcoming these when exploring the quality of supplier relationships. In this stage, case studies were conducted, consisting of the analysis of company documents, a plant visit and in-depth interviews. The interviews were set up in three parts, a fully structured section, an unstructured part guided by the repertory grid technique, and a semi-structured part.

The goal of Stage II was to determine the relationship quality (RQ) constructs as well as to explore their meaning. The repertory grid technique was applied, which involves identifying suitable elements, eliciting constructs and obtaining the ratings (Gammack and Stephens 1994). The aims of Stage II were fulfilled and in the 48 interviews, 96 RQ constructs were elicited. The constructs and the explanations provided by respondents, together with the ratings, form a rich pool of data. Subsequently, the identification of the most important RQ constructs was an issue and the results are as follows:

Firstly, it is interesting to observe that a great number of respondents mentioned the classic factors *Quality*, *Delivery Performance*, and *Price*. These were the most obvious constructs to name when describing the quality of supplier relationships. It might not be a coincidence that these are also the official evaluation and selection criteria in practice. This research indicates that the three factors are still very important in supplier relationships.

Secondly, detailed analysis showed that the three traditional selection criteria did not have the power to differentiate high-quality supplier relationships from relationships with lesser quality levels. This means that not only 'standard suppliers' are able to offer high quality products, on-time, for a competitive price, but also high-quality suppliers. High-quality relationships go beyond the traditional measures. The greater the extent to which *Trust*, *Commitment* and other subjective constructs are perceived to exist, the greater the quality of the relationship.

Thirdly, the outcome of Stage II allowed the researcher to identify and select the seven most important constructs for Stage III (i.e., *Trust*, *Feedback*, *Openness*, *Early Information*, *Problem Solving*, *Complaint Handling*, and *Type of*

Relationship) along with the three official selection criteria (i.e., *Quality*, *Delivery*, and *Price*).

Fourthly, the researcher learned that managers in the research context evaluate suppliers on a computer system. The system computes a score, which determines the supplier class (i.e., A-, B-, or C-Suppliers) in terms of the performance levels they provide. With the three groups there is some analogy to the research approach of Stage II. The researcher asked the managers to name three supplier groups, although the evaluation was based on relationship quality constructs and was not limited to the official performance and selection measures. With hindsight, this way of categorisation of elements was a highly effective way to carry out the repertory grid technique.

Fifthly, suppliers are officially selected based on the three well-established criteria: *Quality*, *Delivery*, and *Price*. The Five-Step Supplier Selection Model provides a good snapshot of how suppliers are selected in practice (refer to Figure 6-17 on page 180). In Stage I, it was unclear why some organisations use *Approach 1* while others follow *Approach 2* (refer to Figure 5-6 on page 109). In Stage II, however, respondents explained that both approaches were in place, depending on the purchasing situation. Objective measures will be evaluated if the situation is a straight re-buy; more and more subjective factors complement the objective criteria as soon as the situation tends to be a modified re-buy or new task scenario.

Sixthly, investigating the selection of suppliers and determining the best modified re-buy scenario from the practitioner's viewpoint for Stage III was an issue. This is so because managers consider objective as well as subjective factors for selecting suppliers. Respondents explained that selecting suppliers in a new product development situation fulfils the requirements of a modified re-buy scenario. Moreover, the situation is a common occurrence in practice and respondents are able to relate to it very well in both industry sectors.

Overall, the researcher captured the commonalities of knowledge that underlie practice with individual repertory grids in Stage II and therefore, this constitutes an important source of insight for developing the research design of Stage III. The selection process suggests a trade-off process where suppliers are compared on the

basis of the three criteria, price, quality, and delivery. Only the objective measures were documented. However, above a certain performance cut-off point (e.g., 97% of performance and over), a supplier enters the 'A-Category.' Suppliers in their respective groups are comparable in terms of measured performance and it is unclear, on what basis the final decision is made.

Decision makers are used to search for additional information on the Internet and, together with the information provided from the computer system, evaluating suppliers on a computer screen is a familiar affair. Unfortunately, it is not clear how well or poorly the soft subjective factors compete against the objective ones in the decision process at this point in the investigation. Some respondents explained that the subjective element is a crucial one in every supplier relationship. But maybe the intangible factors on the subjective relationship level do not make any difference in the supplier selection process after all. The results of Stage II are very general and inconclusive in this respect and Stage III has to focus on exploring this possibility in detail.

CHAPTER SEVEN

7 STAGE III: DETERMINING THE LINK BETWEEN RELATIONSHIP QUALITY AND LOYALTY 195

7.1 INTRODUCTION 196
7.2 RESEARCH STRATEGY: EXPERIMENT 196
7.3 METHODOLOGY (QUANTITATIVE) – CONJOINT ANALYSIS 197
7.4 SAMPLE AND UNIT OF ANALYSIS 222
7.5 DATA ANALYSIS 237
7.6 FINDINGS 247
7.7 DISCUSSION OF FINDINGS AGAINST THE BODY OF KNOWLEDGE 299
7.8 LIMITATIONS OF STAGE III 302
7.9 SUMMARY AND CONCLUSIONS 306

7 Stage III: Determining the Link between Relationship Quality and Loyalty

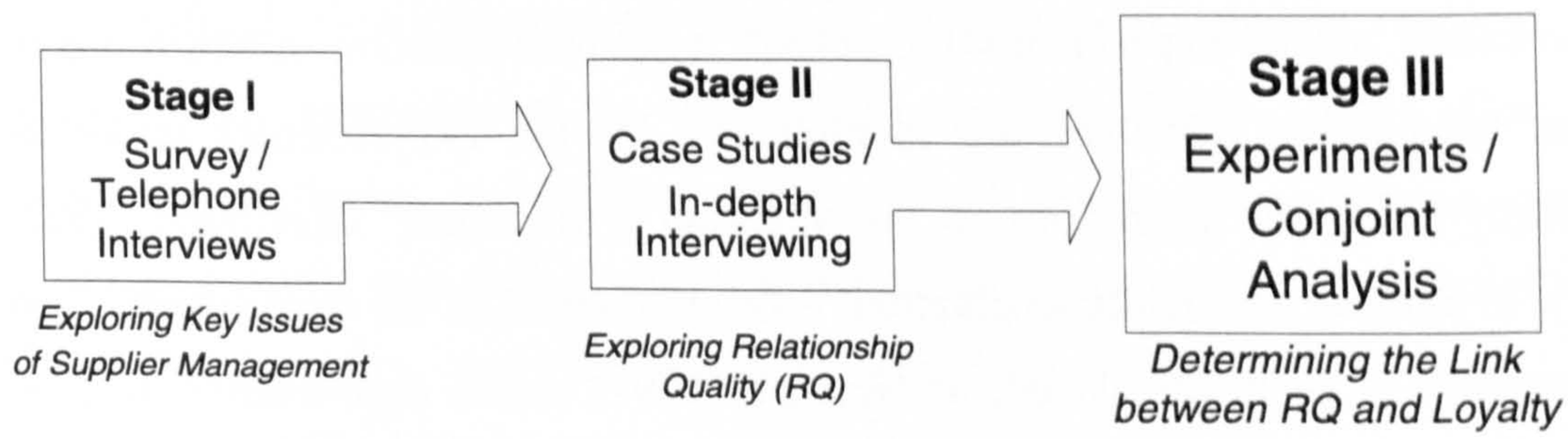


Figure 7-1: Stage III of the Research

7.1 Introduction

Stage III of the research centred on exploring whether relationship quality has an influence on the supplier selection process. The previous stages showed that manufacturers evaluate different factors (i.e., supplier attributes) against each other in the process. Investigating the connection between relationship quality and the customer's loyalty diverts the focus to process methods in decision making. The purpose of these methods is "to observe mental processes as closely as possible during decision making" (Carroll and Johnson, 1990: 12). The experiment is the appropriate research strategy to put this mental process under the spotlight – and this for reasons that will be explained in this chapter.

7.2 Research Strategy: Experiment

An experiment is "a mode of scientific observation," as Babbie (1995: 233) points out. The author describes the foundation of experimental designs in terms of 1) taking action and 2) observing the consequences of that action. Two types of experiments follow this basic idea and are commonly differentiated: *laboratory experiments* and *field experiments*.

Whereas the research in laboratory experiments is isolated in a physical situation (i.e., apart from the usual environment of the participants/subjects) and the researcher has virtually full control over the investigation, field experiments (also called 'natural experiments') represent "a realistic situation in which one or more independent variables are manipulated by the experimenter under as carefully controlled conditions as the situation will permit" (Kerlinger, 1992: 369). In terms of the 'realistic situation' – or the realism of the experiment – two forms have to be distinguished, as Neuman (1997) notes: *experimental realism* and *mundane realism*. A high degree of experimental realism is ensured, when "subjects are caught up in the experiment and are truly influenced by it" (Neuman, 1997: 192-193). To achieve mundane realism, the study aims at capturing as much reality as possible in order to have "the ability to generalise from experiments to the real world" (Neuman, ibid.: 193).

It would seem that laboratory experiments are to be favoured, as long as the researcher has the opportunity to control virtually all variables and when a high level of experimental realism is the aim of the research. Conversely, field experiments seem to be better suited to adding a high degree of mundane realism to the research project, because "generalisability to the 'real world,'" as Robson (1996: 85) emphasises, "is almost self-evidently easier to achieve when the study takes place outside the laboratory in a setting which is almost real 'real life.'" It is the latter objective the present investigation strives to accomplish: exploring the impact of relationship quality on the supplier selection processes within a 'real-life' business context suitable for generalising the findings to this particular business environment. In turn, this means that a laboratory experiment would not serve the purpose of Stage III. Laboratory experiments were consequently rejected and the strategy of conducting field experiments was selected instead. In the field, conjoint analysis proved to be a valuable methodology within the selected research strategy.

7.3 Methodology (Quantitative) – Conjoint Analysis

One way of observing mental processes of decision making is provided by *Conjoint Analysis* (also known as *Trade-off analysis*), which is a multivariate method that analyses preferences of individual decision makers. Conjoint analysis is a natural development of conjoint measurement already applied by mathematical psychologists in the 60's (Luce and Tukey, 1964). Conjoint measurement theory investigates the functional relationships between multi-attribute stimuli and their subjective value as perceived by the individual. However, the term 'conjoint analysis' was first introduced by Green and Srinivasan (1978: 103) to indicate "models and techniques that emphasize the transformation of subjective responses (to objective stimuli) into estimated parameters." The authors (ibid.: 104) define this type of analysis as "any decompositional method that estimates the *structure* of a consumer's preference,..., given his/her overall evaluations of a set of alternatives that are pre-specified in terms of levels of different attributes." In this vein, conjoint analysis

(CA) is often applied to measure the perceived values of specific product attributes and to forecast what the likely acceptance of a product would be if brought to market. Wittink et al. (1994) report that conjoint analysis is the most popular research tool for commercial applications in Europe. Today, CA has become a widely-used quantitative method in consumer marketing research. In this context, main product attributes become pre-defined (e.g., various characteristics of chocolate bars) and the (potential) consumer cognitively trades off certain attributes against others.

Apart from the end-consumer market, CA is potentially suitable for "evaluations of supply alternatives by an organizational buyer,..., Thus, one can argue, these evaluations are among the most important inputs to industrial marketing strategy" (Green and Wind, 1975: 113). Naudé and Buttle (2000: 355) confirmed recently, "[conjoint analysis] is an approach well suited to understanding how buyers trade off different features.,..., While other quantification techniques do exist,..., conjoint analysis remains the best approach to understand how such trade-offs are made." One interesting aspect of conducting CA in this research is that applying trade-off scenarios in supplier selection has received scant empirical attention by researchers (cf. Katsikeas and Leonidou, 1996). For conducting such an analysis, Churchill (1999) highlighted six steps (refer to the figure below).

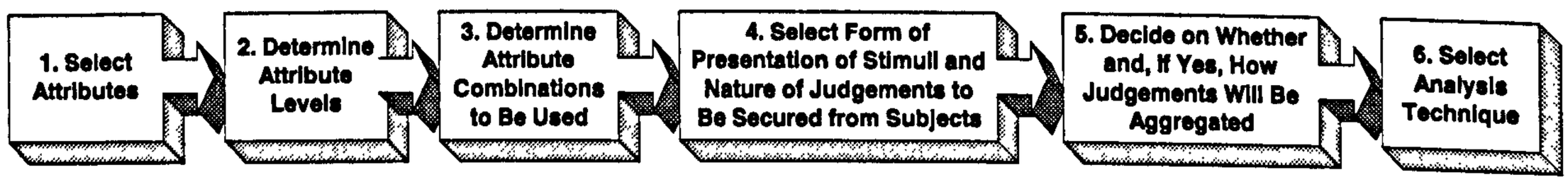


Figure 7-2: Key Decisions When Conducting a Conjoint Analysis

Source: Based on Churchill (1999: 433).

As illustrated in the figure above, CA assumes that any product or service is evaluated as a collection of attributes (step 1). The most important ones will need to be selected for the analysis. While attributes are the key dimensions of a product or service (e.g., quality), the levels are the specific points along these dimensions (e.g., high quality, average, poor quality), which have to be determined (step 2). In step 3, the attribute combinations need to be assessed as

not all possible combinations might make sense in the consumers' eyes (e.g., the combination of highest product quality imaginable and lowest price possible). Step 4 is concerned with the presentation of the attribute combinations and how the preferences of individual consumers will be observed. The researcher has to be clear about how to aggregate the individual results (step 5) and different ways of analysis are open in step 6.

Steps 1-4 will be outlined in this section of the chapter; steps 5 and 6 will be discussed in the section that deals with the analysis of data (refer to section 7.5 on page 237).

7.3.1.1 Attributes

In this particular piece of research, the attributes of the conjoint analysis are the RQ-constructs of the supplier relationship (in repertory grid terminology) that are considered in the selection process. A particular attribute combination is termed a 'choice set' or 'profile.' This prompts the question of which attributes to include in the supplier profile.

In order to measure the RQ-influence on the manufacturer's decision to maintain relationships with particular suppliers, the important RQ-attributes need to be mixed with the official supplier selection criteria. Although a large number of relationship quality constructs were elicited in Stage II, the researcher selected the seven most important ones, as explained earlier (refer to page 172). In addition, the three formal selection criteria (i.e., price, quality, and delivery) will be considered as well in order to make up a meaningful choice set. Just as in other experimental designs, the researcher chooses only those factors (independent variables) that will most influence the subject's preference when choosing a supplier (the dependent variable). The mix of ten factors should provide a realistic measure of how suppliers are selected.

In CA only the labels of attributes, rather than the meaning, will be presented to the respondents, e.g., price, quality. The potential risk of a CA study is that respondents might not be clear about what is meant by the labels; particularly if a label would represent the meaning of an intangible attribute. However, intangible constructs have been objectified earlier in Stage II as "measurable constructs are

likely [in case study research] because they have already been measured during the theory-building process" (Eisenhardt, 1989: 547). In other words, presenting attribute labels should suffice in this stage of the study, as they are meaningful to the participants.

7.3.1.2 Levels

Attribute levels are the possible states of an attribute, e.g., high or low product quality. In Stage II, constructs were evaluated on a 5-point perceptual scale starting from +2 (construct pole), 0 (average), to -2 (contrast pole). This approach was suitable for carrying out the repertory grid technique; for conducting the conjoint analysis, however, describing suppliers attributes on five different levels gives too much information to process when making a choice.

Interestingly, in order to identify which RQ attributes are more important when explaining a 'good relationship', Naudé and Buttle (2000) conducted a conjoint analysis in a mailed questionnaire design. They decided on three attribute levels per construct, i.e., 'essentially better than,' 'the same,' or 'worse' than the current relationship. Hence, their 3-attribute-level-system centres on average, better, and worse levels. The authors took this approach, as they had not clearly identified the RQ attributes in the first place. Therefore, the three generic levels were appropriate.

A similar 3-level approach will be taken in this research. However, rather than simply defining attribute levels in terms of an average, better, and worse, the attribute levels will be individually defined by the construct pole, the contrast pole, and the point between the two (i.e., the average). These levels proved to be meaningful in the research context in Stage II and seem perfectly suited to capturing the attribute dimensions in Stage III.

Finally, Verma and Pullman (1998) designed their analysis by presenting the extremes of attribute levels (e.g. 'on-time delivery' = sometimes late vs. always on time). Also, these researchers did not identify the attribute levels in their particular research context. Presenting only the extreme attribute forms appeared a feasible option. There is a drawback to this approach: suppliers might be misrepresented, as the attributes they provide are sometimes best represented by

the midpoint of the extremes. Giving the respondents the option to choose 'average suppliers' (e.g., provides products at the market price, rather than merely above or below competitors) makes the whole experiment more realistic.

For the present research it can be concluded that considering more than the construct and contrast poles has an advantage: the 'average' level adds more realism to the experiment as not all suppliers provide attributes in their extreme forms to the manufacturer.

7.3.1.3 Attribute-Level Combinations

The ten supplier attributes could be combined in many ways. For instance, 'delivery on time' (i.e., delivery=attribute; on time=level) could be combined with 'price is less expensive,' and 'price represents the market price,' as well as 'price is more expensive.' However, not all theoretical combinations might appear realistic to the respondents. In order to identify possible combinations that should be excluded, the researcher conducted pilot experiments, to be discussed later (refer to page 222).

7.3.1.4 Presentation of Stimuli

The stimuli in a conjoint analysis can be presented in many ways. This section will address the possible presentation types as well as additional design issues.

7.3.1.4.1 Type of Presentation

In order to gain statistically significant results from the experiment, it is important that a high degree of realism is achieved in the hypothetical choice set (Ortuzar and Willumsen, 1994). The basic requirement is that the CA design should ensure that the respondents understand the choices presented and carefully appraise their relative merits.

There are three general approaches to collecting data for conjoint analysis, according to Hair et al. (1998): the *trade-off presentation method,* the *full-profile presentation method,* and the *pairwise combination presentation method.* The

figure below compares the three approaches visually with examples from the end-consumer context:

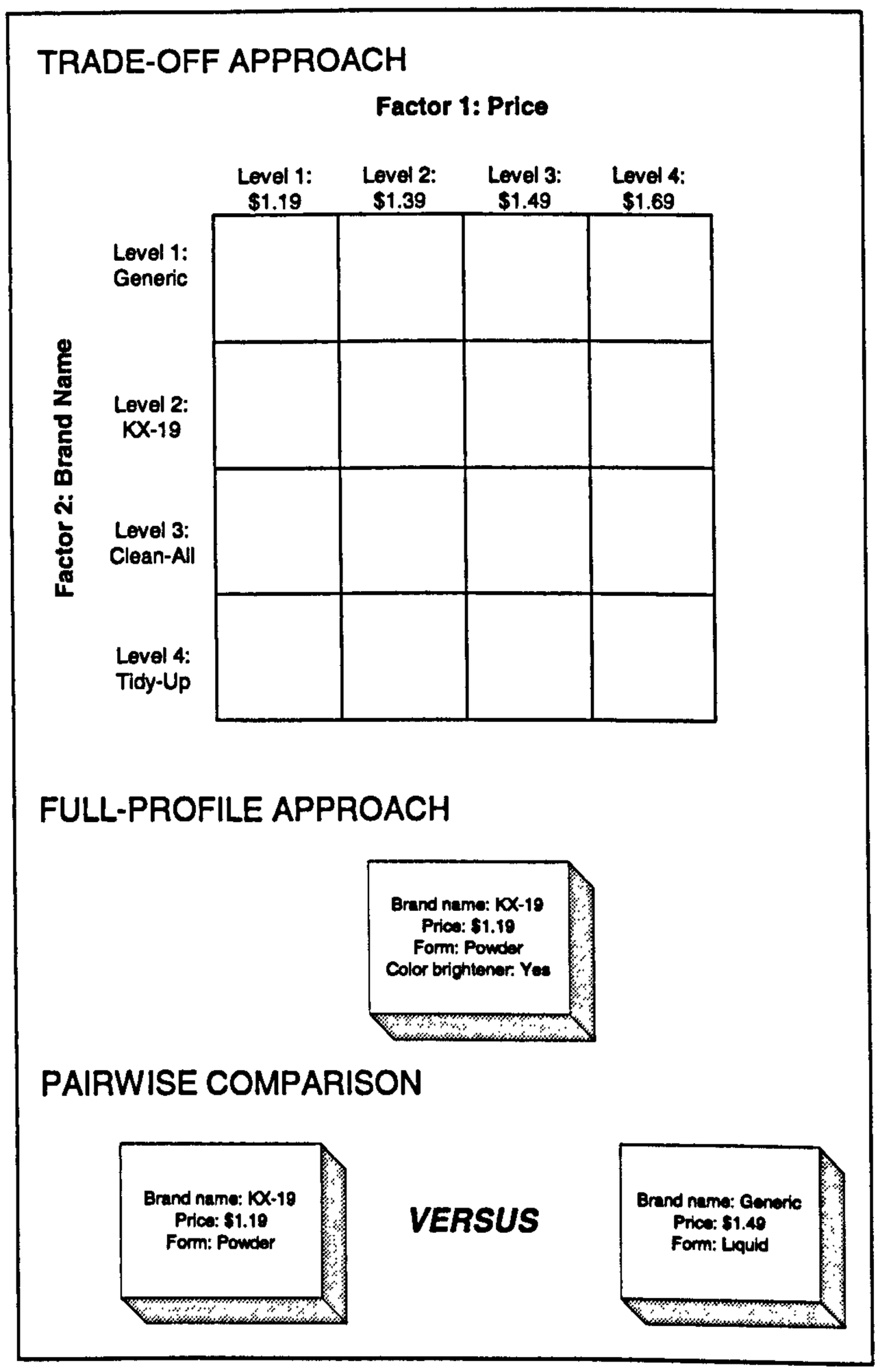


Figure 7-3: Examples of the Trade-off and Full-Profile Methods of Presenting Stimuli

Source: Hair et al. (1998: 413).

The trade-off approach (refer to the top of Figure 7-3) is easier for the respondent to use, as only two attributes need to be compared and evaluated at a time (i.e., price trade off against brand name in the example or quality against delivery in Stage III). However, the two-attribute design is less realistic, particularly when considering trading intangible supplier attributes against each other (e.g., trust vs. feedback). Intangible relationship quality attributes seem to be emotion-laden, which could very well force an emotional trade-off by individual decision makers (e.g., Luce et al., 1999). Moreover, not many attributes can be integrated in this

way, as a) only two of them can be traded off at a time, and b) each attribute has to be traded against all others directly.

In the full-profile (refer to the second option in the figure above), the researcher presents all attributes of a product or service to the respondent. This approach is therefore not only more realistic but also more complex. The respondent is left with ranking or rating all profiles. So, each decision-maker is presented with a list of these attributes on individual cards – these are called 'profiles,' as explained earlier. The following figure illustrates the method:

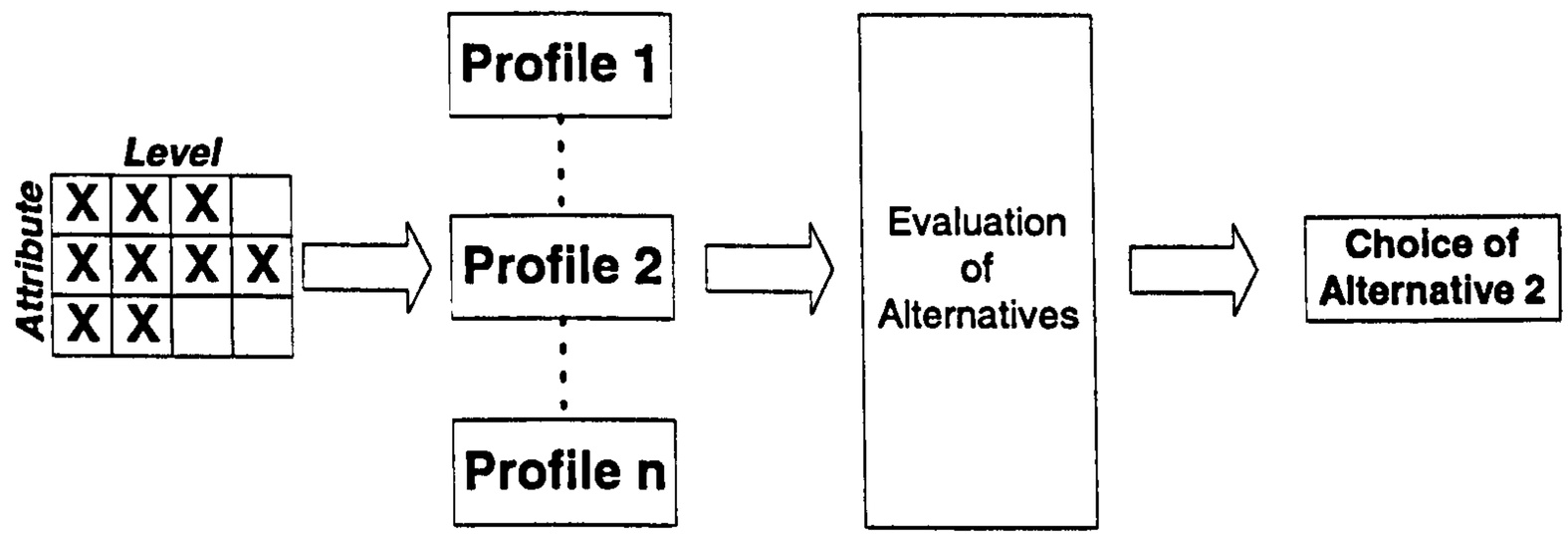


Figure 7-4: Full Profile Conjoint Analysis

Source: Based on Reutterer and Kotzab (2000: 29).

Figure 7-4 shows how different attribute-level combinations enter the profiles. In the example, one attribute has three levels, another has four levels, and yet another has two levels. In conjoint analysis terms, a profile represents the *total utility of a potential supplier* (i.e., holistic value as a subjective preference judgement). The dilemma occurs when one would like to combine all attributes with all attribute levels. The problem presents itself as a vast number of ways in which the attributes can be combined. The number of attributes and levels has a direct effect on the number of profiles and in turn, on the time to complete the CA task. In order to manage all potential combinations of attributes (i.e., stimuli), it is often argued that the *fractional factorial design* is favoured, as it presents a suitable fraction of all possible alternatives. Fractional designs are used when presenting all alternatives would be too time-consuming, too expensive, or fatigue the respondent, thereby potentially invalidating the responses. It is an approach in which only a small subset of all possible combinations will be used; this is called an *orthogonal array*.

Despite the advantages, the full-profile method is not flawless and faces two major limitations. First, as the number of factors increases, so does the possibility of information overload. Psychologists have long recognised that respondents have difficulty processing more than about six attributes at the same time in terms of the amount of information that human beings are able to receive, process, and remember (Miller, 1956). Respondents that see all attributes of products at once tend to use simplification strategies when faced with so much information to process. Therefore, respondents are tempted to simplify the process by focusing only on two or three salient attributes and largely ignore the others, when in an actual situation all factors would be considered (Huber, 1997). In this way, the influence of all attributes cannot be computed accurately in the supplier selection process. Second, the order in which factors are listed on the stimulus profiles may have an impact on the evaluation. Consequently, the researcher needs to rotate the factors across respondents when possible to minimise order effects (cf. Hair, et al., 1999).

Although many conjoint studies are conducted in the full-profile approach, "the choice of presentation media is situational and the best medium for one study might not be appropriate for another" (Verma and Thompson, 1999: 895). Stage III of this study incorporates ten supplier attributes, which renders the full-profile approach unsuitable for collecting the data. When analysing and interpreting the data, however, the fractional factorial design of supplier profiles will be helpful and it will be referred to in the respective chapter (see Table 7-6 on page 239).

The remaining presentation method, the pairwise comparison, combines the other two methods. On the one hand, two different supplier profiles have to be traded off against each other before another pair is presented. On the other hand, the profiles do not contain all attributes, ten in the present case, but a few at a time. Thus, the respondent has to make choices between pairs of particular attribute-level bundles and this design permits the inclusion of more than six attributes. It is similar to the trade-off method in that pairs are evaluated, but in the case of the trade-off method the pairs being evaluated are attributes, whereas in the pairwise comparison method the pairs are profiles with multiple attributes.

As organisational purchasing has been described as "the process by which organisations,..., identify and compare the supplies and suppliers available to them" (Baily, 1998: 783), the pair-wise approach is the preferred method of data collection in Stage III on theoretical grounds. In practice, this method is the only presentation that is efficient in trading off all supplier attributes against each other.

7.3.1.4.2 Design Issues

In order to add an even greater degree of realism to the CA experiment, three issues have to be accounted for. Firstly, the exercise should not include all attributes (and their levels) in all conceivable ways. Certain combinations will need to be excluded in the pair-wise comparison of supplier profiles and this point will be addressed later in greater detail (refer to page 229). Secondly, decision makers in the research context are used to selecting suppliers based on information provided on a computer screen. More often than not, supplier information is even searched for on the Internet, as the case studies have shown. Therefore, it would be advantageous if the conjoint analysis could be computer administered. Thirdly, the design of the exercise should allow the researcher to predefine the following four entities: action, target, context, and time. This point has been highlighted in the literature review where attitudinal and behavioural issues have been discussed (refer to Table 2-11 on page 57). The conclusion was that, as long as the measurement of attitudes and behaviours is consistent, the intention of the respondent to select a supplier would be connected with the actual behaviour to do it.

In terms of *action* (i.e., the manufacturer's loyalty), the conjoint analysis task needs to be phrased in such a way that 'seeking a long-term relationship' is the goal when comparing one supplier with another. With regard to *target* (at which the action is directed), the respondent will have to compare specific attribute levels in the supplier profiles. Therefore, the participant is fully aware of the characteristics of the targets (i.e., suppliers). In terms of *context* (in which the action is performed), the purchasing scenario needs to be introduced early on in the CA design. In Stage II, it was determined that selecting suppliers in the new product development situation is a suitable selection context. In terms of *time* (at

which action is performed), the respondent will have to decide which supplier profile to select directly after evaluating two supplier profiles in order to proceed with the conjoint analysis.

In the experimental design, the respondent is asked which of two suppliers to select for the long-term in the new product development situation. The respondent has to formulate an intention to select certain suppliers (i.e., making a decision to stay loyal to preferred suppliers) and the respondent is likely to act on these intentions (i.e., to select one supplier over another). In this respect, the measurement of the four entities discussed above is consistent. In short, the intention-behaviour link is probably very strong in the experimental design.

The objective is thus to obtain the respondent's overall preference judgements for pre-defined supplier profiles and then to use statistical means to tease out the manager's underlying 'value system.' The central position of the value system can be illustrated as follows:

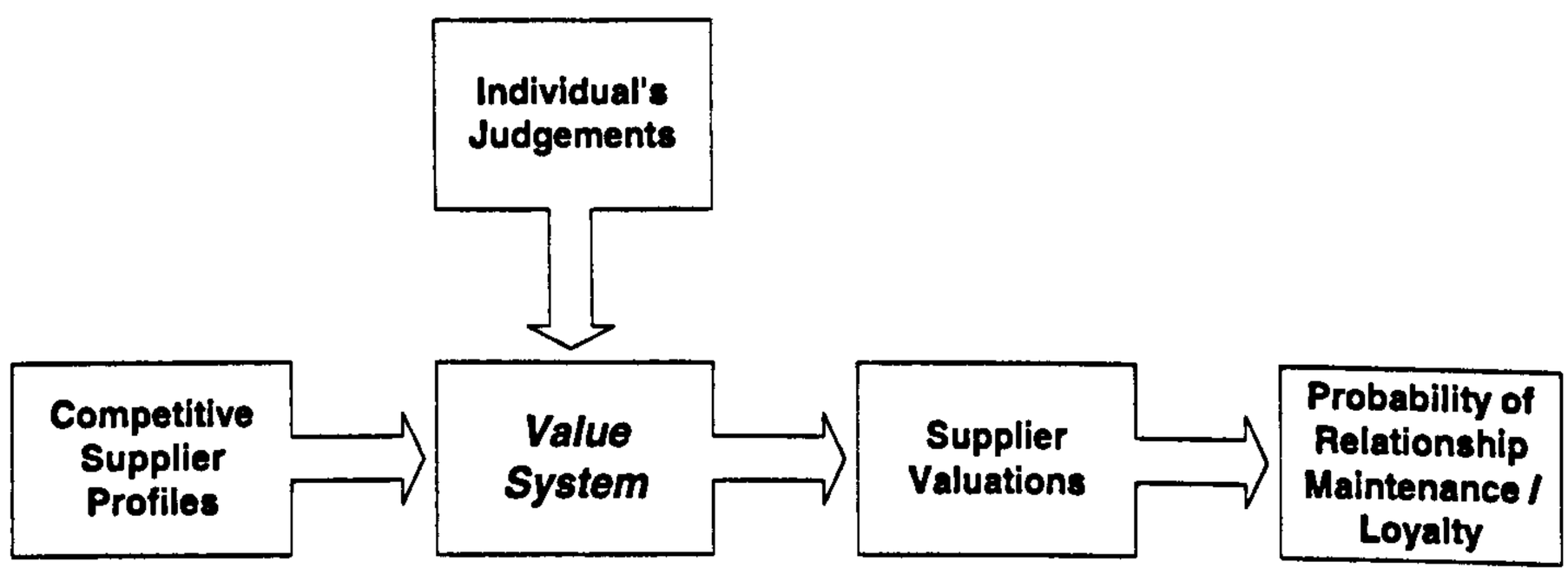


Figure 7-5: Central Role of Value System in Conjoint Analysis
Source: Based on Dolan (1990: 11).

The supplier attributes presented as a profile and the judgment of the individual manager influence the 'value system.' It is worth mentioning that the value system is independent of actual suppliers in the marketplace. As a result, one can determine the value of any supplier as long as he can be described by the set of attributes included in the analysis (Dolan, 1990).

However, one must not forget that the respondent will have to select hypothetical suppliers in a simulated environment. It would be fruitful to go beyond the experimental boundaries and a) to offer the respondent the option to review the results immediately after completion of the exercise and b) to integrate a feature that will allow the respondent to supply the researcher with feedback. All

respondents will be responsible for managing and selecting suppliers. The decisions in the CA will thus be based on practical and absolutely relevant experience. Hence, how managers select suppliers in the experiment and what they write in the feedback form should not be divorced from the things they do in daily practice. Their feedback would indicate whether the measured selection *behaviour in the experiment* would be representative of the actual *behaviour in the organisational context*. In turn, the feedback would validate the findings of the conjoint analysis. This step would correspond to the 'Red-Face Test' in consumer market research (Dolan, 1990), which tests whether the results make sense to the individuals by asking them directly.

The specific requirements prompt the question of which computer programme to adopt in Stage III. When ten attributes or more are involved in CA, Green and Srinivasan (1990) recommend applying methods that combine self-explicated and conjoint data. The Adaptive Conjoint Analysis (ACA) fulfils both requirements and is a programme developed by Sawtooth Software. For Stage III, it is an ideal research tool and will be described next.

7.3.2 ACA – Adaptive Conjoint Analysis

7.3.2.1 Background

Adaptive Conjoint Analysis (ACA) is a hybrid data collection technique that combines self-explicated importance ratings with pairwise trade-off tasks. Huber et al. (1992: 1) explain, "ACA uncovers the microstructure of preferences: how a person would choose, given sufficient information and time." Similarly, Orme (1996) recommends using ACA for modelling high-involvement purchases. Therefore, the software is particularly suited when decision makers use substantial depth of processing (such as in the present study). The ACA algorithm was programmed by Rich Johnson of Sawtooth Software, Inc. in 1985. The main advantage of the programme is that it allows a larger number of attributes and levels to be assessed than is possible with the full-profile approach. ACA was developed specifically for the situation where there are many attributes and levels. Most ACA questions present only small subsets of attributes, so questions do not

necessarily become more complex when there are many attributes in the study. In this way, the problem of information overload, typically associated with the full-profile conjoint approach that includes more than six attributes, is solved.

Suppliers are thought of as possessing specific levels of defined attributes and a respondent's liking or preference for a supplier is modelled as the sum of the respondent's utilities for each of the attribute levels. The term 'utilities' and the way they are calculated will be explained later (refer to 7.5.2 on page 241). However, it might be already apparent at this point that it would be too time consuming and difficult for respondents to evaluate all possible combinations in order to provide information on their values for the various supplier characteristics. ACA works by combining direct evaluations about attributes and levels, with conjoint pairwise comparisons. The interview therefore needs to be adapted in terms of the supplier characteristics shown to the respondent based on their previous answers. Hence, only a carefully computerized chosen set of hypothetical product concepts is presented to respondents for evaluation. This entails each respondent being shown different supplier profiles based on their choices. The answers and successive questions would be used to determine the respondent's preference for each of the attribute levels. The data obtained can serve as a basis for a variety of statistical analyses, making it possible to compare decision-makers against each other.

Given the complexity of many conjoint studies and due to the ability to include a large number of attributes and levels, ACA is the most frequently used method. For instance, a survey conducted by Vriens et al. (1997) found that ACA is the most widely used conjoint methodology in both the US and Europe. Today, as Johnson (2001) points out, ACA is accepted as a 'golden standard' by many practitioners and academics.

ACA is an adaptive technique, which customizes the interview in real time. Tumbusch (1991: 1) explains that the "questions [are] based on the individual respondent's earlier answers and his/her value system [refer to Figure 7-5 on page 206] relative to the product/service category being investigated." As such, it must be computerized. Depending on the research project, this might be a disadvantage. In the present investigation, however, this approach might be welcomed by the

respondents. They usually evaluate and compare supplier performance on a computer screen and base their selection decision on it.

The programme has worked satisfactorily on DOS computers since its introduction in 1985. Today, the software is Windows-based and its latest version makes it also possible to collect CA data over the Internet. It is suggested that implementing a web-based conjoint survey is particularly appealing for Stage III. Remember that decision makers in the research context search for additional supplier information on the Internet as a daily routine. Scholars in the field of CA consider the Internet more often when collecting their data, providing this tool is not alien to the respondents (e.g., Orme and King, 1998).

7.3.2.2 Design Issues – The Different Sections of ACA

The software allows the researcher to create a questionnaire with all the essential sections of an ACA interview: Introduction, Preference Ratings, Attribute Importance, Paired-Comparisons, Calibrating Concepts, and Feedback. The survey can either be conducted a) on a (portable) computer, b) by sending a floppy disk to the respondents that includes essential parts of the programme as well as the survey and the respondent will need to run it on a local machine before returning the disk to the researcher, or c) on the Internet. The researcher selected option c), the on-line version, and the sections of the ACA survey will be described next.

7.3.2.2.1 Introduction

The Internet is often associated with an open system that can also be observed by a third person when important information is transmitted from sender to receiver. Indeed, posting the questionnaire on the Internet gives anyone connected to the Internet potential access to the survey. Therefore, the respondents' anonymity needed to be ensured in Stage III. To start with, the researcher created a website (http://www.lieferantenselektion.com; *lieferantenselektion* is the German term for *supplier selection*) and modified the on-line environment of the ACA survey.

In order to control the security problem, the researcher created a unique password-user-name combination for each respondent that allowed access to the

web-site. The user-name was created at random and was a selection of letters and numbers. After keying in the name, respondents used their randomised password to begin the conjoint analysis. This process had several advantages. Firstly, a 'normal visitor' or 'guest' of the web-site would not be able to proceed beyond the entry screen. Secondly, the respondent would not have to reveal his/her real name nor the name of the organisation. Thirdly, if necessary, a respondent was able to start and leave the survey prematurely and use the password to resume the survey at a later time. Fourthly, once a respondent had completed the survey, the password was rendered inoperable, preventing repeated access to the survey site. Fifthly, providing respondents with passwords only permits them to access the survey; it does not give them access to other aspects of the Web server. Sixthly, only the researcher was able to trace the real identity (i.e., name, function, and sector), which was important for statistical purposes in the analysis.

The figure below displays the entry screen of the web-site. It should be noted that all figures that show screenshots of the survey are translated versions. The original survey was conducted in the German language.

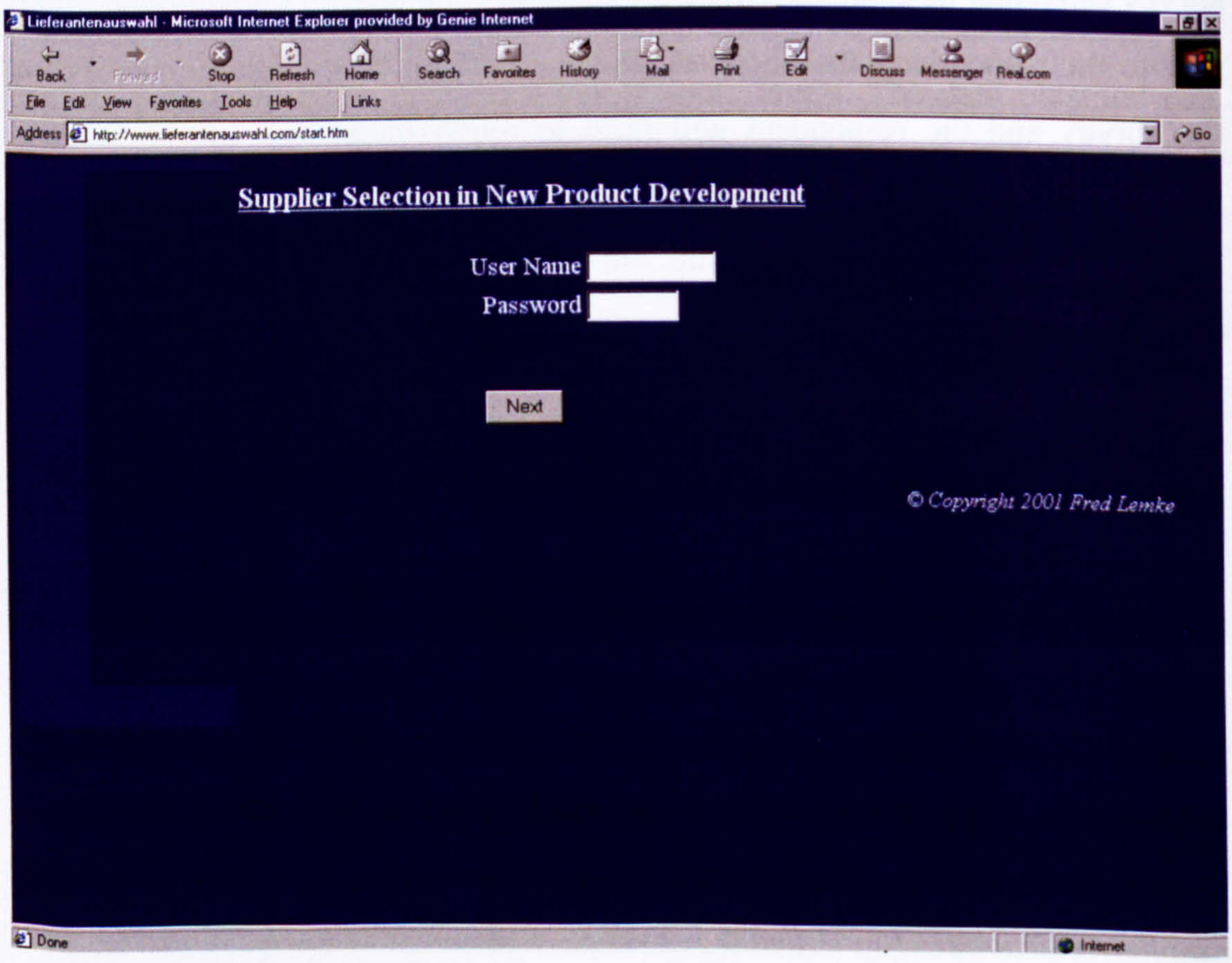


Figure 7-6: Initial Entry Screen of the On-Line Survey

As indicated in the figure (and it will become more apparent later), the design of the web-site aims to offer the user a simple way to submit information. Therefore, the background is kept in blue, while the information is displayed in white. Completing the exercise is a simple point-and-click task for the respondent.

As soon as the system validated the entry data, the respondent was asked about the function and industry sector of the organisation (refer to the figure below).

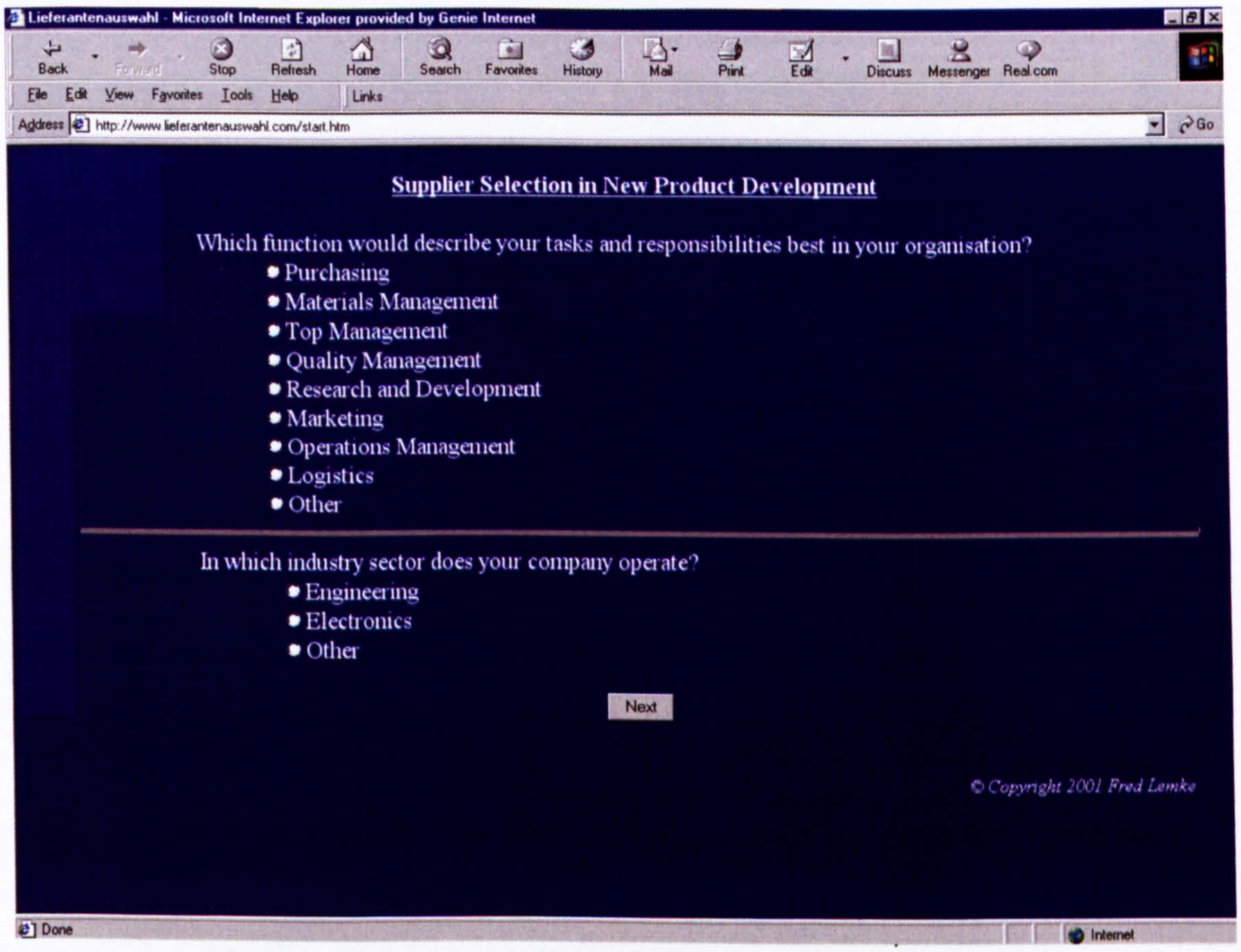


Figure 7-7: Function and Industry Sector Questions of the On-line Survey

As shown in Figure 7-7, the respondent is presented with a list of all relevant functions and industry sectors. Although a given user-name-password key is associated with a particular function and industry sector, asking the respondent to separately select the information was another way to double-check whether the manager who was supposed to complete the survey actually did it. In addition, the analysis became more flexible, as the selected functions/industry sectors enabled the researcher to conduct brief up-to-date overviews on-line where functions and

sectors instantly served as categories. The respondent was re-assured that he/she was being treated anonymously, which was a bonus. Finally, the participant was encouraged to continue the survey, as the complexity of the initial questions was very low.

Next, it was important to convey the context (i.e., the modified re-buy scenario and the loyalty concept) in a language meaningful to the respondents. The following figure shows the screen that explains the background of Stage III.

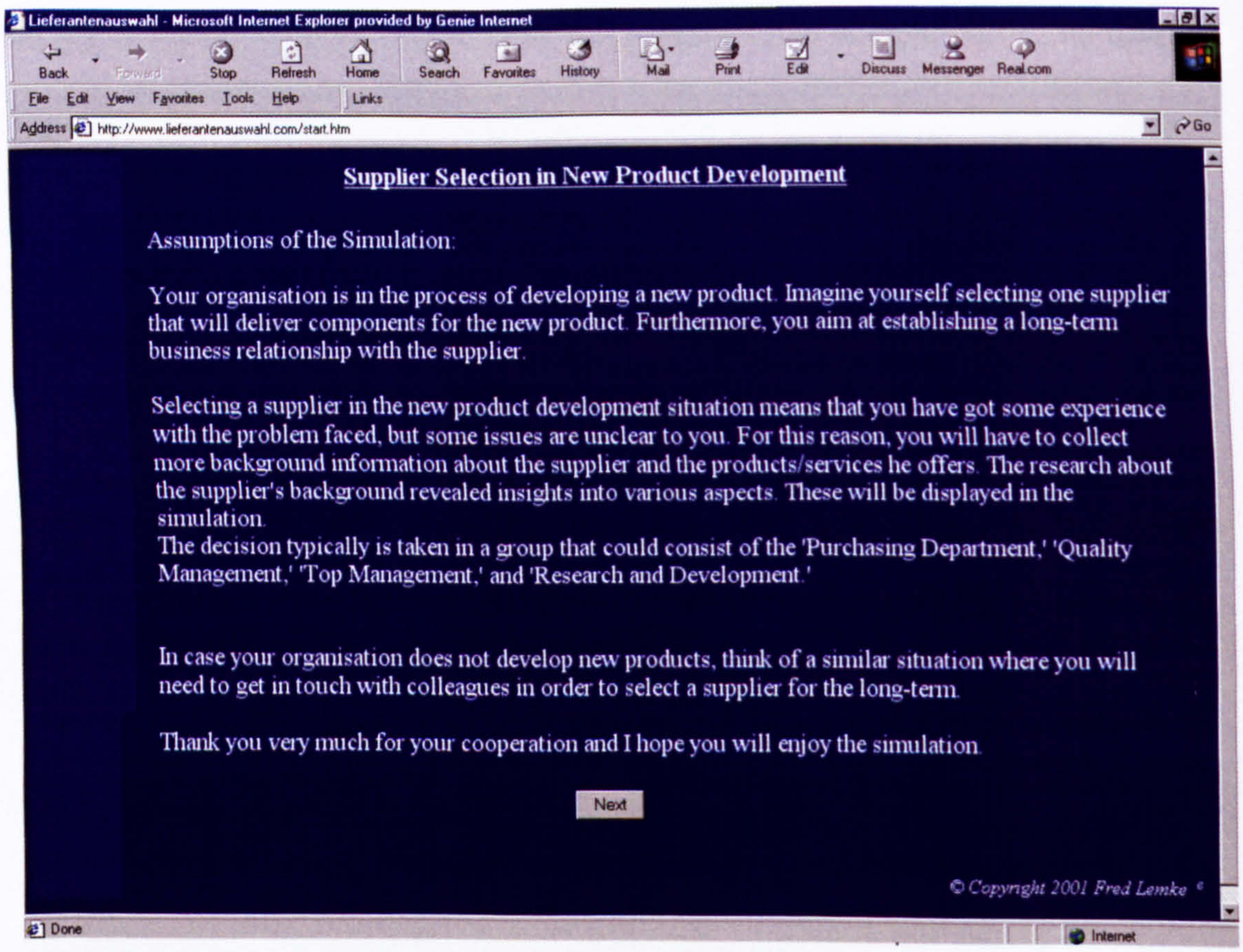


Figure 7-8: Description of the Background of the On-Line Survey

The screen displayed in Figure 7-8 shows the description of the background to the study, which is important to contextualise. In particular, the introduction is written in the words of the respondents of Stage II that described a modified re-buy scenario as 'selecting suppliers in a new product development situation.' Selecting a supplier over and over again with the intention of achieving a long-term relationship with the supplier is the proxy measure of loyalty in this study. Again, this issue was highlighted in the introductory text. After clicking on 'next,' the respondent proceeds to the CA section.

7.3.2.2.2 Preference Ratings

In the actual CA, the respondent first rates the levels of preference. When specifying the attributes and levels in the software, the researcher can specify whether the order of preference for levels is "very desirable" to "not at all desirable" or vice versa. The researcher changed the order at random to reduce the risk of a halo effect, or systematic error where the respondent systematically evaluates all levels of all attributes in the same way. Figure 7-9 illustrates the structure of the preference rating question:

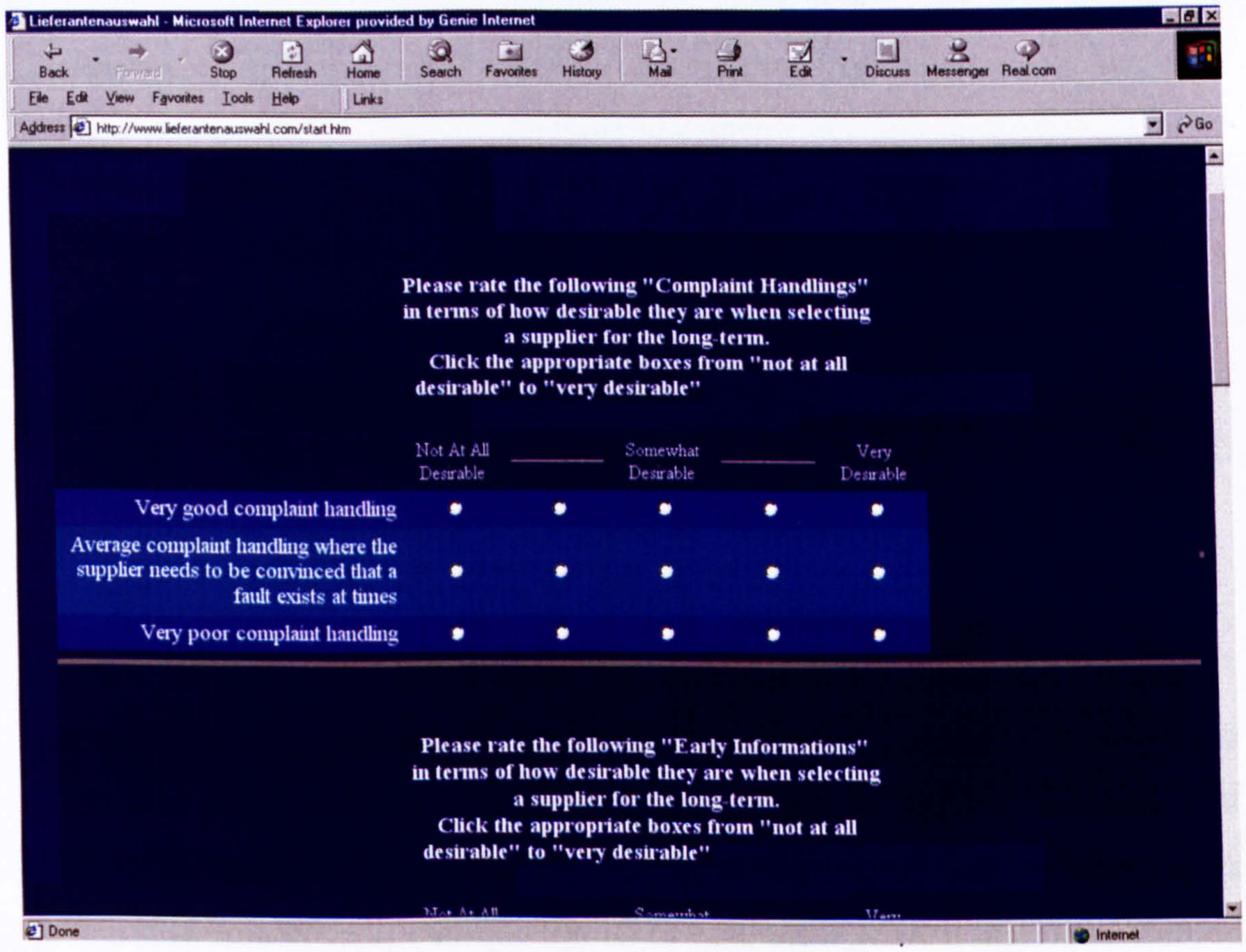


Figure 7-9: Initial Preference Rating Question of the On-Line Survey

As shown in the figure, the respondent is required to click on one button per attribute level. The rating scale can be defined from two to nine points in the programme and range from 'not desirable' to 'very desirable.' In any case, according to Sawtooth Software, the scale points should not be fewer than the number of levels in any one attribute for which the rating question is asked. This means for this particular piece of research that at least three points should be

included. However, Sawtooth Software suggests further using at least five scale points and due to the experience gained in Stage II (i.e., the repertory grid technique), the researcher decided to apply a 5-point scale again.

Preference ratings are usually omitted for attributes for which the respondent's preferences are known. Therefore, the ratings for price, have been omitted, as a less expensive supplier (construct pole) will be rated better than the market price (average level) and better than a more expensive supplier (contrast pole). The same cannot be said for any of the other attributes as, for instance, an average level might be preferred to any of the extremes. Put differently, the researcher was not certain about the preference ratings of the remaining nine attributes and decided to include them in the first section of the exercise. The ratings question for price, however, was skipped.

Note that each question prompts the respondent to indicate the importance of each attribute level when selecting a 'long-term supplier relationship.' Therefore, the respondent is constantly reminded in which context the decision needs to be made. If the evaluation of a level is skipped, ACA will prompt the respondent to complete the question prior to moving on to the next page in the interview.

7.3.2.2.3 Attribute Importance

Having learned about the preferences for levels within each attribute, the next section determines the relative importance of each attribute to the manager. This information is useful in two ways. First, if the interview were too long, it might be a means to eliminate some attributes from further evaluation. This issue would become important if ACA were used to its full capacity (i.e., 30 attributes and up to 15 levels each). In Stage III, which includes 10 attributes at 3 levels, this point was of negligible importance. Second, it provides information upon which to base initial estimates of this respondent's utilities (i.e., cognitive preferences) before the trade-off section begins.

The questioning is based on differences between those levels the respondent would like best and least, as illustrated below.

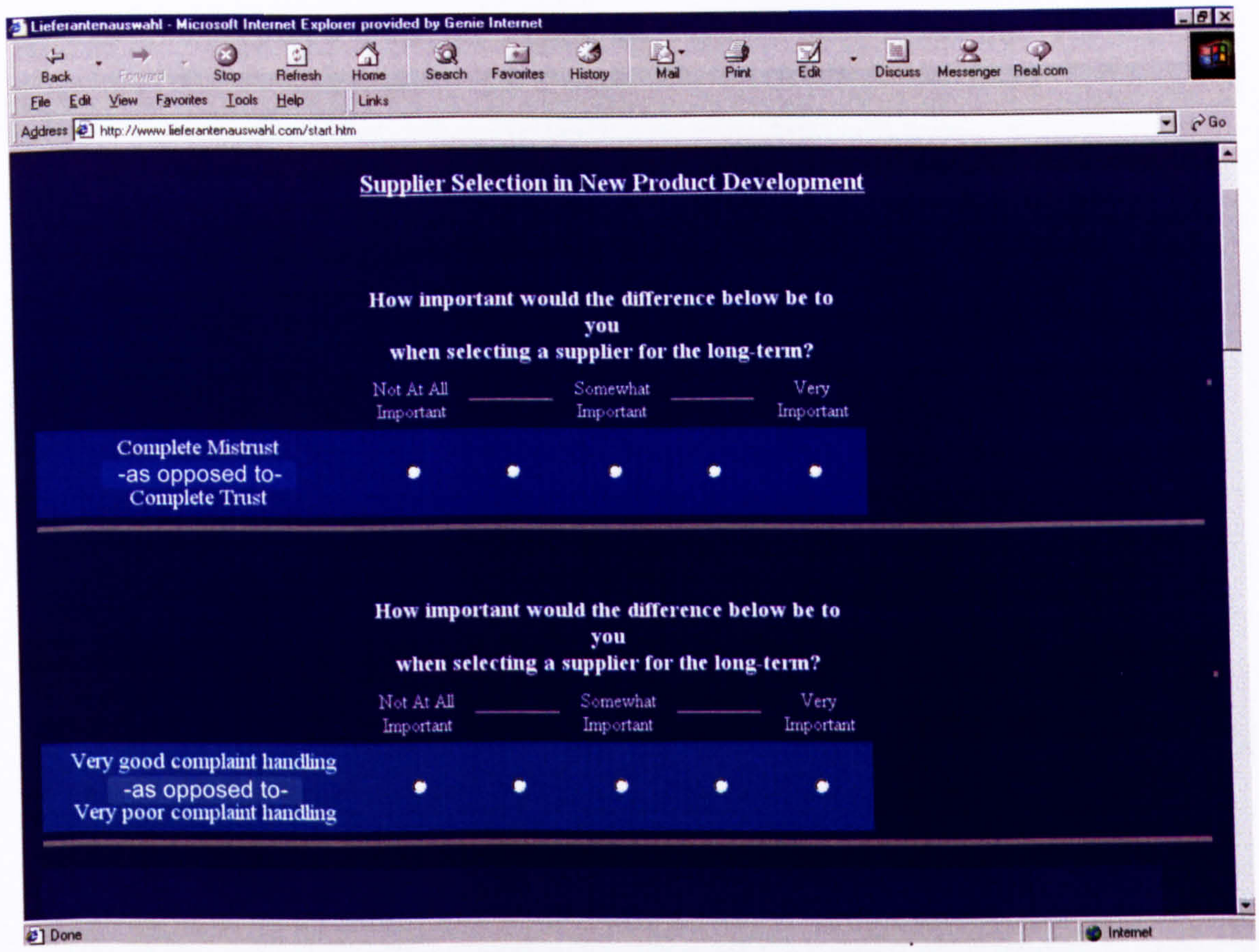


Figure 7-10: Attribute Importance Question of the On-Line Survey

Figure 7-10 shows how the attributes are evaluated by the respondent from 'unimportant' to 'very important.' Again, the respondent is reminded about the context of the evaluation – selecting a supplier for the long-term. At this point, the system has learned which attributes are most important for this respondent and which levels are preferred. From now on, the interview is focussed on those most important attributes and combinations of the levels that imply the most difficult trade-offs.

7.3.2.2.4 Paired-Comparisons

Up to this point in the interview, the programme collected prior information for computing the first supplier profiles; no conjoint analysis was involved thus far. Using the information of the first sections, ACA presents the respondent with customized pairs of supplier profiles, which are scored on a relative rating scale.

The respondent is not only asked which profile is preferred, but also to indicate the strength of preference. Sawtooth Software recommends the use of a 7-point scale which was applied to the present study (see the figure below).

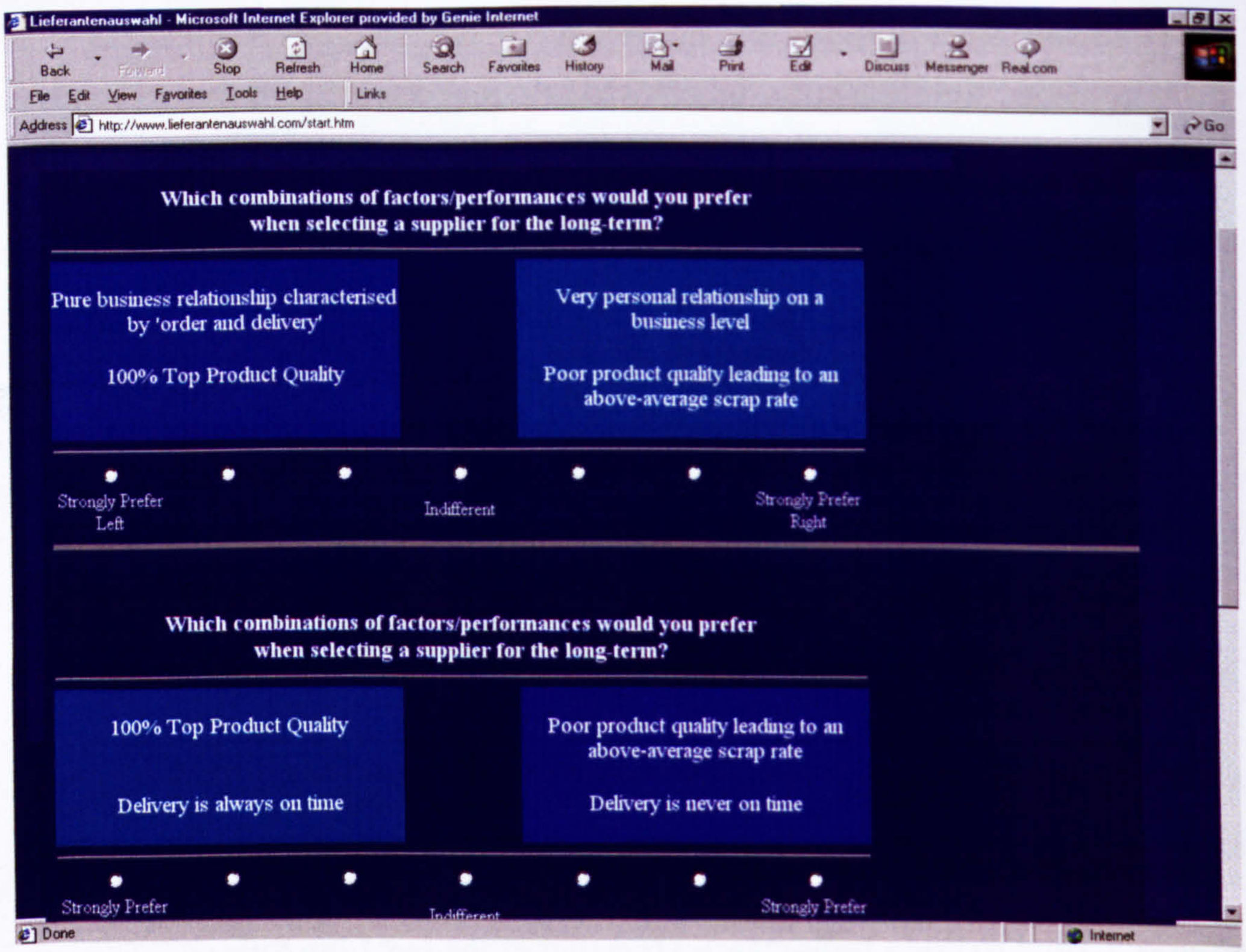


Figure 7-11: Paired Comparison Question of the On-Line Survey

The 'pairs section' displayed in Figure 7-11 elicits the conjoint trade-offs when selecting a supplier for the long-term. There is no fixed attribute order for the paired profile intensity ratings (Huber et al., 1993). The scale starts from 'strongly prefer left' and goes via 'indifferent' to 'strongly prefer right.' The supplier combinations are tailored to each respondent to ensure that each is relevant and meaningfully challenging.

The number of attributes appearing in each profile is pre-specified, and can be varied during the interview. With more attributes, the respondent must process more information and the task is more difficult. For Johnson (1987), it appears best to start with only two attributes. Most respondents can handle three attributes after they have become familiar with the task. A greater number of attributes gains in efficiency but might be offset by respondent confusion due to task difficulty.

Therefore, the researcher decided to start with two-attribute profiles and to increase the number to three attributes later. As the interview proceeds, the choices should therefore become more difficult for the respondent. The attribute number of three has been kept consistent from about the middle towards the end of the survey.

Every time the respondent completes a page of pairs question(s), the estimate of the respondent's utilities is updated, as it was mentioned before. Updating the utilities improves the quality of subsequent pairs questions. The ACA design tries to be as balanced as possible, meaning that observations are spread as evenly as possible over all attribute levels, and the design matrix should be as nearly orthogonal as possible. In other words, asking the respondent questions requires careful consideration. There is not much use in asking questions for which the researcher will already know the answer, such as 'high quality at a low price' versus 'low quality at a high price.' More can be learned if one chooses a pair of supplier profiles nearly equal in attractiveness. ACA follows this approach when presenting the pairwise comparisons.

7.3.2.2.5 Calibrating Concepts

In the last section of the survey, ACA composes a series of calibrating concepts using those attributes determined to be most important. In the full-profile approach, these concepts are termed 'holdout cards,' and they are useful for validating the conjoint model. They are judged by the subjects but are not used by the conjoint analysis to estimate utilities. These concepts are chosen to occupy the entire range from a very unattractive profile to a very attractive one (see the figure below).

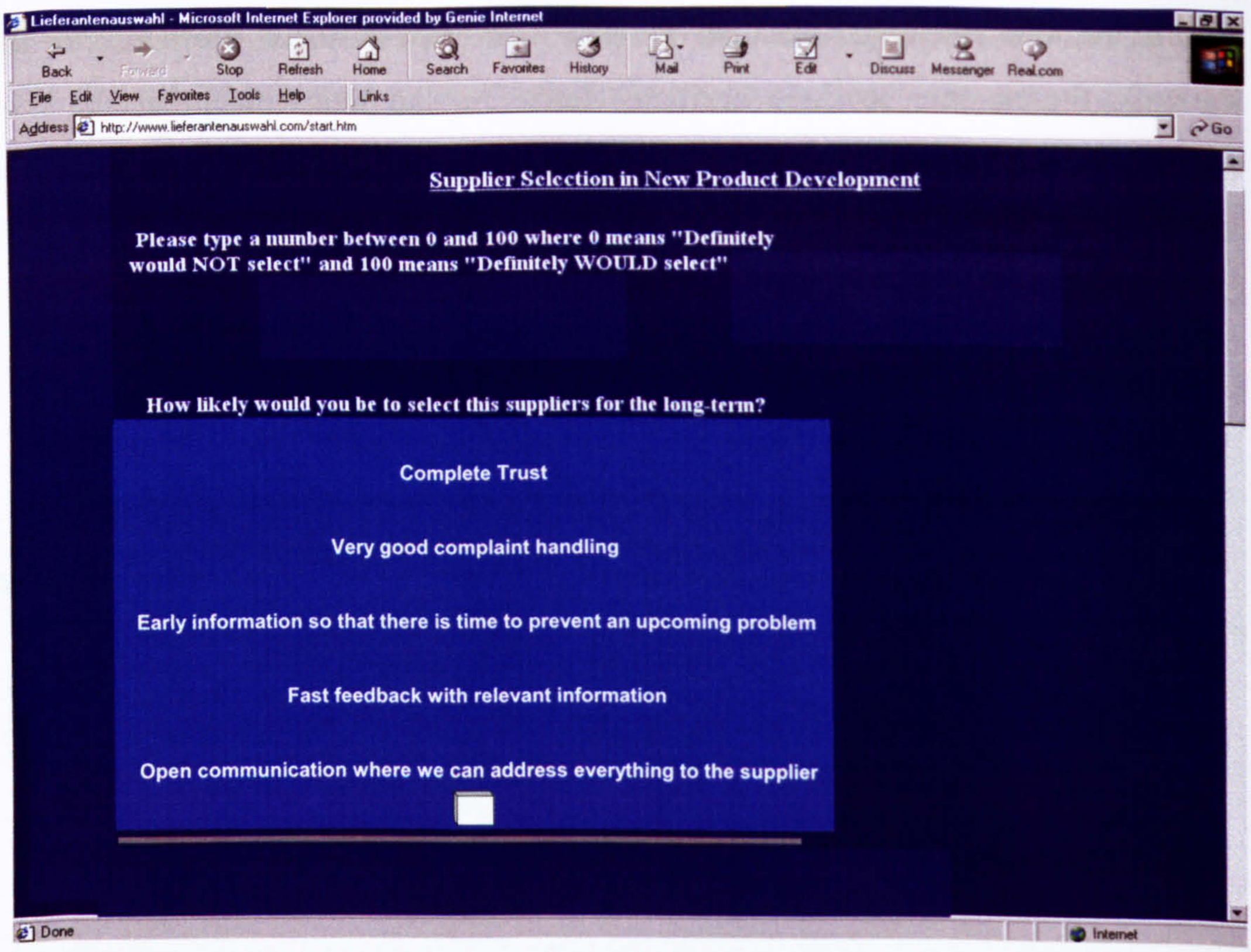


Figure 7-12: Initial Calibrating Concept Question of the On-Line Survey

As shown in Figure 7-12, the respondent has to evaluate how likely he is to select a given supplier from '0' (definitely not) to '100' (definitely yes). Therefore, the respondent is asked a 'likelihood of selecting' question about each calibrating concept and any number between 0 and 100 could be typed in to indicate the strength of inclination.

Each respondent is first shown what should be the least attractive possible concept. This is followed by the most attractive possible concept, as determined from the respondent's answers in the earlier sections of the survey (the second concept is displayed in the figure above). These two concepts establish a frame of reference. The remaining concepts are selected to have intermediate levels of attractiveness. If, for instance, a calibrating concept is expected to be the least preferred one by ACA, the experiment would be invalid if the respondent declares that the particular holdout profile represents the second most preferred supplier (e.g., an evaluation of 98). The calibrating concepts do not duplicate the experimental profiles of previous sections or each other.

7.3.2.2.6 Feedback

Having completed the on-line survey, the respondent is immediately presented with the test results (refer to the figure below).

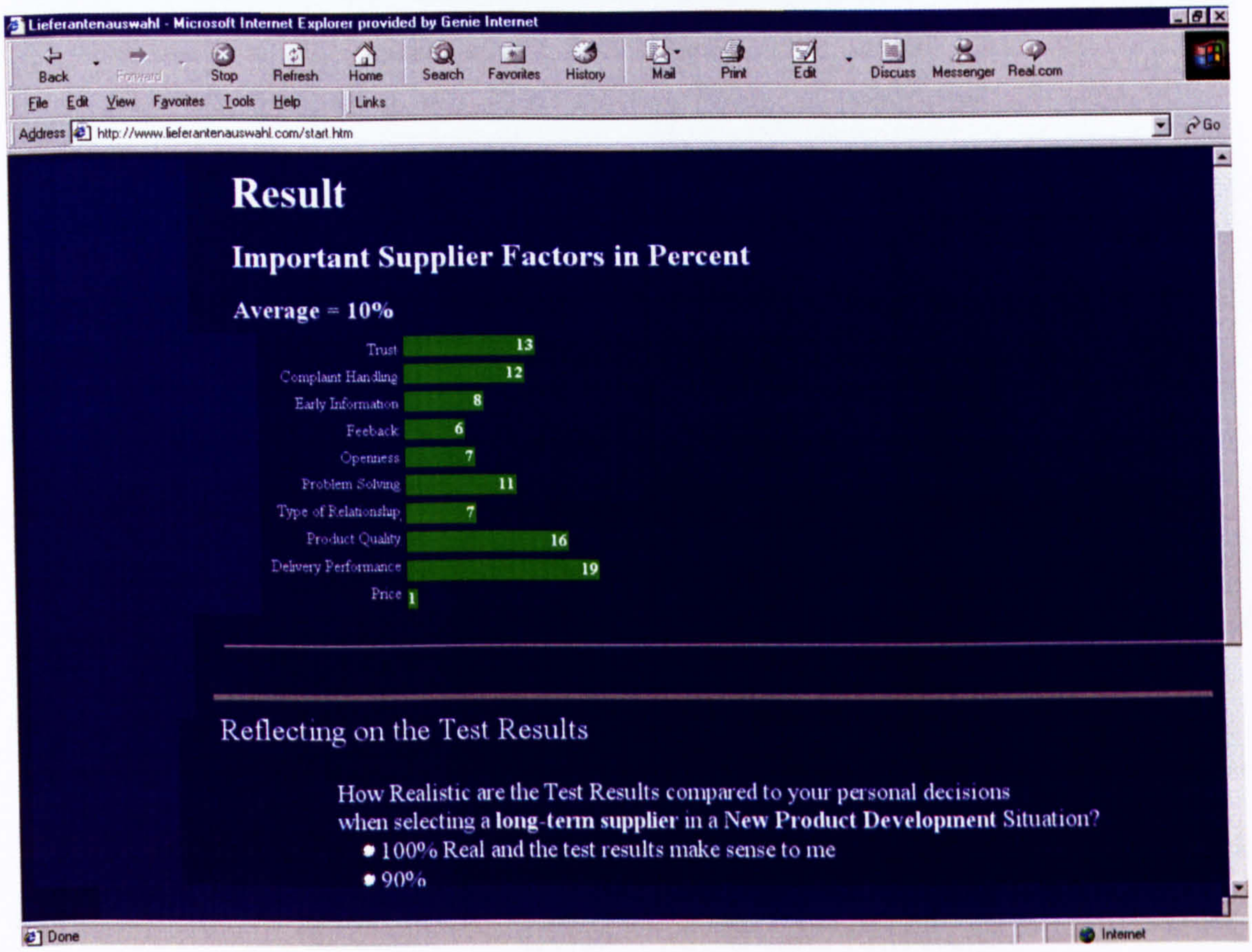


Figure 7-13: Instant Result Screen of the On-Line Survey

Figure 7-13 displays the screen that shows the individual results in percentages. The average importance is 10% (i.e., 100% / 10 attributes) and any supplier attribute greater than 10% has an above-average influence on the supplier selection process at the expense of other attributes. In the example, the respondent is mostly influenced by 'delivery' (19%), followed by 'quality' (16%), 'trust' (13%), 'complaint handling' (12%), and 'problem solving' (11%). The remaining attributes are of less importance; the 'price' (1%) is of least importance for this respondent when selecting suppliers in the described purchasing context. The importance of the supplier attributes provides a good overview of how the ten factors of this study 'compete' against each other in the supplier selection simulation.

As indicated at the bottom of the figure above, the respondent had to scroll down to answer a question after evaluating the test results (see Figure 7-14).

Figure 7-14: Feedback Question of the On-Line Survey

Underneath the individual results, the respondent had to evaluate the realism of the survey findings, starting from '0' (unrealistic) to '100' (realistic). The field validation is thus based on a perceptional scale and the evaluation points have been incremented by 10%. This performed best in the pilot samples.

The final part of the feedback section gave the respondent the opportunity to submit additional comments directly to the researcher (see Figure 7-15).

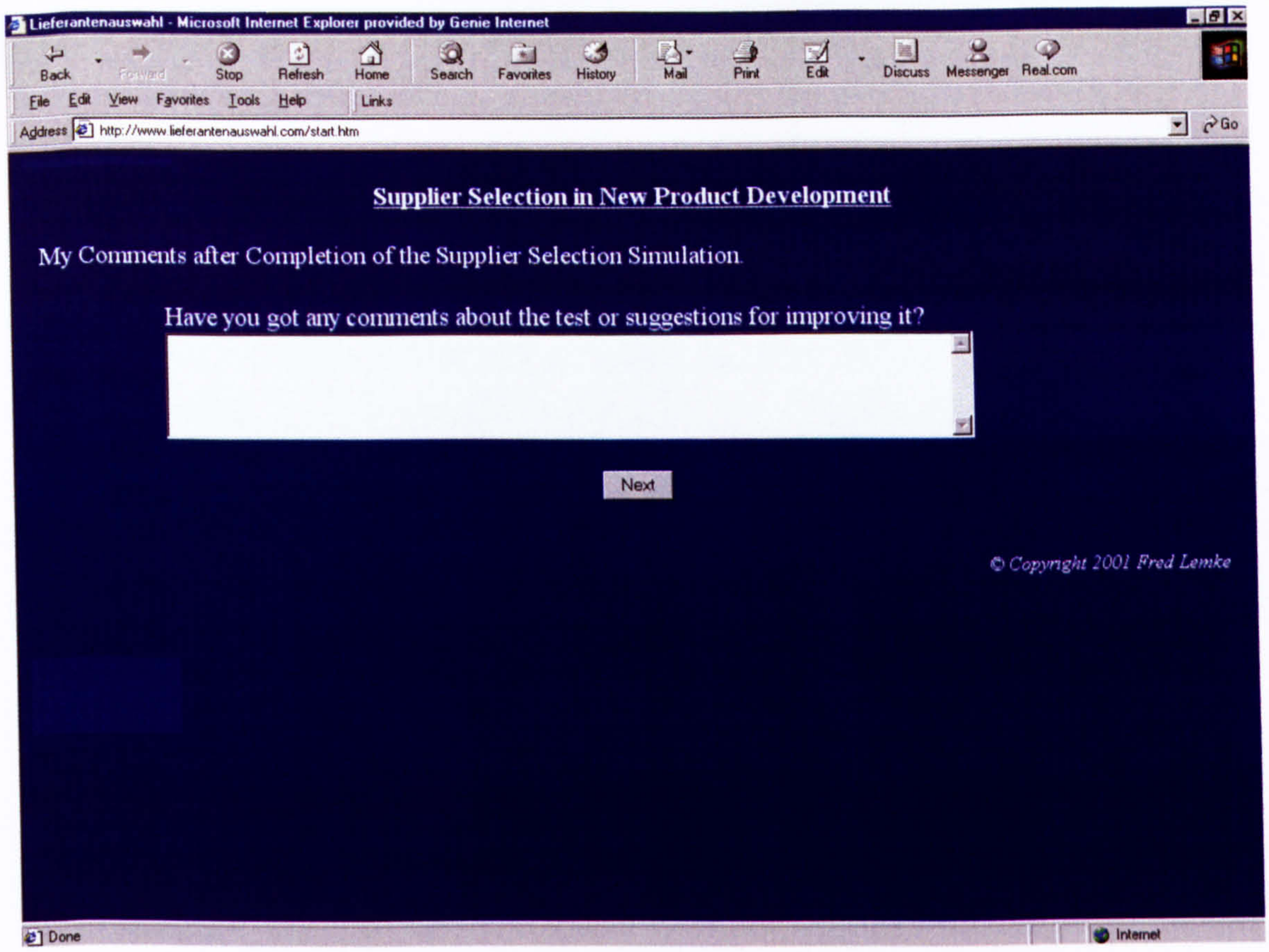


Figure 7-15: Comment Question of the On-Line Survey

A blank field is reserved underneath the question to capture the comments of the respondent. Although all other sections of the on-line survey had to be completed in order to progress to the next section of the exercise, it is worth mentioning that the respondent was not obligated to comment on the survey. Put differently, it was possible for the respondent to skip to the final page of the exercise (see Figure 7-16).

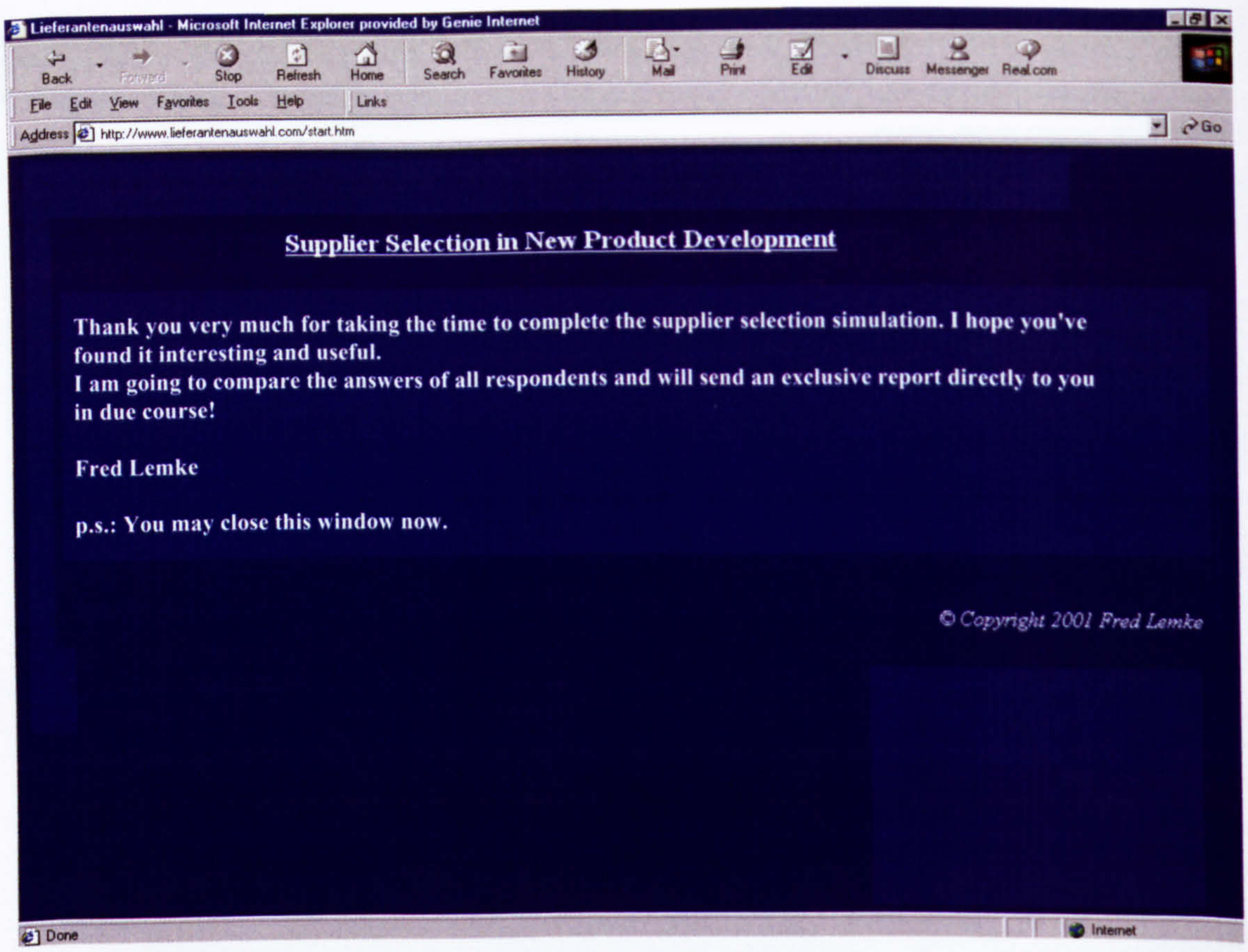


Figure 7-16: 'Thank You Note' for the Respondent and Final Information that the Survey has been Completed Successfully

The last page of the survey is displayed in the figure above and it is a) a confirmation that the on-line simulation has been completed successfully and b) a thank-you note for the respondent. In addition, the respondent is informed that it is now possible to leave the survey website. As soon as the ACA programme has formally been completed, the user-name-password key is rendered invalid.

7.4 Sample and Unit of Analysis

7.4.1 Sample

Stage III had been tested in several ways in order to ensure that the design was suitable for the research purposes. This section explains the pre-pilot tests (i.e., the phase where the methodology was tested outside of the sampling pool), the pilot test (i.e., a focal company within the sampling pool), as well as the actual sample.

7.4.1.1 English Pre-Pilot Test

First, the conjoint analysis survey had initially been designed in English and a convenience sample had been used to test the original design. As in Stage II, the researcher will refer to this part of the study as the 'pre-pilot test' as the purpose was to check the conjoint method alone. None of the results obtained entered the analysis of the actual sample. The table below outlines the structure of the English convenience sample:

Sex	Age	'Function'
1. Male	37	Friend: Business Consultant
2. Female	30	Friend: Business Consultant
3. Female	23	Colleague: Specialist in methodology and attitude research.
4. Male	45	Colleague: Professor in Operations Management
5. Male	36	Colleague: PhD in Operations Management
6. Male	30	Colleague: PhD in Operations Management
7. Male	50	Colleague: Professor in Relationship Marketing

Table 7-1: Sample Structure of the English Stage III Pre-Pilots

The sample was imbalanced in terms of sex, age, and function. However, all respondents had experience in supplier management and market research and the convenience sample was therefore suitable for completing the task at hand.

The shortest pre-pilot conjoint survey was completed in 20 minutes (subject 3) while the longest needed about 1 hour for completion (subject 1). The average time for completing the exercise was about 30 minutes. The researcher discussed the survey with respondents on an individual basis and interesting remarks were made. Although all welcomed the 'innovative research approach,' the following critique points emerged:

1. The exercise needed too much time to complete; the target time frame should be 20 minutes maximum, if possible.
2. On some monitors the survey layout was too wide and could not be displayed fully. Three respondents used the horizontal scrollbar continuously in order to move the picture from the left to the right and vice versa. Completing the survey was therefore very demanding as the paired profiles could not be assessed easily.

3. The respondents went through a learning process and the survey became considerably easier to complete towards the end. However, the instructions for certain tasks needed to be amended, as they were unclear at first.
4. One respondent was unsure whether he fully understood the meaning of all the attributes used in the conjoint exercise.
5. A few attribute-level combinations were very difficult to comprehend and to trade-off. The respondents needed a considerable amount of time to make a decision in these cases.

Although the average time to complete the survey was 30 minutes, a few respondents needed considerably longer. Enhancing the online survey in terms of clarity and user-friendliness might facilitate a reducing in the time required to an acceptable level for all respondents. Responding to critique points 2-5 should be a way of reducing the time needed for survey completion.

The second critique point was a design issue and the online environment of the research instrument had to be redesigned to make it more user-friendly. The researcher did not anticipate the different monitor resolutions of the participants. In particular, the three pre-pilot test candidates used laptops that were not able to display the full screen of the survey at once. The survey was optimised for a resolution of 1024x768 pixels and the screen resolution of the laptops was set to 800x600 by default. The researcher designed a second version of the survey that could be run at a lower resolution (800x600 or smaller). Any respondent to the actual study would be able to select the appropriate one for his computer system to display the tasks accurately (see the figure below).

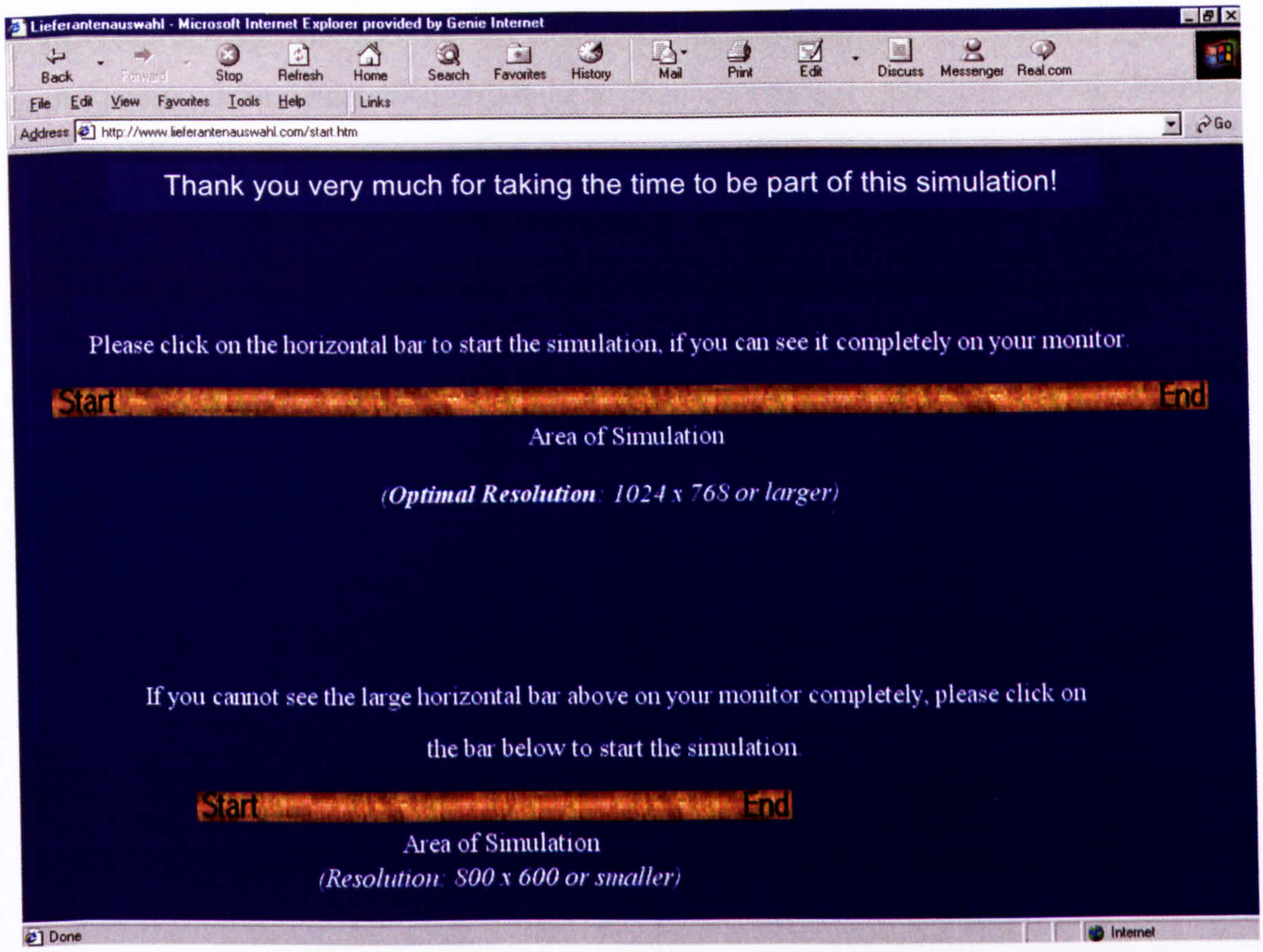


Figure 7-17: Entry Screen - The Choice of Two Different Display Resolutions

Figure 7-17 shows the new entry screen of the survey before entering the page asking for the user-name-password key. The respondent was presented with the options to select between two survey versions (i.e., the two brown horizontal bars). If the computer screen of the respondent displayed the top brown bar fully, the system was able to run the survey in its original form. Conversely, if the top bar could not be displayed fully, the respondent had the opportunity to select the second bar. The second critique point, where some respondents needed to use the horizontal scroll bar to move the survey picture from the left to the right and vice versa, was solved by introducing a second version.

The third critique point needed to be addressed in terms of how two specific survey questions were asked. In particular, a few respondents were uncertain how to answer the preference rating question (displayed in Figure 7-9 on page 213). Having evaluated one of the three levels within an attribute, the respondents went on to evaluate a level of the next attribute (i.e., neglecting to evaluate the remaining two attribute levels). The researcher added to the preference rating

question a note that explains that an evaluation has to be done 'per row' (i.e., per attribute level). The next figure displays the changed preference rating question.

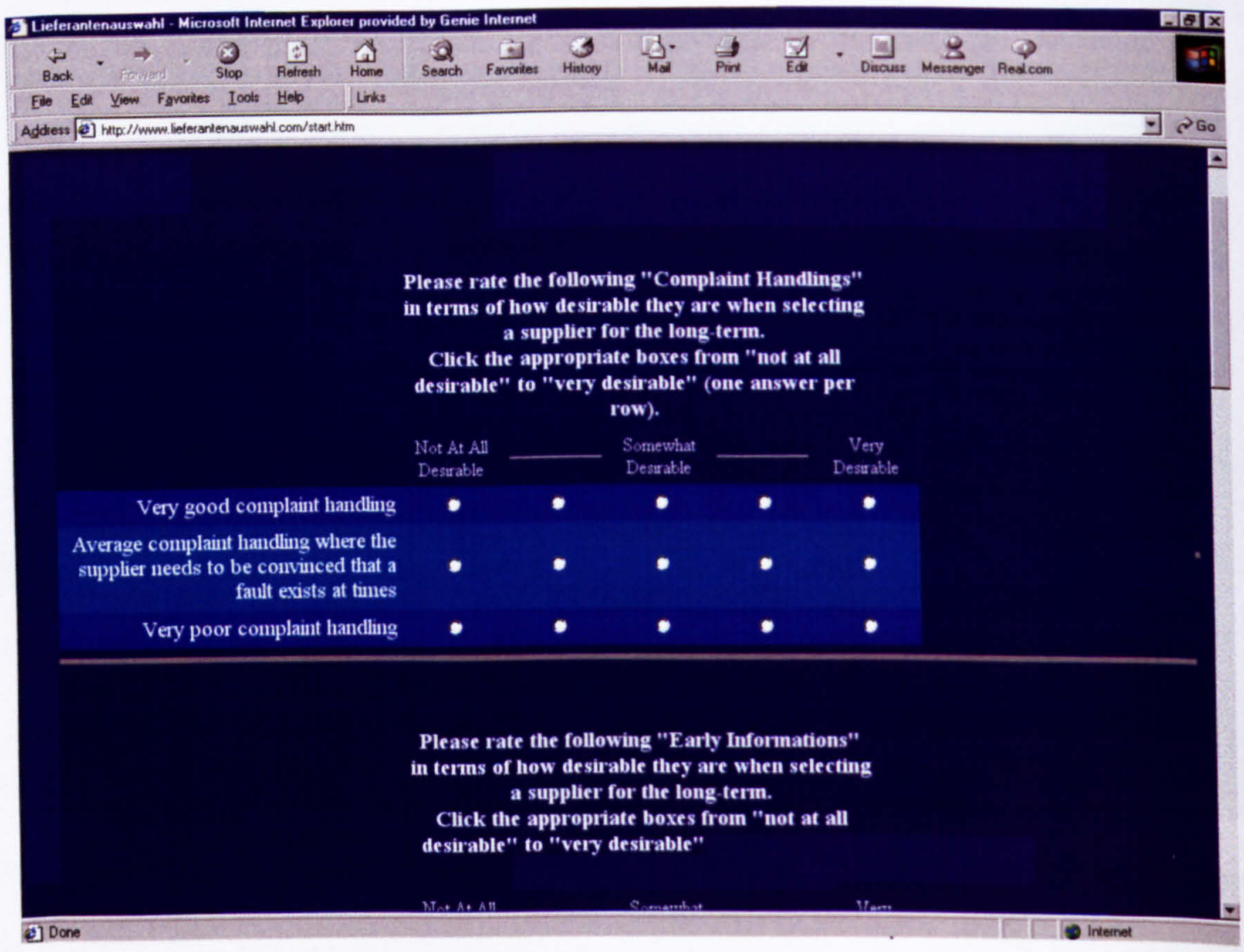


Figure 7-18: Amended Preference Rating Question of the On-Line Survey

Figure 7-18 shows the amended preference rating question with the added information in brackets. It was very important that the instructions of the simulation were clear, particularly as the preference rating question was the first section of the conjoint analysis where attributes needed to be evaluated. In the actual study, the researcher would not 'look over the shoulder' of the participant and so, without the note some managers might not know how to proceed.

Another question that caused concern was the calibration concept (refer to Figure 7-12 on page 218). Some respondents were unclear about what number to type into the blank field when evaluating the supplier profiles. Some found the numbers '0' and '100' too extreme and they felt that a number in-between the two numbers would represent their preferences better. The calibration concept question allowed any number from 0 to 100, but some respondents were not aware

of it. Hence, the researcher altered the question to address this feature (see the next figure).

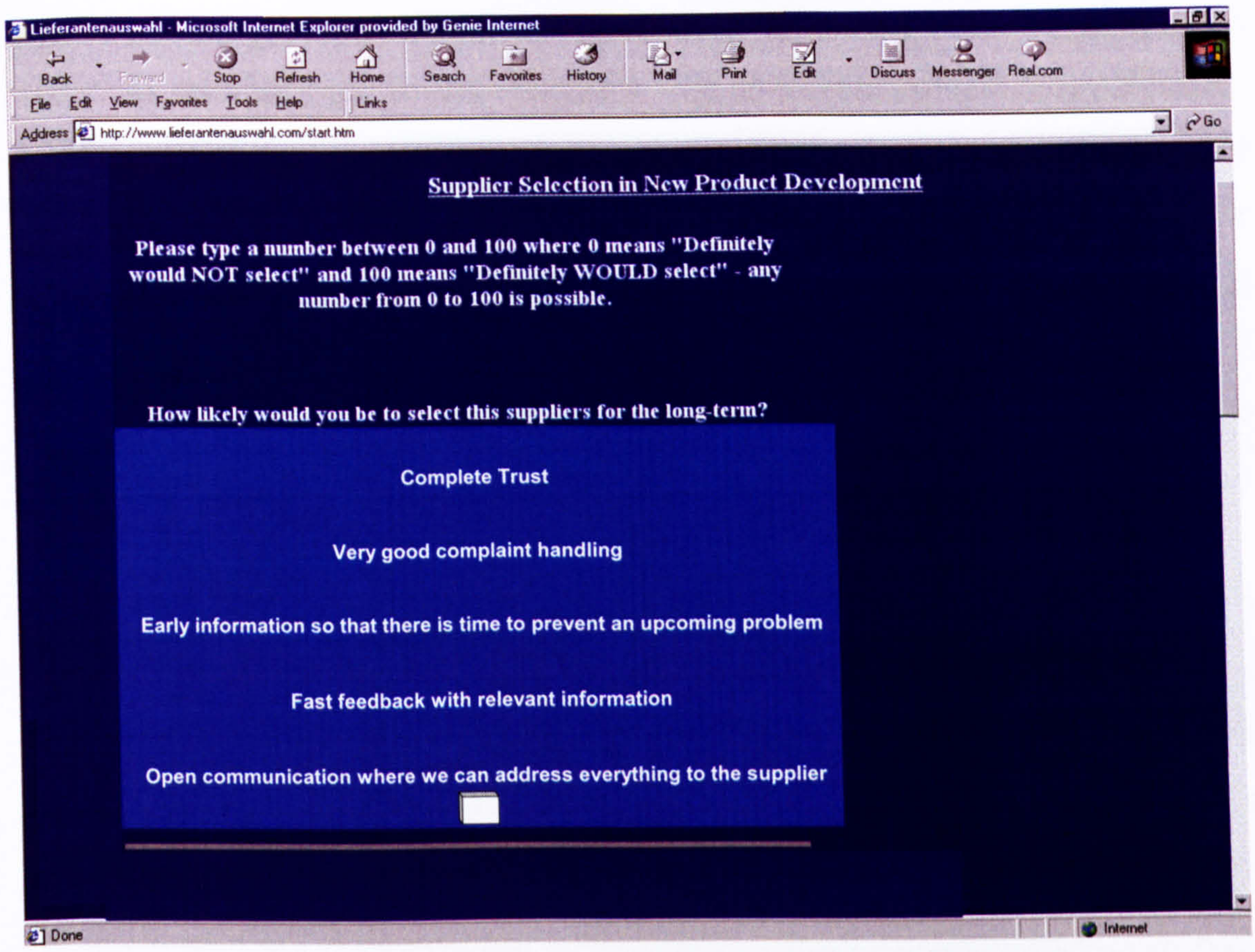


Figure 7-19: Amended Calibrating Concept Question of the On-Line Survey

The possibility to type in any number between 0 and 100 was highlighted in each calibrating concept question, as displayed in Figure 7-19.

Besides preventing any misunderstandings by re-phrasing the two questions, the researcher included specific error messages when a question had been answered incorrectly. For instance, instead of prompting the participant to 'complete all survey questions,' the error messages were customised. Hence, they made the respondent aware that the evaluation of an attribute level had been overlooked or a letter had been submitted when a number was expected. Both amendments helped to clarify the different sections of the ACA survey.

The fourth critique point was made by a respondent who was uncertain whether he understood all the attribute meanings. Consequently, answering the survey questions was a difficult endeavour and in this particular case, one has to expect inconsistencies throughout all answers of the survey. This limitation might

be a specific pre-pilot problem, as the attribute meanings did not come from the convenience sample, but from practitioners in the research context. However, the researcher amended the online environment of the ACA survey and included a menu-bar (see Figure 7-20).

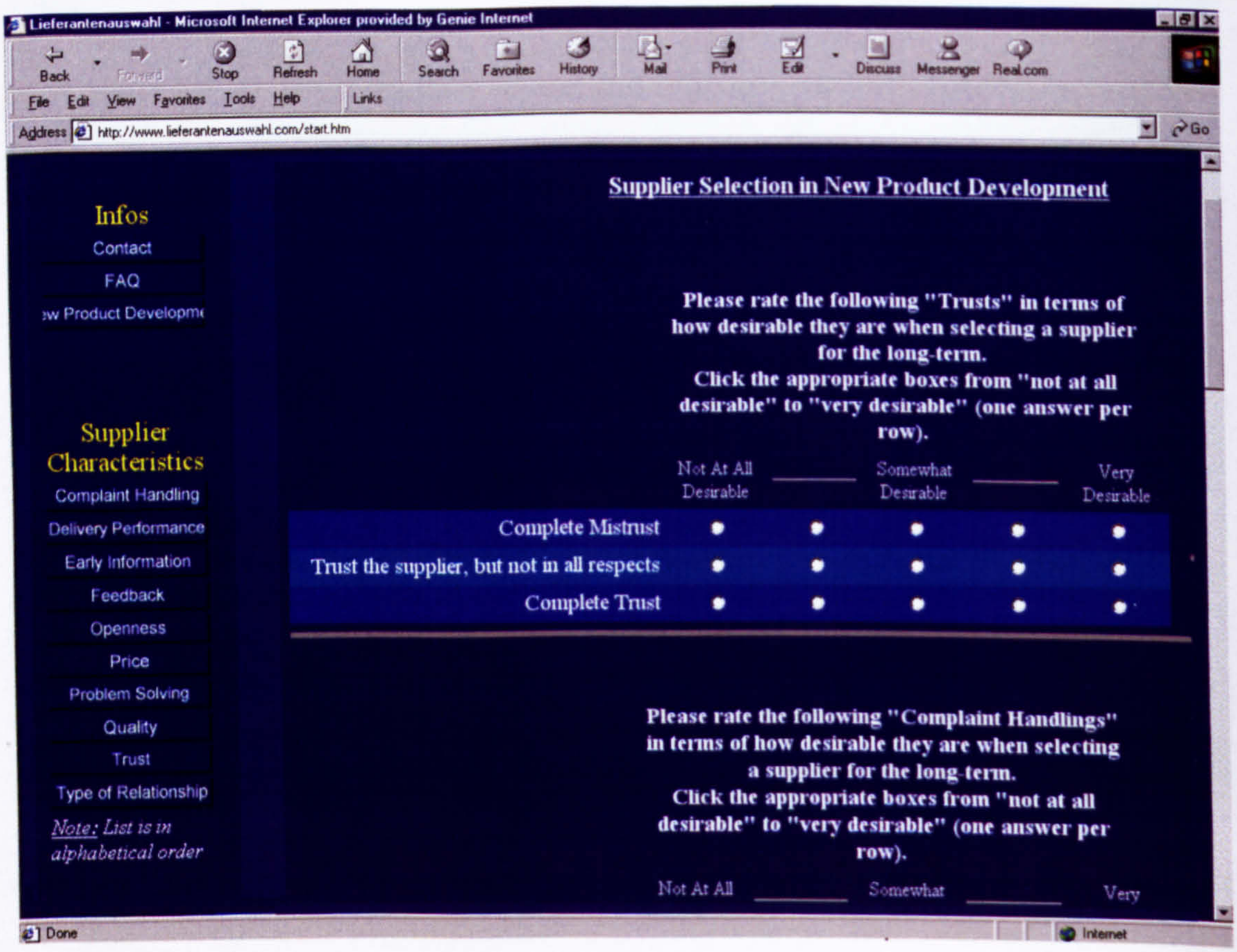


Figure 7-20: The Menu-Bar of the Online Survey (Example of the Preference Rating Question)

On the left-hand side of the figure above, one can see the menu-bar and the screen shot shows the preference rating section as an example. The bar was static and could be found at the same place throughout the survey. It consists of various buttons explaining each attribute as well as the background of the exercise per mouse-click. In particular, the bar was the starting point to obtain information on the researcher ('contact' button), frequently asked questions ('FAQ' button), as well as on the research context ('new product development' button). The FAQ-section included questions and answers about the research project, the website, and how the menu-bar can be useful. The section was divided into questions 'before starting the survey,' 'during the survey process,' and 'after completion of

the survey.' Thus, managers were able to access the information provided even before starting the survey.

In addition, the bar offered information on all ten attributes in alphabetical order. As soon as a participant clicked on any of the menu-buttons, a new small window would open up providing the relevant information. The window would partly overlay the survey screen and would contain a 'close' button. The menu-bar would serve as an ongoing reference point that could be consulted at any time and at any stage of the survey.

The attributes were explained in the words of the respondents, as the definitions of Stage II were included. Hence, these definitions were approved for their validity and applicability earlier and the fourth critique point was solved.

The fifth comment addresses the point that not all attribute levels should be mixed in a single profile. An example from the consumer-market area will serve to illustrate this point. If a respondent has to compare a 'black Ferrari' that is 'more expensive' with a 'red Ferrari' that 'is less expensive,' the respondent might state that this is unrealistic. In cases like these, the researcher would ask the individual to imagine that 'a black Ferrari' will be a future market trend. An evaluation would still be possible, although it might not appear realistic at a particular moment in time. When products are compared, it is easier to state that unrealistic product feature combinations will become available in the future.

In the present research, however, appealing to the imagination of the respondent would not be a solution, as the attribute level combinations that appeared difficult to comprehend were all intangible in nature. To this end, the pre-pilot phase revealed interesting insights in terms of unrealistic attribute-level combinations. These are summarised in the table below:

Attribute	Level(s)	Combined	Attribute	Level(s)
Type of Relationship	Personal	↔	Trust	Mistrust
Type of Relationship	Personal	↔	Openness	Indirect Communication
Type of Relationship	Neutral	↔	Openness	Indirect Communication
Feedback	All three levels	↔	Early Information	All three levels
Feedback	All three levels	↔	Openness	All three levels
Early Information	All three levels	↔	Openness	All three levels

Table 7-2: Unrealistic/Problematic Attribute-Level Combinations

Table 7-2 outlines the attribute levels that should not be combined. To start with, a 'personal business relationship' and 'mistrust' does not make sense to combine, according to the pre-pilot respondents. Although both attribute-levels are valid in their own right, a combination appears unrealistic. The same can be said with regard to a 'personal business relationship' and 'indirect communication where everything needs to be addressed diplomatically.' For the respondents, this is an unlikely combination. Even a 'neutral business relationship' should be combined with a certain degree of openness – again, to combine the average type of relationship with 'indirect communication' is not a plausible arrangement of attribute-levels. In these cases, Hair et al. (1998: 416) recommend that "the unacceptable stimuli present unrealistic choices to the respondent and should be eliminated to ensure a valid estimation process as well as a perception of credibility of the choice task among the respondents."

Interestingly, although 'early information,' 'feedback,' and 'openness,' are discrete attributes, the respondents find it problematic to cognitively process a realistic comparison. For instance, a supplier that provides speedy feedback and is open, but does not provide early information about problems in comparison to a supplier that provides slow feedback and communication is indirect, yet open. All three factors are linked to an overarching communication factor and certain combinations do not make sense to the respondents. The researcher has either the option to condense the three factors into one factor, possibly called 'communication' or to continue measuring the three attributes separately. The researcher decided to measure all three attributes, as the trade-off between 'feedback' and 'early information,' for instance, would still be interesting to investigate. It should be emphasised at this point that the three attributes are discrete and the respondents did not have a problem to differentiate them on an individual basis. Still, the combination of the three attributes was more demanding. Therefore, if possible, the three attributes should not be directly traded against each other, but indirectly in the conjoint analysis.

Fortunately, ACA enables the researcher to prohibit direct combinations of any of the attribute levels shown in Table 7-2. This means, on the one hand, that

all levels of 'relationship type' can be measured against 'trust' and 'openness.' It also means, on the other, that 'Feedback' will be included in one pair-wise comparison, 'Openness' in another, and 'Early Information' in yet another comparison. In this way, the utilities of the three communication factors can still be calculated, although the respondent does not have to trade off the three attributes against each other directly in a single profile.

As some of the complexity of the research instrument had been taken out, less time would be needed to complete the survey. To check whether the ACA exercise could be completed in about 20 minutes, and whether it had been improved, the researcher translated the new survey version into German and presented it to a second convenience sample.

7.4.1.2 German Pre-Pilot Test

The new survey version was tested by a German convenience sample and the structure is displayed in the table below:

Sex	Age	'Function'
1. Male	31	Friend: Business Consultant
2. Male	34	Friend: Supply Chain Manager
3. Male	30	Colleague: Specialist in Supplier Management
4. Male	36	Colleague: Professor in Operations Management
5. Male	51	Friend: Professor in Industrial Marketing
6. Male	45	Colleague: Professor in Operations Management
7. Male	38	Friend: Market Researcher

Table 7-3: Sample Structure of the German Pre-Pilots (Convenience Sample of Stage III)

The second pre-pilot test was balanced in terms of function, but was biased in terms of sex and age. However, as the purpose was to enhance the design of the research instrument, the sample fulfilled its purpose.

Subject 5 completed the survey in 12 minutes while subject 3 needed 23 minutes for completion. The time for completion averaged about 15 minutes in the pre-pilot phase, which cut the average time of the English pre-pilots by half. This shows that the elimination of technical difficulties (e.g., by providing for screen

resolutions) and by enhancing the clarity of survey questions and error messages, the research instrument became more efficient in collecting the data.

The researcher examined the survey together with the respondents on an individual basis. The following comments were made:

1. The Web-design and the on-line survey itself are both very user-friendly.
2. The new menu-bar was used in some cases and the respondents welcomed the fact that help could be sought immediately at any time, if needed.
3. The survey gives the respondent the impression that the system is paying attention to the answers, and it seems to be asking increasingly insightful questions.

None of the respondents used the 'resume-function' of the software; they completed the survey in 'one go' and hence, were not interrupted in the survey process. Therefore, the researcher was concerned to not ask more pairs of questions than is prudent. The discussions with the respondents after completing the exercise confirmed that all respondents could reliably answer all the paired comparison questions asked. Information overload did not take place and overall, the survey was deemed realistic and suitable for the actual research.

Neither of the two convenience samples was included in the final analysis, as they were outside the original sampling pool. Furthermore, the research instrument underwent amendments at all times, which made comparisons impossible.

7.4.1.3 Pilot Focus Company

The conjoint survey entered the pilot phase. The researcher aimed at pilot-testing the revised research instrument with a manager from the actual sample. One Managing Director especially, who oversees the purchasing department of his organisation, was very interested in the research project. The German organisation operated in the engineering sector and represented one company of the actual sampling pool. Again, in the presence of the researcher, the pilot test respondent went through the online survey. Without any problems, and without any questions

asked, the MD completed the survey without any interventions required by the researcher.

At this point, it might be helpful to describe the situation of the company in brief terms: The company found itself in financial difficulties and several management problems existed at the time. In order to improve on their business operations, one consultancy company was hired. In addition, the MD felt that the company was under-performing particularly in supplier management and two students were employed who analysed the company's activities as their Master dissertation project.

The MD found the survey very useful and practical and asked whether eight of his purchasing managers could take part in the study. The researcher supplied the MD with eight additional user-name-password keys and emphasised to the manager that all respondents would have to complete the survey individually – the researcher would not be present.

Instead of one manager, the pilot phase consisted of a focus company where nine respondents (i.e., eight purchasing managers, plus the Managing Director who heads up the purchasing department) were involved. ACA measures in the background the time needed to complete the survey automatically and the average time required was about 15 minutes for each of the purchasing managers. Afterwards, the researcher discussed the initial impressions about the conjoint survey with some of the respondents over the phone. The key points were:

- All respondents used the higher resolution version of the survey on their stationary desktops.
- Although the survey could be completed at any computer that had Internet-access, all managers completed the on-line simulation in their familiar working environment. In this respect, the simulation fits almost seamlessly into the normal daily routine when comparing suppliers.
- Not all respondents consulted the menu bar that explained the supplier attributes, as a shared understanding exists among the respondents. The MD said, "the factors on the buttons are the same factors we discussed last time [i.e., in Stage II]."

- The research instrument was suitable for evaluating the impact of the ten supplier attributes in selecting suppliers in a modified re-buy scenario. The respondents found the survey results very realistic and helpful. The MD took them as an additional angle to enhance the supplier management practice of the company.

Overall, the pilot phase did not lead to any amendments of the research instrument and it was thus deemed suitable for Stage III. In the analysis, the focus pilot company was treated separately from the original sample as the nine managers might represent the views of the particular purchasing department alone rather than giving a general perspective. In other words, the data of the focus company and the original sample were analysed in the same ways, and will be compared, but the data were not mixed.

7.4.1.4 Actual Sample

For the actual study, the researcher created a *stratified sample with a random start* from the 1997 IBFA-D database population of the 97 German organisations (i.e., the original sampling pool of 110 organisations, excluding 12 process organisations minus the focus company). Therefore, all three research stages are based on the same sampling pool for comparability purposes. 51 companies have been selected in the engineering and the electronics industries for Stage III. Based on the telephone contact prior to each research stage and particularly as a result of the interviews held in Stage II, the researcher knew of at least two managers involved in supplier management per company.

120 managers were sent an initial letter explaining the final stage of the research project together with a unique user-name and password for the web-based conjoint survey. In an attempt to encourage response, managers were guaranteed to remain anonymous. All managers were offered a report illustrating the research results in return for their cooperation. A follow-up reminder was sent to managers that had not completed the survey three weeks after the initial mailing. By applying Dillman's (1978, 2000) 'total design method,' as in the research stages before, 36 responses were generated. Three surveys were

incomplete, which resulted in 33 usable responses from 27 companies. The table below gives an overview of the sample structure:

Function of Respondent	Proportion
Purchasing Manager	*14 (42%)*
Managing Director	*8 (24%)*
Quality Management	*6 (18%)*
Operations Management	*2 (6%)*
Other	*3 (9%)*

Table 7-4: Structure of Sample by Respondent Function

The sample structure of Stage III is similar to the structure of Stage II (refer to Table 6-5 on page 147), meaning that the survey has mostly been completed by purchasing managers. This is followed by Managing Directors and quality management. Two managers are responsible for operations management, while three respondents selected the 'other function' option. The time for completion was about 15 minutes, which is in line with the focus company sample.

The 'functions' and 'industry sector' answers of the respondents were consistent with the information the researcher had when creating the randomised user-name-password keys. This is not only an indication that all respondents that were supposed to complete the survey did so, but also that the managers did not change function inside the company between Stage II and Stage III. The sample breakdown by industry is shown below:

Industry Sector	Companies Contacted	Participating Companies	Response Rate
Electronics	*17*	*10*	*59%*
Engineering	*34*	*17*	*50%*
Total	**n = 51**	**n = 27**	**53%**

Table 7-5: Structure of Sample by Industry Sector

From the 51 companies contacted, 27 organisations completed the survey. As in the previous stage of the study, the proportion of engineering companies is larger than that for electronic firms.

Overall, a response rate of 53% was achieved in respect of participating companies. However, as the unit of analysis is the individual manager, the response rate in terms of participating respondents is more significant for the

present study. Of the 120 letters to managers in the sampling pool, 8 were returned as undeliverable (i.e., the managers were not employed by the company any longer). This leaves 112 possible responses. Although 36 managers took part in the survey, three surveys were submitted incomplete. These were eliminated from further analysis. The response rate had to be calculated on the 33 usable responses, resulting in a rate of 29.46% (33 × 100 / 112). As this research is exploratory in nature, a response rate of about 30%, using a survey-type of design, was deemed acceptable.

7.4.2 Unit of Analysis

The researcher focussed on the DMU members that decided on which supplier to select and the unit of analysis was the individual manager. However, the assumption that the multiple informants were answering questionnaires independently can be untenable for some firms (Anderson and Narus, 1990). In order to ensure that the key informants took part in the conjoint analysis exercise, the researcher took three precautionary steps. First, the introductory letter explained that the respondent would receive personal feedback after completion of the conjoint task online. This feedback is a summary of the individual findings and would be generated by the ACA programme automatically, as explained earlier. Consequently, it would be important for the respondent to take part in the survey. Second, each manager obtained a unique user-name-password combination (i.e., 'user-key') in the letter. The key becomes invalid after the conjoint simulation has been completed online. In this way, only the key informant was able to access the online environment of the simulation. Third, the researcher checked daily which keys had been used online. Some managers, particularly the ones that completed the survey early on, were contacted by telephone in order to briefly discuss their experience with the conjoint survey after completion. This procedure is similar to the one taken in the pilot test. Fourth, the respondent had to select the appropriate 'function' and 'industry sector' from a list. This was another means to double-check whether the respondent had completed the survey. The first step ensured that the key informant was motivated

to take part in the exercise. The remaining three steps helped to determine that the key informant completed the task and not somebody else.

Overall, all 42 subjects (i.e., 9 managers of the pilot focal company and 33 respondents from the original sample) were involved in Stage III and the researcher proceeded with analysing the data.

7.5 Data Analysis

Using conjoint analysis, the research can determine both the relative importance of each attribute as well as which levels of each attribute are most preferred. Once these preferences (or utilities) have been determined, the respondent's overall preference for a given supplier can be estimated by summing the utilities for each attribute level that describes the supplier. Remember that seven subjective measures represented the degree of relationship quality with a given supplier, on the one hand; on the other, three objective measures stood for the formal selection criteria as the official selection basis. The purpose of conjoint analysis is to estimate utility scores, called part-worths, for these characteristics. Since each factor level has a part-worth score, it is also possible to predict the effects of factor level combinations that were not actually presented in the experiment. Output from conjoint analysis not only includes part-worth estimates showing preferences for attribute alternatives, but also importance ratings of the attributes etc. In other words, the influence of relationship quality against the official selection criteria can be determined, which will answer the second part of the research question (i.e., how does RQ relate to the customer's loyalty?).

Since any one supplier will probably not contain all of the best characteristics and none of the worst, the manufacturer decides which characteristics are important and which are unimportant – however, not all attributes can be physically 'touched.' The question arises as to how to present suppliers to all respondents and to observe which supplier would have really been selected? This question will be answered in the next two sections.

7.5.1 Supplier Profiles in an Orthogonal Design

ACA not only helps the design of the conjoint task and data collection, but it also combines data analysis and market simulation in one piece of software. ACA's market simulator works as though one had all of the respondents gathered in one room for the purpose of voting for suppliers in a competitive setting. The programme is able to let 30 supplier profiles compete against each other at a time. As profiles will be created out of 10 attributes with 3 levels each, the number of possible profiles would go beyond the capacity of the simulator.

Earlier, the orthogonal design was introduced as one way of presenting the full-profile conjoint analysis. The approach was deemed unsuitable for collecting the data in Stage III (refer to 7.3.1.4.1 on page 201). However, to use the ACA market simulator effectively, an orthogonal array is perfectly appropriate as the number of profiles can be reduced by it. The orthogonal design is integrated in the statistical programme package *SPSS 10.05*, which defines a subset of the stimuli for evaluation that still allows estimation of the part-worth for all main effects. In other words, SPSS presents a suitable fraction of all possible supplier alternatives and it is not necessary for the respondents to evaluate every theoretical combination, but a subset of representative ones (Hair et al., 1998).

In this particular piece of research, *SPSS* created 27 hypothetical supplier profiles based on the total number of attributes and attribute levels. On each of these profiles, all factors of interest are represented and a different combination of factor levels appears (refer to the table below).

Supplier Profile	Trust	Complaint Handling	Early Info.	Feed-back	Open-ness	Problem Solving	Type of Relation-ship	Quality	Delivery	Price
Supplier 1	1	2	1	3	2	2	1	1	2	3
Supplier 2	3	2	2	3	3	1	2	1	3	1
Supplier 3	2	3	2	3	1	1	1	2	2	2
Supplier 4	2	1	2	2	2	2	1	2	3	1
Supplier 5	3	1	1	2	1	3	3	2	2	3
Supplier 6	2	3	3	2	2	1	3	1	2	1
Supplier 7	1	1	3	2	3	1	2	2	1	2
Supplier 8	2	2	1	2	2	3	2	3	1	1
Supplier 9	3	3	2	2	1	2	2	1	1	3
Supplier10	3	1	3	3	3	3	1	3	2	1
Supplier11	2	3	1	1	3	1	2	3	2	3
Supplier12	1	3	2	1	1	3	3	3	3	1
Supplier13	1	2	3	1	1	2	2	2	2	1
Supplier14	3	3	3	1	2	2	1	3	1	2
Supplier15	1	3	1	2	3	3	1	1	3	2
Supplier16	2	1	1	3	1	2	2	3	3	2
Supplier17	1	1	2	3	2	1	3	3	1	3
Supplier18	1	1	1	1	1	1	1	1	1	1
Supplier19	3	2	1	1	2	1	3	2	3	2
Supplier20	1	3	3	3	2	3	2	2	3	3
Supplier21	3	1	2	1	2	3	2	1	2	2
Supplier22	2	1	3	1	3	2	3	1	3	3
Supplier23	1	2	2	2	3	2	3	3	2	2
Supplier24	3	2	3	2	1	1	1	3	3	3
Supplier25	2	2	3	3	1	3	3	1	1	2
Supplier26	3	3	1	3	3	2	3	2	1	1
Supplier27	2	2	2	1	3	3	1	2	1	3

Table 7-6: Orthogonal Design of Hypothetical Suppliers

Table 7-6 gives an overview of the supplier profiles 1 to 27 (in the left column) that are representative for all supplier profiles imaginable. In the top row, the ten attributes are listed. In the body of the table, the attribute levels are indicated. Note that the levels are coded 1, 2 or 3, but any other coding scheme that is unique could have been used. The attribute levels in the factorial orthogonal design are as follows:

Trust:
1 = Total Mistrust
2 = Trust the supplier, but not in all respects
3 = Complete Trust

Complaint Handling:
1 = Very good complaint handling
2 = Average complaint handling where the supplier needs to be persuaded/convinced that a fault exists
3 = Very poor complaint handling

Early Information:
1 = No active information
2 = Information is not always provided in time to react
3 = Early information that allow one to deal with upcoming problems early on

Feedback:
1 = Speedy feedback with relevant information content
2 = Average feedback where information is not always relevant
3 = No feedback

Openness:
1 = Indirect communication where everything needs to be addressed in a diplomatic manner
2 = Open communication, but not in all respects
3 = Open communication where everything can be addressed openly

Problem Solving:
1 = Problems are solved jointly with the supplier
2 = Supplier understands the problems, but is not always able to solve them
3 = Buyer needs to solve problems alone as the supplier is either not able to solve them or does not understand the problems at all

Type of Relationship:
1 = Pure business relationship merely based on 'order and delivery'
2 = Neutral, friendly business relationship
3 = Very personal relationship on the 'professional level'

Quality:
1 = 100%-Top quality
2 = Average product quality
3 = Poor product quality that leads to an above-average scrap rate

Delivery:
1 = Delivery is always on-time
2 = Average delivery performance which is on-time usually but delayed sometimes
3 = Delivery is always delayed

Price:
1 = Less than market price (less expensive)
2 = Average (market price)
3 = Above market price (more expensive)

Fortunately, the orthogonal design of SPSS created less than 30 profiles, which is a number within the limits of the ACA market simulator. Instead of printing them on separate cards (for presenting them to the respondents for evaluation purposes), the attribute levels of each profile was used to conduct the supplier selection simulation in ACA.

7.5.2 Supplier Selection Simulation

Based on the preferences of the respondents, hypothetical suppliers (defined in terms of the attribute levels in the study) compete against each other and gain a hypothetical share of business. The ACA market simulator transforms these preferences into different models for predicting buyer choices for specific market scenarios. Four simulation models can be used to calculate these shares: first choice, share of preference, randomised first choice, and supplier selection likelihood.

All analysis models will be explained first, before moving on to apply the models in the analysis of Stage III (refer to 'Findings' starting on page 247).

7.5.2.1 First Choice

The First Choice Model assumes that a respondent would choose the product/service (or supplier in this study) with the highest overall utility. It is sometimes referred to as the 'Maximum Utility Rule.' A simple example, where different ice creams are compared, is given below:

Flavour	Utility
Chocolate	0
Vanilla	30
Strawberry	40

Price	Utility
£0.60	50
£0.80	25
£1.00	0

Table 7-7: First Choice Model - Example of a Product based on Two Attributes and Three Attribute Levels

Source: Based on Orme (2000: 6-3).

In Table 7-7, different ice creams are compared in terms of their flavour (one attribute and three levels) and their price (one attribute and three levels). Knowing the utility values of each attribute level, it is possible to predict how a respondent would choose between, for instance, a vanilla ice cream for £0.80 and a strawberry ice cream for £1.00. The formula below illustrates how to determine the overall utility of each ice cream:

Vanilla (30 utiles) + £0.80 (25 utiles) = 55 utiles

Strawberry (40 utiles) + £1.00 (0 utiles) = 40 utiles

According to overall utilities, the respondent is likely to prefer the vanilla ice cream as it offers more utilities (i.e., 55 vs. 40).

The First Choice Model generates a hypothetical market simulation based on a large number of respondents. If, for instance, the utility values of 500 respondents are known, it is possible to count how many would prefer the vanilla and how many would choose the strawberry ice cream. The result would lead to the 'share of preference,' also referred to as the 'share of choice.'

The model requires the individual-level utilities. Based on the utility values, if 300 of the 500 respondents preferred the vanilla ice cream and 200 the strawberry one, the share of choice would be computed as follows:

Vanilla at £0.80	300/500 = 0.60
Strawberry at £1.00	200/500 = 0.40

In the example above, 60% of the 500 respondents would prefer the vanilla ice cream compared to 40% that would be in favour of the strawberry one.

This illustrates the most simple simulation approach, referred to as the First Choice Model. It assumes the respondent will choose the product with the highest overall utility. All other less preferred products receive zero share. If two or more products are exactly the same in terms of utility (and more preferred than any other product in the simulation scenario), the respondent's choice is split evenly amongt them. In other words, the First Choice rule does not artificially inflate the

shares for similar (or identical) products. This property is especially important in situations in which some product offerings are quite similar to others in the competitive set.

As products with less overall utility are ignored, its principal weakness is that the shares of preference results are generally more extreme than with the other simulation models. Another weakness is that it reflects information only about the respondent's first choice. Information about the relative preference for the remaining products in the simulation is lost. As a result, standard errors for the First Choice Model are generally much higher than with the other simulation models.

However, the First Choice Model is relevant to the present study, as manufacturers in a modified re-buy situation tend to select one supplier for a given product rather than distributing their order amongst several suppliers.

7.5.2.2 Share of Preference

Two 'Share of Preference' models exist: a) the basic model, and b) the model with correction for product similarity. A basic share of preference model does not consider similarities among products and if an identical product is entered into the simulation twice, it can receive up to twice as large a total share of preference as it would when entered only once. In contrast, the correction model prevents the preference shares of similar products from being overstated. The correction is based on each product's total similarity to other products (i.e., defined by their attribute levels).

In this analysis, the supplier profiles are computed in an orthogonal design, covering the whole range of attribute level combinations. These combinations are unique and the 27 hypothetical suppliers are unique also. Huber (1987: 7) describes this design as follows: "An orthogonal design is simply one in which the levels of different attributes across profiles are uncorrelated." For this reason, both share of preference models will compute the same results and the share of each supplier will not be overstated (i.e., the corrected model does not need to account for identical supplier profiles). In this particular piece of research, the 'model with correction for product similarity' has not got any advantage over the basic model

and the researcher decided to exclude the corrected model from the analysis. From here onwards, the basic model for computing the share of preference will be referred to as the 'share of preference model' for short.

The share of preference model takes into account that respondents will not always make rational decisions like buying the product with the highest total utility. Instead, it estimates the probability of choosing the simulated product, arriving at a 'share of preference' for the product. Orme (2000) expects this model to match decisions in the real world more closely, as it captures much more information about each respondent's preferences for products than the First Choice method (described above). The programme distributes these preference shares based on the relative differences in total utilities between each product in the simulation. Not only does a researcher learn which product is preferred, but he also learns the relative desirability of the remaining products

7.5.2.3 Randomised First Choice

The Randomised First Choice (RFC) method combines many of the desirable elements of the First Choice and the Share of Preference models. RFC, suggested by Orme (1998b) and later refined by Huber et al. (1999), was shown to outperform all other Sawtooth Software simulation models in predicting holdout choice shares for a data set they examined. The holdout choice sets for that study were designed specifically to include product concepts that differed greatly in terms of similarity within each set. Therefore, as Huber et al. (1999: 8) explain, this model adjusts conjoint shares to the marketplace, as it "provides better choice share predictions by determining the optimal levels of attribute and product variability when generating simulated choices."

Rather than using the utilities as point estimates of preference, RFC recognizes that there is some degree of error or variance around these points. The RFC model adds unique random variance to each part-worth (and/or product utility) and computes shares of preference in the same manner as the First Choice method.

7.5.2.4 Supplier Selection Likelihood

As calibration concepts had been integrated into the online survey, the researcher had the opportunity to compute a 'purchase likelihood model.' The purchase likelihood model estimates the stated purchase likelihood for the suppliers specified in the simulator. As any supplier has more attributes than a product has, the purchase likelihood model will be referred to as the 'supplier selection likelihood model' in this study.

Each supplier profile is considered independently and does not take into account any competitive profiles, but simply evaluates a single supplier profile in terms of its average desirability. Thus, the result could be interpreted as a 'desirability index' meant to serve as a gauge or barometer for purchase intent. All other choice models in this chapter are comparative models that require at least two profiles to be specified in the simulation.

Sawtooth suggests that in the case of new product introductions, especially when there are no existing competitors, it is probably the most appropriate method of analysis. For this research, it means that each supplier profile will be evaluated independently from others. As the 'supplier market' in the new product development process (i.e., the modified re-buy situation in the conjoint analysis) is limited to a few suppliers, it would be interesting to see how they would score on the desirability index.

7.5.3 Average Utility Values of Supplier Attributes

A utility is a measure of relative desirability or worth. An ACA study leads to a set of utilities (part-worths) that quantify managers' preferences for each level of each supplier attribute. These utilities can be analysed in a number of ways and they can be analysed on an individual basis (i.e., manager by manager). In order to arrive at meaningful predictions and to compare the supplier attributes, the utility values are typically averaged per respondent. The utilities are zero-centred within each attribute.

For example:

Level	Utility
£300	-0.6
£200	+0.1
£100	+0.5

An example of three attribute levels and their respective utility values is shown above. A negative utility value does not necessarily mean that this level is unattractive to the respondent. The utilities are scaled to sum to 0 within each attribute and certain utility values have to be negative in order to counterbalance the positive values. Consequently, a given value has to be interpreted in relation to the remaining values. In this respect, the example shows that on average respondents prefer lower price levels (£100 = 0.5 utility level) to higher ones (e.g., £300 = -0.6).

Every attribute level in a conjoint project is assigned a utility. The higher the utility, the more desirable the attribute level. Before leaving this example behind, it is worth noting that high utility levels have a large positive impact on influencing respondents to choose products or to select suppliers.

7.5.4 Average Importance of Supplier Attributes

ACA computes the relative importance of each supplier attribute. The importance depends on how much difference each attribute could make to the total utility of a supplier profile. That difference is the range in the attribute's utility values. The ranges are percentaged in order to obtain a set of attribute importance values that add up to 100. An example, where three attributes of a product are compared, is as follows:

Attribute	Level	Range of Utility Values	Total Range	Percent Importance
Brand	A – B	+40 – -60	100	45.5%
Colour	Red – Blue	+20 – -20	40	18.2%
Price	£50 – £100	+40 – -40	80	36.4%
		Total	**220**	**100%**

Table 7-8: Attribute Importance – An Example

Source: Based on Orme (2000: *10-4*).

Table 7-8 shows for the attribute Brand that the total range of utility values from level A (+40) to B (-60) is 100. Across the attributes Brand, Colour, and Price, the total range of utility values is 220. In the case of Brand, the share of Percentage Importance is 45.5% (i.e., 100 total range of Brand / 220 total range of all attributes × 100).

Overall, a larger range of utility values is reflected in a higher percentage of importance. If the three attributes were equally important, Brand, Colour, and Price would achieve 33.33% importance (i.e., 100% / 3 attributes). The importance is ratio data, which means that an attribute with an importance of 20% is twice as important as an attribute with an importance of 10%. In the example above, Brand is thus most important, followed by Price and Colour. The percentage importance is based on the average utility values across all respondents. It is therefore also termed the 'average importance' of an attribute.

All four analysis models, average utility values and average importance of supplier attributes have been computed for this research and the findings are introduced next.

7.6 Findings

This chapter consists of three main sections: 1) the findings of the focus company (i.e., pilot study), 2) the results of the actual sample, and 3) the results of both the focus company and the actual sample combined. Each section will be analysed in the light of the following four models:

- *First Choice Model* analyses the offers in a highly competitive market, focussing on the first choice while neglecting all other offers (i.e., 'maximum utility rule').
- *Share of Preference Model* compares suppliers in a competitive market, estimating the probability of choosing the supplier and arriving at a 'share of preference' for each supplier. All suppliers are considered and the market is split amongst them.

- *Randomised First Choice Model* combines the advantages of the First Choice Model and the Share of Preference Model.
- *Supplier Selection Likelihood Model* computes the likelihood of selecting a given supplier while neglecting all other offers. It is a 'desirability index' regardless of whether the market is competitive or not.

The models are simulations that will analyse supplier selection processes in different market scenarios. The discussion of findings will then move on to cover the average utility values that compare the ten supplier attributes in terms of their attribute levels. Afterwards, the discussion will centre on the average importance of each supplier attribute in the supplier selection process. Finally, the researcher will develop a model that will answer the question of how relationship quality is related to loyalty.

7.6.1 Focus Company

The pilot study consists of eight purchasing managers and the managing director, who is mostly involved in purchasing in a single organisation (i.e., focus company). All nine managers are responsible for managing and selecting suppliers. More information about the focus company was given earlier (refer to sample description on page 232).

7.6.1.1 Supplier Selection Simulation

7.6.1.1.1 First Choice Model

The First Choice Model illustrates how the nine managers of the focus company would have selected the suppliers, based on their preferences. Table 7-9 compares the twenty-seven hypothetical suppliers in this respect (refer to section 7.5.1 on page 238 for the overview of the supplier profiles):

Supplier Profile	Share of Choice (%)	Standard Errors
Supplier 1		
Supplier 2	*11.11*	*10.48*
Supplier 3		
Supplier 4		

Supplier Profile	Share of Choice (%)	Standard Errors
Supplier 5		
Supplier 6	*55.56*	*16.56*
Supplier 7	*22.22*	*13.86*
Supplier 8		
Supplier 9		
Supplier 10		
Supplier 11		
Supplier 12		
Supplier 13		
Supplier 14		
Supplier 15		
Supplier 16		
Supplier 17		
Supplier 18	*11.11*	*10.48*
Supplier 19		
Supplier 20		
Supplier 21		
Supplier 22		
Supplier 23		
Supplier 24		
Supplier 25		
Supplier 26		
Supplier 27		
Total Number of Respondents	*9*	*9*

Table 7-9: First Choice Model – Supplier Shares of Preference (Focus Company)

The table shows which suppliers are preferred by the sample. As not all respondents favour the same supplier attributes to the same extent, the choice of only one supplier from a pool of twenty-seven has to entail compromises. Therefore, shares of preferences are not estimated without error and ACA reports the respective standard errors within a 95% confidence interval (i.e., .05 level of significance) in the right-hand column of the table. These errors are "a sort of yardstick against which experimental or 'variable' variance is checked" (Kerlinger, 1992: 191). The terms 'error' and 'deviation' are seen as synonymous in statistics (Heiman, 1996; Gravetter and Wallnau, 1996) and this is the reason why the term standard deviation is sometimes used to express how the preferences of the sample deviate from the mean share of choice. The share is the standard –

or mean – and the error defines the distance from the mean. Hence, a standard error measures the variation in estimated values within the confidence interval that would be observed if multiple replications of the sample were made. The values lie above and below the mean share of choice, as the following figure illustrates:

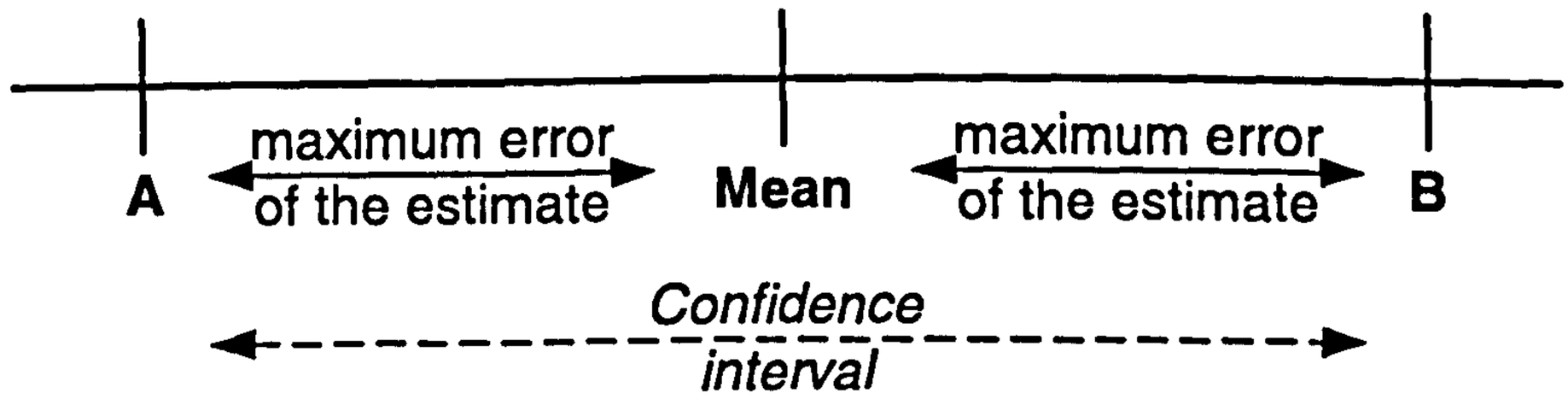


Figure 7-21: The Anatomy of a Confidence Interval

Source: Based on Tropper (1998: 277).

In Figure 7-21, value A represents the lower boundary of the confidence interval, while B stands for the upper boundary. Between both 'maximum errors of the estimate' one can see the confidence interval itself and this is indicated by the dotted line. The interval shows that variability around the mean exists.

Explained in simple terms, standard errors express the degree of compromise among the respondents needed to select a given supplier. The question is 'how much had the sample to compromise to arrive at their mutual Share of Choice for each supplier?' (i.e., 'what is the range between A and B?').

Taking Supplier 6 as an example, the share of choice of all nine respondents is 55.56% of the total. The standard error of this share is 16.56. The range is equal to ± 1.96 times the standard error, where 1.96 is the z-score[20] associated with the 95% confidence interval (Orme, 1998a; Norman and Streiner, 2000). For Supplier 6, the range can be computed as follows:

$$55.56 \pm 1.96 \times 16.56 = 23.1024 \text{ and } 88.0176.$$

Based on ACA's calculation, one is 95% confident that the share of choice for Supplier 6 is somewhere between 23.10% and 88.02%. The next question is whether the range is large or small. Although 'large' and 'small' are relative

[20] The z-score is also called 'standard score' and "is a way of expressing any raw score in terms of SD [standard deviation] units" (Norman and Streiner, 2000: 28).

terms, when computing the range of Supplier 7 (i.e., -4.9456 and 49.3856) one has to conclude that the range is quite large. The lower boundary value is even less than 0. When calculating the ranges for suppliers 2 and 18, the results are more extreme.

Why is this the case? Standard errors are dependent on the sample size; the smaller the sample the higher the error (cf. Orme, 1998a). This effect can be observed when comparing the standard errors reported in Table 7-9 (n=9) with the equivalent errors of Table 7-24 on page 278 (i.e., the results of the First Choice Model of the actual sample; n=33).

In addition, higher standard errors can be expected in this mode of analysis. As the model assumes that the respondents will select the suppliers with the highest overall utility, the total market is split amongst the four suppliers. Consequently, the model allocates zero share of business for all other less preferred suppliers. Information about the relative preference for the remaining suppliers in the simulation is not considered. The results are therefore more extreme and, therefore, standard errors for the First Choice Model are generally much higher than with all other analysis models (Orme, 2002).

Despite the discussion on standard errors, the results are interesting. ACA computes the mean shares of choice based on the individuals' preferences. The shares represent the compromises the sample made based on their preferences and in this sense, they are very relevant and meaningful. The sample favours only four suppliers, while twenty-three suppliers have not been considered for selection at all: The largest share of choice is allocated to Supplier 6 (i.e., 55.56%). Fewer respondents are in favour of Supplier 7 (22.22% share), 2 (11.11%), and 18 (11.11%). As noted earlier, the results are based on the 'maximum utility rule,' which indicates that the four suppliers offer the greatest average utility values to the respondents compared to all other suppliers.

Before discussing why particularly these four suppliers have been chosen by the sample, the results of the remaining three models of analysis will be shown.

7.6.1.1.2 Share of Preference Model

The Share of Preference Model computes the shares of preference for each supplier. Rather than excluding suppliers that would not receive the first choice of the sample, it is possible to see the relative desirability of the remaining suppliers. Table 7-10 provides an overview of the preference shares:

Supplier Profile	Share of Preference (%)	Standard Errors
Supplier 1	*0.99*	*0.31*
Supplier 2	*9.38*	*2.27*
Supplier 3	*0.95*	*0.15*
Supplier 4	*3.50*	*1.32*
Supplier 5	*0.82*	*0.37*
Supplier 6	*15.12*	*1.86*
Supplier 7	*12.03*	*2.06*
Supplier 8	*1.42*	*0.44*
Supplier 9	*1.55*	*0.43*
Supplier 10	*4.31*	*0.67*
Supplier 11	*0.92*	*0.27*
Supplier 12	*0.13*	*0.03*
Supplier 13	*5.90*	*1.33*
Supplier 14	*4.51*	*1.19*
Supplier 15	*0.31*	*0.08*
Supplier 16	*0.28*	*0.06*
Supplier 17	*0.72*	*0.19*
Supplier 18	*9.10*	*1.89*
Supplier 19	*3.22*	*0.57*
Supplier 20	*0.29*	*0.09*
Supplier 21	*7.03*	*1.38*
Supplier 22	*7.59*	*1.49*
Supplier 23	*0.44*	*0.07*
Supplier 24	*0.81*	*0.16*
Supplier 25	*3.44*	*0.60*
Supplier 26	*3.69*	*0.88*
Supplier 27	*1.49*	*0.22*
Total Number of Respondents	*9*	*9*

Table 7-10: Supplier Shares of Preference (Pilot Sample)

All hypothetical suppliers received a certain share of preference – the average preference share is 3.70% (i.e., 100% total share / 27 suppliers). Those suppliers with an above-average share of preference gained a share from the supplier that

only achieved a proportion below average. Therefore, suppliers with a share greater than 3.70% would have been selected by the sample. Table 7-11 shows the suppliers that gained an above-average share:

Supplier Profile	Share of Preference (%)	Comparison to other Models
Supplier 6	***15.12***	Confirms Results of *First Choice Model*
Supplier 7	***12.03***	
Supplier 2	***9.38***	
Supplier 18	***9.10***	
Supplier 22	*7.59*	
Supplier 21	*7.03*	
Supplier 13	*5.90*	
Supplier 14	*4.51*	
Supplier 10	*4.31*	

Table 7-11: Above-average Supplier Shares of Preference in the order of Shares (Pilot Sample)

Table 7-11 re-grouped the results displayed in Table 7-10 in terms of the share of preference: ten out of twenty-seven suppliers gained an above-average share (i.e., >3.70%). Suppliers 6 (15.12%) and 7 (12.03%) are leading, followed by Suppliers 2 (9.38%) and 18 (9.10%) who achieved similar results. The Top-4 suppliers confirm the finding of the First Choice Model (discussed earlier) and are highlighted in grey. Suppliers 22, 21, 13, 14, 10, and 26 achieved an above-average share of preference. However, the last six suppliers scored considerably lower in terms of share of preference.

7.6.1.1.3 Randomised First Choice Model

The Randomised First Choice Model is based on the 'maximum utility rule,' as the First Choice Model. However, instead of neglecting the less preferred suppliers, the overall choice of 100% is divided amongst all potential suppliers (i.e., like in the Share of Preference Model). Table 7-12 provides a snapshot of the results:

Supplier Profile	Randomised First Choice (%)	Standard Error
Supplier 1	*0.49*	*0.20*
Supplier 2	*10.50*	*2.48*
Supplier 3	*0.49*	*0.17*
Supplier 4	*3.36*	*1.63*
Supplier 5	*0.46*	*0.28*
Supplier 6	*17.45*	*2.48*
Supplier 7	*13.48*	*2.37*
Supplier 8	*0.92*	*0.42*
Supplier 9	*1.07*	*0.41*
Supplier 10	*3.77*	*0.72*
Supplier 11	*0.36*	*0.16*
Supplier 12	*0.01*	*0.01*
Supplier 13	*5.67*	*1.53*
Supplier 14	*4.69*	*1.52*
Supplier 15	*0.11*	*0.05*
Supplier 16	*0.04*	*0.02*
Supplier 17	*0.33*	*0.13*
Supplier 18	*10.42*	*2.38*
Supplier 19	*2.72*	*0.57*
Supplier 20	*0.12*	*0.06*
Supplier 21	*7.52*	*1.70*
Supplier 22	*8.00*	*2.00*
Supplier 23	*0.07*	*0.02*
Supplier 24	*0.48*	*0.12*
Supplier 25	*2.96*	*0.64*
Supplier 26	*3.57*	*1.00*
Supplier 27	*0.91*	*0.18*
Total Number of Respondents	*9*	*9*

Table 7-12: Randomised First Choice (Pilot Sample)

The table above shows all suppliers in terms of the share they would receive out of a total of 100%. The shares range from 0.01% (Supplier 12, mid-table) to 17.45% (Supplier 6, top-quarter of table).

The average of receiving a randomised first choice is 3.70% (i.e., 100% / 27 suppliers). The results are re-organised in terms of the above-average randomised first choice (see Table 7-13).

Supplier Profile	Randomised First Choice (%)	Comparison to other Models	
Supplier 6	***17.45***	Confirms Results of *Share Preference Model*	Re-confirms Results of *First Choice Model*
Supplier 7	***13.48***		
Supplier 2	***10.50***		
Supplier 18	***10.42***		
Supplier 22	***8.00***		
Supplier 21	***7.52***		
Supplier 13	***5.67***		
Supplier 14	***4.69***		
Supplier 10	***3.77***		

Table 7-13: Above-average Randomised First Choice (Pilot Sample)

All suppliers that achieved an above-average randomised first choice are listed in the order of the randomised first choice share. Supplier 6 (17.45%) is the most preferred, followed by Suppliers 7 (13.48%), 2 (10.50%), and 18 (10.42%). Suppliers 2 and 8 have a similar choice level, which re-confirms the findings of the First Choice Model. Suppliers 22, 21, 13, 14, and 10 are considerably less attractive to the sample when selecting suppliers, although their choice shares are above average. This confirms the results of the Share of Preference Model. Overall, the results are in tune with the findings of the First Choice and the Share of Preference Models.

7.6.1.1.4 Supplier Selection Likelihood

The Supplier Selection Likelihood Model evaluates each supplier independently from all other suppliers. The likelihood of selection is given on a 0 to 100 scale, shown below:

Supplier Profile	Focus Company (%)	Standard Error
Supplier 1	*32.79*	*8.40*
Supplier 2	*75.47*	*6.92*
Supplier 3	*34.12*	*6.28*
Supplier 4	*52.69*	*8.91*
Supplier 5	*24.34*	*7.83*
Supplier 6	*84.48*	*4.37*
Supplier 7	*84.18*	*2.38*
Supplier 8	*37.85*	*8.88*
Supplier 9	*38.27*	*6.93*
Supplier 10	*63.74*	*7.59*
Supplier 11	*28.42*	*6.72*
Supplier 12	*5.72*	*0.81*
Supplier 13	*67.86*	*5.09*
Supplier 14	*61.55*	*7.20*
Supplier 15	*15.01*	*3.88*
Supplier 16	*14.43*	*3.72*
Supplier 17	*27.67*	*5.76*
Supplier 18	*76.23*	*4.98*
Supplier 19	*59.47*	*7.74*
Supplier 20	*12.44*	*2.80*
Supplier 21	*72.98*	*6.96*
Supplier 22	*74.75*	*4.86*
Supplier 23	*20.93*	*3.41*
Supplier 24	*29.64*	*5.59*
Supplier 25	*58.94*	*7.72*
Supplier 26	*59.75*	*7.62*
Supplier 27	*43.34*	*7.35*
Total Number of Respondents	*9*	*9*

Table 7-14: Supplier Selection Likelihood (Pilot Sample)

Table 7-14 displays the twenty-seven hypothetical suppliers in terms of how likely it is that they have been selected (in percent). The results range from 5.72% (Supplier 12, mid-table) to 84.48% (Supplier 6, top-quarter of table). It is likely that those suppliers that scored greater than 50% on the desirability index are the

contenders most likely to be selected. Table 7-15 below regroups the results of Table 7-14 in terms of the desirability index above 50%:

Supplier Profile	Selection Likelihood (%)	Comparison to other Models		
Supplier 6	***84.48***	Re-confirms Results of *Share of Preference Model*	Confirms Results of *Randomised First Choice Model*	Re-confirms Results of *First Choice Model*
Supplier 7	***84.18***			
Supplier 18	***76.23***			
Supplier 2	***75.47***			
Supplier 22	***74.75***			
Supplier 21	***72.98***			
Supplier 13	***67.86***			
Supplier 10	***63.74***			
Supplier 14	***61.55***			
Supplier 26	*59.75*			
Supplier 19	*59.47*			
Supplier 25	*58.94*			
Supplier 4	*52.69*			

Table 7-15: Above-average Supplier Selection Likelihood (Pilot Sample)

Thirteen of the twenty-seven suppliers achieved a desirability index greater than 50%. The high scores of Suppliers 6 (84.49%), 7 (84.18%), 18 (76.23%), and 2 (75.47%) re-confirm the results of the First Choice Model. The results of Suppliers 22, 21, 13, 10, and 14 confirm the findings of the Share of Preference Model as well as the First Choice Model. These results are highlighted in grey. In addition, Suppliers 26, 19, 25, and 4 were able to gain a desirability index above-average, although they can be found at the bottom of the table.

7.6.1.1.5 Overview of the Four Analysis Models

The table below gives a snapshot of the results of the First Choice Model, Share of Preference Model, Randomised First Choice Model, and the Supplier Selection Likelihood Model:

Supplier Profile	First Choice	Randomised First Choice	Share of Preference	Supplier Selection Likelihood
Supplier 6	**1**	**1**	**1**	**1**
Supplier 7	**2**	**2**	**2**	**2**
Supplier 18	**3/4**	**4**	**4**	**3**
Supplier 2	**3/4**	**3**	**3**	**4**
Supplier 22		5	5	5
Supplier 21		6	6	6
Supplier 13		7	7	7
Supplier 10		9	9	8
Supplier 14		8	8	9
Supplier 26				10
Supplier 19				11
Supplier 25				12
Supplier 4				13

Table 7-16: Overview of the Four Analysis Models (Focus Company)

Table 7-16 compares the four models of analysis and displays the suppliers that have the potential to be selected. Depending on the model, the rank of preference is given in the main body of the table. The four models of analysis achieved similar results. In particular, the Top-4 suppliers across all models are Suppliers 6, 7, 18, and 2 (highlighted in grey). The Randomised First Choice Model is less extreme than the First Choice Model and suggests Suppliers 22, 21, 13, 10, and 14 in addition. The Share of Preference Model achieved similar results, and the Supplier Selection Likelihood Model – which is the most general – adds Suppliers 26, 19, 25, and 4.

Overall, the focus company respondents would have selected Supplier 6. It is worth noting that the Top-4 suppliers clearly outperformed the remaining suppliers and all four suppliers would be strong contenders for the focus company. It would be interesting to evaluate their characteristics and Table 7-17 compares their profiles.

Attribute	Supplier 6	Supplier 7	Supplier 18	Supplier 2
Trust	*2 = Trust the supplier, but not in all respects*	*1 = Total Mistrust*	*1 = Total Mistrust*	*3 = Complete Trust*
Complaint Handling	*3 = Very poor complaint handling*	*1 = Very good complaint handling*	*1 = Very good complaint handling*	*2 = Average complaint handling where the supplier needs to be persuaded/convinced that a fault exists*
Early Information	*3 = Early information that allows one to deal with upcoming problems early on*	*3 = Early information that allows one to deal with upcoming problems early on*	*1 = No active information*	*2 = Information is not always provided in time to react*
Feedback	*2 = Average feedback where information is not always relevant*	*2 = Average feedback where information is not always relevant*	*1 = Speedy feedback with relevant information content*	*3 = No feedback*
Openness	*2 = Open communication, but not in all respects*	*3 = Open communication where everything can be addressed openly*	*1 = Indirect communication where everything needs to be addressed in a diplomatic manner*	*3 = Open communication where everything can be addressed openly*
Problem Solving	*1 = Problems are solved jointly with the supplier*	*1 = Problems are solved jointly with the supplier*	*1 = Problems are solved jointly with the supplier*	*1 = Problems are solved jointly with the supplier*
Type of Relationship	*3 = Very personal relationship on the 'professional level'*	*2 = Neutral, friendly business relationship*	*1 = Pure business relationship merely based on 'order and delivery'*	*2 = Neutral, friendly business relationship*
Product Quality	***1 = 100%-Top quality***	***2 = Average product quality***	***1 = 100%-Top quality***	***1 = 100%-Top quality***
Delivery Performance	***2 = Average delivery performance which is on-time usually but delayed sometimes***	***1 = Delivery is always on-time***	***1 = Delivery is always on-time***	***3 = Delivery is always delayed***
Price	***1 = Less than market price (less expensive)***	***2 = Average (market price)***	***1 = Less than market price (less expensive)***	***1 = Less than market price (less expensive)***

Table 7-17: The Top-4 Supplier Profiles Selected by the Focus Company

According to all modes of analysis, the focus company would have selected the hypothetical suppliers in Table 7-17 (or at least one of them). The supplier attributes are split between the relationship quality factors (i.e., the seven attributes at the top of the table) and the three performance factors quality, delivery, and price (i.e., at the bottom of the table; highlighted in grey).

Comparing the profiles on the basis of the analysis performed is difficult, as the importance values of the supplier attributes are not known. The only conclusion that one can draw at this point is as follows:

- *Performance Factors*: The suppliers offer at least average performance or better (with the exception of Supplier 2 whose 'delivery is always delayed').
- *Relationship Quality*: The seven relationship quality factors are all mixed (except 'problem solving' which happens to be always jointly with the supplier).

In conclusion, the findings of the four modes of analysis are very important as they clearly differentiate suppliers that would have been selected and the ones that would not have been considered. However, the analysis offers little help in interpreting the findings. Fortunately, all analysis models are based on the average utility values of supplier attributes. Based on these values, it is possible to compute correlations of respondents and the attributes. Further, introducing the attribute values, together with the average importance of attributes, allows a more detailed data interpretation that will shed light on the motivation to select the Top-4 suppliers. The remainder of this chapter will be dedicated to discussing the initial results further.

7.6.1.2 Analysing Potential Links Between Respondents and Supplier Attributes

Based on the individual utility values, it is possible to compute correlations of a) the respondents of the focus company and b) the relationship between the ten supplier attributes. Table 7-18 provides an overview of how the respondents are associated with each other.

Internal Respondent Number*	MD	Purchasing 1	Purchasing 2	Purchasing 3	Purchasing 4	Purchasing 5	Purchasing 6	Purchasing 7	Purchasing 9
MD	1								
Purchasing 1	**0.853959**	1							
Purchasing 2	0.699438	0.505064	1						
Purchasing 3	**0.822847**	**0.73024**	0.6755	1					
Purchasing 4	**0.794992**	**0.710161**	**0.705024**	0.647276	1				
Purchasing 5	**0.838591**	0.693324	**0.83135**	0.607693	**0.80456**	1			
Purchasing 6	**0.703252**	**0.7468**	0.584039	0.646412	**0.700839**	**0.729494**	1		
Purchasing 7	**0.854653**	**0.792489**	0.673945	**0.733984**	**0.800839**	**0.758962**	**0.747854**	1	
Purchasing 8	**0.800836**	0.678757	**0.71034**	**0.707299**	**0.911502**	**0.786332**	**0.741256**	**0.81737**	1

All correlations are significant at the .01 level.

Table 7-18: Correlations of Respondents (Focus Company)

The table above shows how closely the respondents correlate in terms of their utility values (correlations >70% are highlighted in bold; all correlations are significant at the .01 level). The nine managers correlate highly with each other, which shows that they represent a homogeneous group of subjects. This might not be surprising, as all respondents are involved in the purchasing department of a single organisation.

The next table gives an overview of the attribute correlations, based on the same utility values.

AL*	A.	B.	C.	D.	E.	F.	G.	H.	I.	J.	K.	L.	M.	N.	O.	P.	Q.	R.	S.
A.	1																		
B.	0.350844	1																	
C.	**-0.80801**	-0.60708	1																
D.	-0.40588	0.415198	0.147153	1															
E.	0.126415	0.574331	0.041235	0.135206	1														
F.	0.325647	-0.61657	0.039681	**-0.87009**	-0.34373	1													
G.	0.341434	0.43105	-0.03503	0.144183	**0.738426**	-0.11743	1												
H.	**-0.73194**	-0.3579	**0.74338**	0.378658	0.047545	-0.31396	-0.23181	1											
I.	0.262016	0.150276	-0.49942	-0.31857	-0.32296	0.222634	-0.53489	-0.54816	1										
J.	-0.26771	-0.04424	0.019985	-0.24001	0.065463	-0.17286	-0.40044	0.089628	0.235711	1									
K.	0.22778	0.291464	0.023364	0.28447	0.322732	0.024674	0.603205	-0.02364	-0.29357	-0.67509	1								
L.	0.095145	0.168932	0.244433	0.316157	0.562644	-0.16605	**0.739098**	0.074824	-0.50328	-0.51818	0.527076	1							
M.	-0.0382	0.27375	-0.06798	0.129287	0.09329	-0.07573	-0.21068	-0.16827	**0.701087**	-0.03618	0.173977	-0.05388	1						
N.	0.385627	0.420718	-0.16162	0.072234	0.657302	-0.16168	**0.886786**	-0.14681	-0.64818	-0.20675	0.419633	0.467332	-0.51743	1					
O.	**-0.70481**	-0.5985	**0.708203**	0.104455	-0.3076	0.044985	-0.53036	0.667223	-0.03367	0.058775	-0.23358	0.078871	0.146311	-0.67608	1				
P.	-0.41601	0.083057	0.287425	0.142712	0.263521	-0.28408	0.183768	0.056918	-0.19491	0.301562	-0.33186	0.359036	-0.19679	0.068252	0.294582	1			
Q.	0.082767	0.057469	0.133593	-0.22286	0.397201	0.207613	0.192973	0.227203	-0.12835	-0.0779	0.443941	-0.14516	0.166889	0.276466	-0.23729	-0.57744	1		
R.	0.344013	0.366903	-0.2128	0.531347	0.224392	-0.35194	0.511061	-0.22929	-0.15075	-0.5522	0.445862	**0.734749**	0.138206	0.27759	-0.1764	0.024497	-0.37312	1	
S.	0.385863	**0.857157**	-0.58403	0.450906	0.402675	-0.54478	0.286577	-0.44045	0.388363	-0.0989	0.269241	0.183543	0.587529	0.142666	-0.48675	-0.10937	-0.03464	0.584852	1
T.	0.268534	-0.18296	-0.04507	-0.52405	0.190734	0.323731	0.257272	0.06462	-0.49864	0.196107	-0.1385	-0.07247	**-0.80131**	0.585406	-0.31074	-0.00975	0.297283	-0.40848	-0.5352
U.	-0.59861	-0.62312	**0.923364**	-0.03459	0.068956	0.27857	0.12503	0.610385	-0.54504	-0.22805	0.230765	0.386932	-0.16318	-0.02984	0.638603	0.263561	0.184687	-0.17497	-0.66768
V.	0.380274	0.506261	-0.33312	0.491894	0.131441	-0.22045	0.521642	-0.24813	-0.16721	-0.8456	**0.852983**	0.423387	0.108676	0.403213	-0.43017	-0.31994	0.08901	0.664512	0.518054
W.	-0.30879	-0.25163	0.412569	0.035773	0.249155	-0.20318	-0.15476	0.446018	-0.09228	0.489709	-0.49572	0.284355	0.071061	-0.22974	0.55624	0.369374	-0.22442	0.09224	-0.10219
X.	-0.08609	0.264153	0.298547	-0.12968	**0.816751**	0.007442	0.647978	0.068564	-0.33315	0.07053	0.342285	0.321289	0.034614	0.57425	-0.23799	0.243221	0.599217	-0.19238	0.028132
Y.	-0.03442	0.149995	0.242178	-0.1728	0.537827	0.183481	0.457526	0.190033	-0.3415	-0.31608	0.536879	0.36125	-0.08832	0.399136	0.031343	0.193163	0.503495	-0.2198	-0.19736
Z.	0.144301	0.4483	-0.11677	0.421184	0.585193	-0.61043	0.572106	-0.05384	-0.38744	0.201511	-0.0872	0.516021	-0.20758	0.577593	-0.3469	0.343146	-0.26209	0.588747	0.450019
AA.	-0.13373	-0.21516	0.273478	-0.08578	-0.16858	0.398747	-0.17076	0.09009	0.297901	-0.47017	0.543406	-0.09198	0.62378	-0.39922	0.255953	-0.49307	0.523877	-0.14028	-0.02347
BB.	-0.39046	-0.01769	0.281629	0.285477	0.185755	-0.45244	0.15374	0.451026	-0.67571	0.426949	-0.27794	-0.12379	-0.64346	0.461185	-0.15287	0.198537	0.085026	-0.24423	-0.26969
CC.	-0.42239	0.289801	0.364961	0.315666	0.467585	-0.29094	0.07037	0.24454	0.203641	0.021387	0.298563	0.164861	**0.78021**	-0.20878	0.257697	0.094153	0.3846	-0.00454	0.390808
DD.	0.581315	0.233696	-0.25294	-0.17135	0.301701	0.328422	0.452869	-0.42916	0.198217	-0.64449	0.614453	0.615466	0.374652	0.140761	-0.11554	-0.10379	0.06229	0.551097	0.358052

Table continuous on next page.

Table continued from previous page.

AL*	T.	U.	V.	W.	X.	Y.	Z.	AA.	BB.	CC.	DD.
T.	1										
U.	0.104629	1									
V.	-0.26556	-0.18517	1								
W.	-0.056	0.248388	-0.60328	1							
X.	0.310204	0.370651	-0.01805	-0.01153	1						
Y.	0.356692	0.488662	0.168535	-0.1979	**0.72558**	1					
Z.	0.07342	-0.24252	0.102227	0.420269	0.18174	-0.23777	1				
AA.	-0.43604	0.352821	0.253403	-0.32114	0.119325	0.282994	-0.68598	1			
BB.	0.494968	0.102605	-0.23442	0.111625	0.225786	-0.07423	0.450845	-0.5624	1		
CC.	-0.58169	0.251469	0.0457	0.175503	0.508574	0.314343	-0.05638	0.556532	-0.22179	1	
DD.	-0.20415	0.01916	0.507817	-0.09174	0.148828	0.374619	-0.03418	0.356013	**-0.78567**	0.179877	1

Table 7-19: Correlations of Attribute Levels (Focus Company)

***Attribute Levels (AL):**

A. Total Mistrust	P. Problems are solved jointly with the supplier
B. Trust the supplier, but not in all respects	Q. Supplier understands the problems, but is not always able to solve them
C. Complete Trust	R. Buyer needs to solve problems alone as the supplier is either not able to solve them or does not understand the problems at all
D. Very good complaint handling	S. Pure business relationship merely based on 'order and delivery'
E. Average complaint handling where the supplier needs to be persuaded/convinced that a fault exists	T. Neutral, friendly business relationship
F. Very poor complaint handling	U. Very personal relationship on the 'professional level'
G. No active information	V. 100%-Top quality
H. Information is not always provided in time to react	W. Average product quality
I. Early information that allows one to deal with upcoming problems early on	X. Poor product quality that leads to an above-average scrap rate
J. Speedy feedback with relevant information content	Y. Delivery is always on-time
K. Average feedback where information is not always relevant	Z. Average delivery performance which is on-time usually but delayed sometimes
L. No feedback	AA. Delivery is always delayed
M. Indirect communication where everything needs to be addressed in a diplomatic manner	BB. Less than market price (less expensive)
N. Open communication, but not in all respects	CC. Average (market price)
O. Open communication where everything can be addressed openly	DD. Above market price (more expensive)

To organise the thirty attribute levels in table format (i.e., ten attributes at three levels), the attribute levels (AL) in Table 7-19 are abbreviated from A to DD. The table shows how the levels are associated with each other and highlights the correlations r > +/-0.70 in bold. The findings are in order of the strength of correlation and are as follows:

- *Complete Trust* correlates positively with *Very personal relationship on the 'professional level'* (r = 0.92). This is a correlation that might be expected to be found.
- *No active information* correlates positively with *Open communication, but not in all respects* (r = 0.89). If there is no active communication from the supplier side, the communication in general is only partly open.
- *Very good complaint handling* correlates negatively with *Very poor complaint handling* (r = -0.87). This is a relationship one would expect to find and is within one attribute.
- *Trust the supplier, but not in all respects* correlates positively with *Pure business relationship merely based on 'order and delivery'* (r = 0.85). The correlation shows that a certain degree of trust is needed in any business relationship.
- *Average feedback where information is not always relevant* correlates positively with *100%-Top quality* (r = 0.85). Suppliers that provide average feedback usually deliver top product quality.
- *Average complaint handling where the supplier needs to be persuaded/convinced that a fault exists* correlates positively with *Poor product quality that leads to an above-average scrap rate* (r = 0.82). A supplier who delivers poor product quality needs to be persuaded that a fault in the product exists.
- *Total Mistrust* correlates negatively with *Complete Trust* (r = -0.81). This is a relationship one would expect to find and is within one attribute.
- *Indirect communication where everything needs to be addressed in a diplomatic manner* correlates negatively with *Neutral, friendly business relationship* (r = -0.80). This means that in the eyes of the focus company, a neutral business relationship is characterised by indirect communication.

- *Less than market price (less expensive)* correlates negatively with *Above market price (more expensive)* (r = -0.79). That a less expensive supplier is negatively associated with a more expensive supplier is a correlation that one would expect to find.
- *Indirect communication where everything needs to be addressed in a diplomatic manner* correlates positively with *Average (market price)* (r = 0.78). Indirect communication is associated with an average market price.
- *No active information* correlates positively with *No feedback* (r = 0.74). A supplier that does not establish an active communication link does not provide any feedback to the manufacturer either.
- *Average complaint handling where the supplier needs to be persuaded/convinced that a fault exists* correlates positively with *No active information* (r = 0.74). The correlation suggests that if a supplier needs to be convinced that the product is faulty, the supplier does not actively establish a communication link with the manufacturer.
- *Complete Trust* correlates positively with *Information is not always provided in time to react* (r = 0.74). The manufacturer might expect to receive information to prevent an upcoming problem etc., if the manager completely trusts the supplier. However, the manufacturer does not always expect it.
- *No feedback* correlates positively with *Buyer needs to solve problems alone as the supplier is either not able to solve them or does not understand the problems at all* (r = 0.73). Suppliers that do not provide any feedback usually leave the manufacturer alone in solving problems.
- *Poor product quality that leads to an above-average scrap rate* correlates positively with *Delivery is always on-time* (r = 0.73). When the delivery is always on time, the product quality is poor. This association is inconclusive.

- *Total Mistrust* correlates negatively with *Information is not always provided in time to react* (r = -0.73). A similar association was discussed earlier in terms of Complete Mistrust and the average 'early information' level. Sometimes information is provided in time to react and sometimes it is not. However, the manufacturer might not expect to receive any information to prevent an upcoming problem etc., if the manager totally mistrusts the supplier.
- *Total Mistrust* correlates negatively with *Open communication where everything can be addressed openly* (r = -0.70). This is a relationship one would expect to find.
- *Complete Trust* correlates positively with *Open communication where everything can be addressed openly* (r = 0.70). Again, a similar association has been discussed above in terms of Total Mistrust and is a relationship one might expect to find.
- *Early information that allows one to deal with upcoming problems early on* correlates positively with *Indirect communication where everything needs to be addressed in a diplomatic manner* (r = 0.70). Suppliers that inform the manufacturer early are associated with indirect communication. This relationship is inconclusive.

Of the 435 possible correlations of Table 7-19, only twenty correlations can be found that are worth noting (i.e., r = >0.70). When interpreting the correlation table, most of the associations are plausible. Some correlations are within a given attribute (e.g., the attribute level *Total Mistrust* correlates negatively with the level *Complete Trust* within the trust-attribute). Outside an attribute, only certain attribute levels correlate (e.g., *Complete Trust* and *Personal Relationship*). However, in these cases only individual levels correlate and not the complete attributes (i.e., *Total Mistrust* does not correlate with *Pure Business Relationship*, nor do the average levels of *Trust* and *Type of Relationship* correlate). This not only shows that respondents were clearly able to differentiate the meaning of supplier attributes. It also means that the attributes are orthogonal and measure discrete entities, which re-confirms the impression gained in Stage II.

It should be noted that not all correlations could be expected. This unfortunate fact might be attributed to the limited sample size (n = 9) and not all correlations might be valid.

Overall, the respondents correlate highly, but not the attributes. This is another way of saying that every respondent focuses on similar attributes when selecting suppliers, but the attributes are discrete properties and measure different constructs. In order to interpret the data analysis further, attention will be diverted to the Performance-Relationship Quality Matrix.

7.6.1.3 Performance-Relationship Quality Matrix

Suppliers are selected based on the utilities they are able to offer the buyer. Hence, all analysis models are based on the average utility values of attribute levels. Moreover, not all attributes are equally important when selecting suppliers. Both the average utility values and average importance of supplier attributes are critical measures in developing the Performance-Relationship Quality Matrix.

7.6.1.3.1 Average Utility Values of Supplier Attributes

To each supplier attribute level, a different utility value is attached on average. Table 7-20 lists the average utility values that the focus company associates with all supplier attribute levels.

Dimension	Supplier Attribute	Supplier Attribute Levels	Average Utility
RELATIONSHIP QUALITY	Trust	Total Mistrust	*-49.89*
		Trust the supplier, but not in all respects	*12.30*
		Complete Trust	*37.59*
	Complaint Handling	Very good complaint handling	*43.48*
		Average complaint handling where the supplier needs to be persuaded/convinced that a fault exists	*2.26*
		Very poor complaint handling	*-45.74*
	Early Information	No active information	*-45.60*
		Information is not always provided in time to react	*-24.73*
		Early information that allows one to deal with upcoming problems early on	*70.34*
	Feedback	Speedy feedback with relevant information content	*37.32*
		Average feedback where information is not always relevant	*-12.28*
		No feedback	*-25.04*
	Openness	Indirect communication where everything needs to be addressed in a diplomatic manner	*-39.76*
		Open communication, but not in all respects	*12.88*
		Open communication where everything can be addressed openly	*26.88*
	Problem Solving	Problems are solved jointly with the supplier	*53.75*
		Supplier understands the problems, but is not always able to solve them	*1.03*
		Buyer needs to solve problems alone as the supplier is either not able to solve them or does not understand the problems at all	*-54.78*
	Type of Relationship	Pure business relationship merely based on 'order and delivery'	*-3.94*
		Neutral, friendly business relationship	*8.27*
		Very personal relationship on the 'professional level'	*-4.33*
PERFORMANCE	**Product Quality**	**100%-Top product quality**	***63.65***
		Average product quality	***10.22***
		Poor product quality that leads to an above-average scrap rate	***-73.87***
	Delivery Performance	**Delivery is always on-time**	***42.51***
		Average delivery performance which is on-time usually but delayed sometimes	***9.81***
		Delivery is always delayed	***-52.32***
	Price	**Less than market price (less expensive)**	***56.93***
		Average (market price)	***0.25***
		Above market price (more expensive)	***-57.17***

Table 7-20: Average Utility Values of Supplier Attributes (Focus Company)

The results in the table above are very interesting in that they show which attribute levels are preferred by the focus company. For instance, the three performance factors (highlighted in grey) offer positive average utility values when performed well (i.e., top product quality = 63.65, on-time delivery = 42.51, and less than market price = 56.93). In contrast, when the performance factors show poor performance, the average utility values of the supplier offer are negative. Average performance results in somewhat positive average utility values. In this respect, the results might not be too surprising. However, the values of the relationship quality attributes are worth looking at: Trust (i.e., complete trust = 37.59; total mistrust = -49.89), complaint handling (i.e., very good = 43.48; very poor = -45.74), and problem solving (i.e., jointly = 53.75; alone = -54.78) convey positive or negative utility values, depending on whether they are performed well or poorly. The average levels result in utility values between the two extremes.

It is different with early information, for instance. Although 'early information that allows one to deal with upcoming problems early on' is seen very positively (i.e., average utility value of 70.34), when 'information is not always provided in time to react' contributes a negative utility value to the supplier's offer (-24.73). As soon as the supplier does not actively provide any information at all, the utility value drops even further down to -40.60. In similar vein, speedy feedback leads to positive average utility values, whereas average feedback and no feedback add negative utilities to the supplier's offer (-12.28 and -25.04 respectively). 'Open communication where everything can be addressed openly' as well as 'open communication but not in all respects' are both perceived positively (26.88 and 12.88 in stated order). In contrast, indirect communication is seen very negatively (-39.76). Communication seems therefore quite important for the focus company when selecting suppliers.

Last but not least, the sample prefers a 'neutral, friendly business relationship' (8.27) as opposed to a 'pure business relationship' (-3.94) or to a 'very personal relationship on the professional level' (-4.33). The latter attribute level is the least preferred compared to the former two. However, the range of utility values is very

small (i.e., -4.33 – +8.27) which suggests that the type of relationship may play a minor role for the focus company when selecting suppliers. The average importance of all ten supplier attributes will be discussed next.

7.6.1.3.2 Average Importance of Supplier Attributes

The average utility of supplier attributes is based on the total range of average utility values of a given attribute (as discussed earlier). ACA computes the importance that each respondent perceives for each attribute when selecting suppliers. When summarising attribute importance for groups, according to Orme (2000), it is best to compute importance for respondents individually and then to average them, and ACA is based on that principle. The table below gives a snapshot of average attribute importance:

Supplier Attribute	Importance (%)
Product Quality	***13.77***
Early Information	***12.35***
Price	***11.41***
Problem Solving	***10.85***
Trust	***10.11***
Delivery Performance	*9.67*
Complaint Handling	*9.08*
Openness	*8.71*
Feedback	*7.39*
Type of Relationship	*6.65*

Table 7-21: Average Importance of Supplier Attributes (Focus Company)

The table above lists the ten supplier attributes in order of their importance. For the focus company, product quality enjoys top priority when selecting suppliers, followed by early information, price, problem solving, trust, etc. The type of relationship comes last in the table. The attribute importance is averaged across the nine managers of the focus company. However, when discussing the importance of the ten supplier attributes, the average of importance is 10% (i.e., 100% total importance / ten attributes). It is apparent that only the top-five supplier attributes are above-average in importance when selecting suppliers, which is indicated in grey in Table 7-21.

Knowing the utility values of the attribute levels across all respondents and the average importance of each supplier attribute will help to explain why certain suppliers have been chosen over other suppliers by the four analysis models.

7.6.1.3.3 The Performance-Relationship Quality Matrix

The Performance-Relationship Quality Matrix is based on the utilities that a given supplier provides in terms of performance and the quality of the relationship. Both utility indices can be computed with the average utility values per attribute level as well as the average importance of each supplier attribute.

To start with, the attribute levels of the twenty-seven suppliers have been converted to their average utility values in the table below.

Supplier Profile	Relationship Quality Attributes							Performance Attributes		
	Trust	Complaint Handling	Early Information	Feedback	Openness	Problem Solving	Type of Relationship	Quality	Delivery	Price
Supplier 1	-49.89	2.26	-45.6	-25.04	12.88	1.03	-3.94	63.65	9.81	-57.17
Supplier 2	37.59	2.26	-24.73	-25.04	26.88	53.75	8.27	63.65	-52.32	56.93
Supplier 3	12.3	-45.74	-24.73	-25.04	-39.76	53.75	-3.94	10.22	9.81	0.25
Supplier 4	12.3	43.48	-24.73	-12.28	12.88	1.03	-3.94	10.22	-52.32	56.93
Supplier 5	37.59	43.48	-45.6	-12.28	-39.76	-54.78	-4.33	10.22	9.81	-57.17
Supplier 6	12.3	-45.74	70.34	-12.28	12.88	53.75	-4.33	63.65	9.81	56.93
Supplier 7	-49.89	43.48	70.34	-12.28	26.88	53.75	8.27	10.22	42.51	0.25
Supplier 8	12.3	2.26	-45.6	-12.28	12.88	-54.78	8.27	-73.87	42.51	56.93
Supplier 9	37.59	-45.74	-24.73	-12.28	-39.76	1.03	8.27	63.65	42.51	-57.17
Supplier 10	37.59	43.48	70.34	-25.04	26.88	-54.78	-3.94	-73.87	9.81	56.93
Supplier 11	12.3	-45.74	-45.6	37.32	26.88	53.75	8.27	-73.87	9.81	-57.17
Supplier 12	-49.89	-45.74	-24.73	37.32	-39.76	-54.78	-4.33	-73.87	-52.32	56.93
Supplier 13	-49.89	2.26	70.34	37.32	-39.76	1.03	8.27	10.22	9.81	56.93
Supplier 14	37.59	-45.74	70.34	37.32	12.88	1.03	-3.94	-73.87	42.51	0.25
Supplier 15	-49.89	-45.74	-45.6	-12.28	26.88	-54.78	-3.94	63.65	-52.32	0.25
Supplier 16	12.3	43.48	-45.6	-25.04	-39.76	1.03	8.27	-73.87	-52.32	0.25
Supplier 17	-49.89	43.48	-24.73	-25.04	12.88	53.75	-4.33	-73.87	42.51	-57.17
Supplier 18	-49.89	43.48	-45.6	37.32	-39.76	53.75	-3.94	63.65	42.51	56.93
Supplier 19	37.59	2.26	-45.6	37.32	12.88	53.75	-4.33	10.22	-52.32	0.25
Supplier 20	-49.89	-45.74	70.34	-25.04	12.88	-54.78	8.27	10.22	-52.32	-57.17
Supplier 21	37.59	43.48	-24.73	37.32	12.88	-54.78	8.27	63.65	9.81	0.25
Supplier 22	12.3	43.48	70.34	37.32	26.88	1.03	-4.33	63.65	-52.32	-57.17
Supplier 23	-49.89	2.26	-24.73	-12.28	26.88	1.03	-4.33	-73.87	9.81	0.25
Supplier 24	37.59	2.26	70.34	-12.28	-39.76	53.75	-3.94	-73.87	-52.32	-57.17
Supplier 25	12.3	2.26	70.34	-25.04	-39.76	-54.78	-4.33	63.65	42.51	0.25
Supplier 26	37.59	-45.74	-45.6	-25.04	26.88	1.03	-4.33	10.22	42.51	56.93
Supplier 27	12.3	2.26	-24.73	37.32	26.88	-54.78	-3.94	10.22	42.51	-57.17

Table 7-22: Average Utility Values of All Suppliers (Orthogonal Design of Focus Company)

The orthogonal design table (refer to Table 7-6 on page 239) and the average utility values of each attribute level (refer to Table 7-20 on page 268) gave the input to Table 7-22. The performance attributes are highlighted in grey. In short, the table does not show the attribute levels of the supplier offers, but the utility values that are associated with them.

The analysis of the ten supplier attributes showed that they are not all equally important when selecting suppliers. Hence, the Performance Utility Index (P_{util}) and the Relationship Quality Utility Index (RQ_{util}) can be computed when taking the average importance of each attribute into account (refer to Table 7-21 on page 270). The formulas to compute both indices are as follows:

$$P_{util} = (PQ_{util} \times PQ_{imp}) + (DP_{util} \times DP_{imp}) + (PR_{util} \times PR_{imp})$$

P_{util}	=	Performance Utility Index
PQ_{util}	=	Product Quality Average Utility Value (level-dependent)
PQ_{imp}	=	Product Quality Average Importance
DP_{util}	=	Delivery Performance Average Utility Value (level-dependent)
DP_{imp}	=	Delivery Performance Average Importance
PR_{util}	=	Price Average Utility Value (level-dependent)
PR_{imp}	=	Price Average Importance

$$RQ_{util} = (TR_{util} \times TR_{imp}) + (CH_{util} \times CH_{imp}) + (EI_{util} \times EI_{imp}) + (FE_{util} \times FE_{imp}) + (OP_{util} \times OP_{imp}) + (PS_{util} \times PS_{imp}) + (RE_{util} \times RE_{imp})$$

RQ_{util}	=	Relationship Quality Utility Index
TR_{util}	=	Trust Average Utility Value (level-dependent)
TR_{imp}	=	Trust Average Importance
CH_{util}	=	Complaint Handling Average Utility Value (level-dependent)
CH_{imp}	=	Complaint Handling Average Importance
EI_{util}	=	Early Information Average Utility Value (level-dependent)
EI_{imp}	=	Early Information Average Importance
FE_{util}	=	Feedback Utility Value (level-dependent)
FE_{imp}	=	Feedback Importance
OP_{util}	=	Openness Average Utility Value (level-dependent)
OP_{imp}	=	Openness Average Importance
PS_{util}	=	Problem Solving Average Utility Value (level-dependent)
PS_{imp}	=	Problem Solving Average Importance
RE_{util}	=	Relationship Type Average Utility Value (level-dependent)
RE_{imp}	=	Relationship Type Average Importance

For Supplier 1, for instance, P_{util} and RQ_{util} are computed as follows:

Supplier 1 P_{util} = (PQ63.65×13.77) + (DP9.81×9.67) + (PR-57.17×11.41) = 319.0135

Supplier 1 RQ_{util} = (TR-49.89×10.11) + (CH2.26×9.08) + (EI-45.6×12.35) + (FE-25.04×7.39) + (OP12.88×8.71) + (PS1.03×10.85) + (RE-3.94×6.65) = -1134.9134

For Supplier 1, the Performance Utility Index scores 319.0135, while the Relationship Quality Utility Index corresponds to -1134.9134. The table below shows the indices of all suppliers:

Supplier Profile	Performance Utility Index (P_{util})	Relationship Quality Utility Index (RQ_{util})
Supplier 1	319.0135	-1134.9134
Supplier 2	1020.0974	782.4024
Supplier 3	238.4446	-570.7504
Supplier 4	284.3663	220.146
Supplier 5	-416.7176	-848.543
Supplier 6	1620.8945	1153.5614
Supplier 7	554.6536	1540.6681
Supplier 8	43.4531	-936.2181
Supplier 9	635.2225	-711.5876
Supplier 10	-272.7559	1072.0475
Supplier 11	-1574.6369	293.9764
Supplier 12	-873.553	-1918.7949
Supplier 13	885.1634	380.4881
Supplier 14	-603.2657	1206.3688
Supplier 15	373.3786	-1960.0555
Supplier 16	-1520.2718	-509.1928
Supplier 17	-1258.4279	66.5272
Supplier 18	1937.1035	-186.2778
Supplier 19	-362.3525	779.7683
Supplier 20	-1017.5147	-663.2364
Supplier 21	974.1757	318.0299
Supplier 22	-281.7836	1880.151
Supplier 23	-919.4747	-663.526
Supplier 24	-2175.434	1389.1824
Supplier 25	1290.3847	-140.9399
Supplier 26	1201.3724	-566.9841
Supplier 27	-100.5086	-271.1861

Table 7-23: The Performance Utility Index and the Relationship Quality Utility Index of All Suppliers (Focus Company)

Table 7-23 gives an overview of P_{util} (highlighted in grey) and RQ_{util} of the twenty-seven hypothetical suppliers. The utility values on their own are meaningless; only comparing a given value with another one adds to the understanding of the problem at hand. Put differently, utility values have to be seen relatively and thus, both indices serve as coordinates in the figure below where meaningful comparisons can be made:

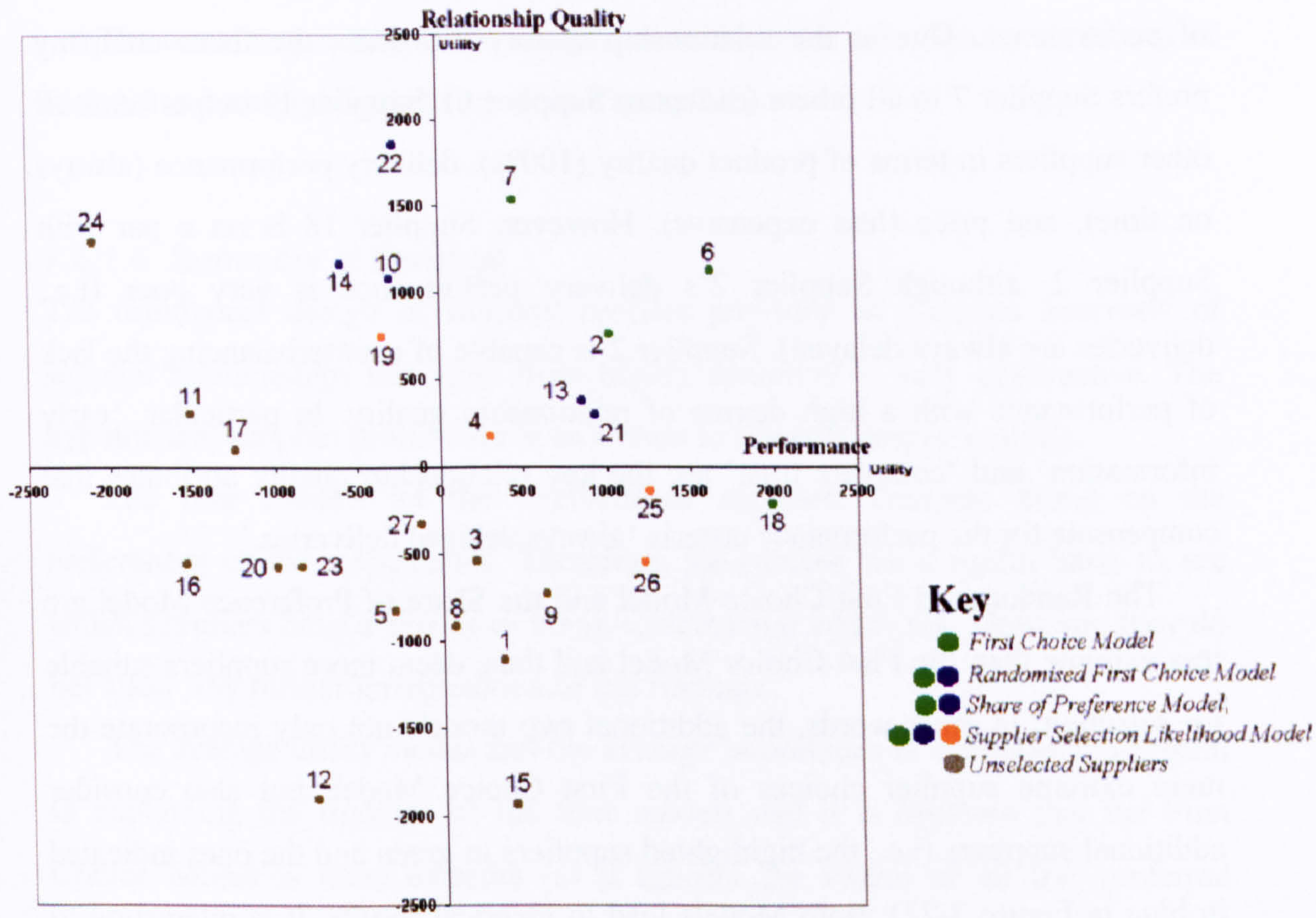


Figure 7-22: Performance-Relationship Quality Matrix (Focus Company)

Figure 7-22 shows the Performance-Relationship Quality Matrix that groups suppliers according to their average performance utility values (i.e., the X-axis of the figure) and average relationship quality utility values (i.e., the Y-axis). According to the First Choice Model, Supplier 6 is most preferred (55.56% First Choice share), 7 is the second preferred (22.22% First Choice share), and Suppliers 18 and 2 are third/forth preferred (both gained a 11% First Choice

share). Apart from these four suppliers highlighted in green, no other offers are considered in the supplier selection process, based on the First Choice Model.

It is interesting to see that Supplier 6 – the most preferred supplier – offers less than Supplier 18 in terms of performance. The lack of performance is overcompensated for by the relationship quality utility values and an influence of the relationship quality supplier attributes is visible in the selection process. This point is even more apparent when analysing Supplier 7, the second choice. Compared to Suppliers 25, 26, 2, 21, 13, and 9, Supplier 7 offers far less in terms of performance. Due to the relationship quality influence, the focus company prefers Supplier 7 to all others (except to Supplier 6). Supplier 18 outperforms all other suppliers in terms of product quality (100%), delivery performance (always on time), and price (less expensive). However, Supplier 18 is on a par with Supplier 2, although Supplier 2's delivery performance is very poor (i.e., deliveries are always delayed). Supplier 2 is capable of counterbalancing the lack of performance with a high degree of relationship quality. In particular, 'early information' and 'complete trust' are the key relationship quality attributes that compensate for the performance criteria 'always delayed deliveries.'

The Randomised First Choice Model and the Share of Preference Model are less extreme than the First Choice Model and thus, deem more suppliers suitable for selection. In other words, the additional two models not only incorporate the more extreme supplier choices of the First Choice Model, but also consider additional suppliers (i.e., the highlighted suppliers in green and the ones indicated in blue in Figure 7-22). Both Models lead to identical results. It is interesting to note that Supplier 22 is considered the fifth preferred supplier (i.e., 8% Randomised First Choice share and 7.59% Share of Preference) closely behind Supplier 18, which is the fourth (i.e., 10.42% Randomised First Choice share and 9.10% Share of Preference). Although Supplier 22 offers 100%-Top product quality, the deliveries are always delayed and the price is higher. The lack of performance is counterbalanced by relationship quality attributes, such as trust, very good complaint handling, early information, speedy feedback, open communication etc. The high-quality relationship makes the selection over Suppliers 13 and 21 more likely, although both offer greater performance.

In addition to the suppliers discussed above, the Supplier Selection Likelihood Model allocates above-average chances to be selected to Suppliers 26 (59.75% selection likelihood), 19 (59.47%), 25 (58.94%), and 4 (52.69%). These suppliers are highlighted in orange. Although their chance to be selected is above 50%, they are outperformed by all other suppliers discussed earlier – a chance to be selected of less than 60% might be unrealistic in practice (compare with Table 7-15 on page 257, where the more extreme models of analysis suggest a cut-off point for selection likelihood by 61.55% for Supplier 14).

The remaining suppliers are deemed unsuitable for selection by all modes of analysis and are highlighted in grey in Figure 7-22.

7.6.1.4 Summary of Findings

The orthogonal design of supplier profiles provides an accurate overview of supplier relationships that span from highly attractive to very unattractive. The hypothetical supplier profiles serve as a basis to conduct deeper analysis.

The four models let the hypothetical suppliers compete based on the preferences of the respondents. Therefore, the models are a useful basis to see which suppliers have a chance of being selected and which not. However, they do not allow any further interpretation of the findings.

The average utility values and the average importance of attributes are helpful in explaining the findings of the four models and it is apparent that the First Choice Model is more extreme (as it ignores the values of all less preferred suppliers). The Randomised First Choice Model is more general and achieved identical results to the Share of Preference Model. Finally, the Supplier Selection Likelihood Model highlights all suppliers that achieve an above-average chance of being selected (i.e., >50%). However, in practice, just scoring above average might prove to be insufficient for being selected in practice when the supplier market is competitive.

RQ has an influence on supplier selection and the Performance-Relationship Quality Matrix predicts supplier selection very well. However, the results might hold true only for the purchasing department of the focus company and it would be interesting to see how the findings of the actual sample compare.

7.6.2 Actual Study

The findings of the actual sample will be discussed under the same headings as the focus company findings above. However, the detailed tables are shown in the Appendices section (e.g., the results of the Supplier Selection Likelihood Model starting from 0% to 100% chance of selection in the order of the supplier number) and the regrouped tables will be discussed in the main body of the thesis (e.g., only the suppliers with a greater selection possibility than 50% in the Supplier Selection Likelihood table in the order of their selection chances).

7.6.2.1 Supplier Selection Simulation

7.6.2.1.1 First Choice Model

The original table of the First Choice Model is given in Appendix 8 on page 339. All hypothetical suppliers that have received a First Choice Share are shown in Table 7-24.

Supplier Profile	First Choice (%)	Standard Errors
Supplier 21	*24.24*	*7.46*
Supplier 22	*18.18*	*6.71*
Supplier 6	*15.15*	*6.24*
Supplier 7	*12.12*	*5.68*
Supplier 18	*12.12*	*5.68*
Supplier 2	*6.06*	*4.15*
Supplier 14	*6.06*	*4.15*
Supplier 9	*3.03*	*2.98*
Supplier 26	*3.03*	*2.98*

Table 7-24: First Choice Model – In Order of Supplier Shares of Preference (Actual Sample)

According to the First Choice Model, seven suppliers gain a share in the selection process. Supplier 21 is leading (24.24%), followed by 22 (18.18%), 6 (15.15%), 7 (12.12%), and 18 (12.12%). Suppliers 2, 14, 9, and 26 obtain considerably lower shares; the remaining suppliers did not receive any shares at all. Compared to the First Choice Model of the focus company (refer to Table 7-9 on page 249), the

standard errors are smaller. This is explained by the greater number of respondents in the actual study.

7.6.2.1.2 Share of Preference Model

The Share of Preference Model computed the shares of preference for all suppliers in Appendix 9 on page 340. The average preference share is 3.70% per supplier (i.e., 100% share / 27 suppliers) and Table 7-25 lists the suppliers that gained 3.70% or more.

Supplier Profile	Share of Preference (%)	Standard Error
Supplier 22	*13.26*	*1.82*
Supplier 7	*12.19*	*1.02*
Supplier 21	*11.98*	*1.17*
Supplier 6	*10.87*	*1.12*
Supplier 18	*8.00*	*1.44*
Supplier 2	*7.89*	*1.14*
Supplier 14	*4.51*	*0.99*
Supplier 19	*3.91*	*0.49*
Supplier 26	*3.80*	*0.78*

Table 7-25: Above-average Supplier Shares of Preference (Actual Sample)

Nine of the twenty-seven suppliers gain an above-average share of preference. The results almost completely reflect the findings of the First Choice Model.

7.6.2.1.3 Randomised First Choice

The randomised first choice shares of all suppliers are listed in Appendix 10 on page 341. Table 7-26 displays the suppliers that gained an above-average share of 3.70% or more.

Supplier Profile	Randomised First Choice (%)	Standard Error
Supplier 22	*14.72*	*2.07*
Supplier 21	*13.75*	*1.41*
Supplier 7	*13.67*	*1.22*
Supplier 6	*12.40*	*1.44*
Supplier 2	*8.62*	*1.40*
Supplier 18	*8.56*	*1.69*
Supplier 14	*4.23*	*1.14*

Table 7-26: Above-average Randomised First Choice (Actual Sample)

In line with the First Choice Model and the Share of Preference Model, the outcome of the Randomised First Choice Model allocated an above-average choice to Supplier 22, 21, 7, 6, 2, 18, and 14.

7.6.2.1.4 Supplier Selection Likelihood

The selection likelihood for each supplier is expressed in a percentage from 0% to 100% (refer to Appendix 11 on page 342). All suppliers that have a likelihood greater than 50% are listed in Table 7-27.

Supplier Profile	Supplier Selection Likelihood (%)	Standard Errors
Supplier 7	*82.79*	*1.43*
Supplier 21	*80.97*	*2.06*
Supplier 22	*80.09*	*2.14*
Supplier 6	*78.36*	*2.53*
Supplier 2	*70.78*	*2.88*
Supplier 18	*69.92*	*2.63*
Supplier 19	*58.16*	*3.46*
Supplier 14	*57.71*	*3.17*
Supplier 25	*55.40*	*2.95*
Supplier 26	*54.40*	*3.26*
Supplier 9	*53.45*	*3.28*
Supplier 10	*51.32*	*3.55*

Table 7-27: Above-average Supplier Selection Likelihood (Actual Sample)

Twelve suppliers secured a selection chance greater than 50%, although in practice one might argue that a chance less than 60% is unrealistic.

7.6.2.1.5 Overview of the Four Analysis Models

The supplier simulations were analysed with four different models – Table 7-28 provides a snapshot of the findings.

Supplier Profile	Randomised First Choice	First Choice	Share of Preference	Supplier Selection Likelihood
Supplier 21	**2**	**1**	**3**	**2**
Supplier 22	**1**	**2**	**1**	**3**
Supplier 6	**4**	**3**	**4**	**4**
Supplier 7	**3**	**4**	**2**	**1**
Supplier 18	**6**	**5**	**5**	**6**
Supplier 2	**5**	**6**	**6**	**5**
Supplier 14	**7**	**7**	**7**	**8**
Supplier 9		8		11
Supplier 26		9	9	10
Supplier 19			8	7
Supplier 25				9
Supplier 10				12

Table 7-28: Overview of the Four Analysis Models (Actual Sample)

When analysing the preferences of the thirty-three respondents, seven suppliers turn out to have the potential to be selected. They are highlighted in grey in the table above and their profiles can be found in Appendix 12 on page 343.

The First Choice Model, the Share of Preference Model and the Supplier Selection Likelihood Model add five extra suppliers (i.e., Suppliers 9, 26, 19, 25, and 10). However, the additional suppliers have a much smaller chance of being selected; the suppliers that have not been listed in Table 7-28 have no chance at all.

7.6.2.2 Analysing Potential Links Between Respondents and Supplier Attributes

The correlation table of respondents in the actual sample can be found in Appendix 13 on page 345. The table shows that the respondents correlate highly, indicating that a homogeneous group of managers was involved in Stage III.

When attribute levels are compared (refer to Appendix 14 on page 346), it is apparent that the attributes included in the study are very discrete.

When interpreting both tables in combination, one has to conclude that the thirty-three respondents of the actual study focus on similar attributes when selecting suppliers. In addition, the attributes are discrete properties and measure different entities. This finding reflects the outcome of the focus company, found earlier.

7.6.2.3 Performance-Relationship Quality Matrix

The Performance-Relationship Quality Matrix is based on two dimensions describing performance and relationship quality. The basis is a combination of average utility value of all attributes and the attribute importance for the actual sample. The matrix will be discussed next.

7.6.2.3.1 Average Utility Values of Supplier Attributes

The following table provides an overview of the average utility values of each attribute level. The supplier attributes have been divided into the relationship quality and performance dimensions.

Dimension	Supplier Attribute Levels	Average Utility
RELATIONSHIP QUALITY	Total Mistrust	-64.14
	Trust the supplier, but not in all respects	8.58
	Complete Trust	55.56
	Very good complaint handling	51.87
	Average complaint handling where the supplier needs to be persuaded/convinced that a fault exists	-3.74
	Very poor complaint handling	-48.13
	No active information	-37.62
	Information is not always provided in time to react	-15.75
	Early information that allows one to deal with upcoming problems early on	53.37
	Speedy feedback with relevant information content	42.21
	Average feedback where information is not always relevant	-8.37
	No feedback	-33.84
	Indirect communication where everything needs to be addressed in a diplomatic manner	-43.60
	Open communication, but not in all respects	7.60
	Open communication where everything can be addressed openly	36.00
	Problems are solved jointly with the supplier	51.90
	Supplier understands the problems, but is not always able to solve them	2.04
	Buyer needs to solve problems alone as the supplier is either not able to solve them or does not understand the problems at all	-53.94
	Pure business relationship merely based on 'order and delivery'	-21.84
	Neutral, friendly business relationship	14.21
	Very personal relationship on the 'professional level'	7.64
PERFORMANCE	100%-Top product quality	73.33
	Average product quality	2.54
	Poor product quality that leads to an above-average scrap rate	-75.88
	Delivery is always on-time	52.03
	Average delivery performance which is on-time usually but delayed sometimes	7.76
	Delivery is always delayed	-59.79
	Less than market price (less expensive)	22.02
	Average (market price)	3.78
	Above market price (more expensive)	-25.79

Table 7-29: Average Utility Values of Supplier Attributes (Actual Sample)

According to Table 7-29, complete trust is associated with a high utility value (55.56), whereas total mistrust is seen as far less attractive (-64.14) in the eyes of the respondents. To trust a supplier, while not in all respects, adds a considerably smaller value to the supplier offer (8.58).

Very good complaint handling is perceived as positive by the sample (51.87), whereas average (-3.74) and very poor complaint handling (-48.13) are both unattractive supplier characteristics. This means that a supplier has to offer above-average complaint handling skills if he would like to make a positive impact in his offer overall.

If no active information is provided (-37.62) or not provided in time to react (-15.75), the utility is associated with negative scores. If early information is provided in time to deal with upcoming problems, for instance, the utility value is positive and very high (53.37).

The respondents perceive the way a supplier provides feedback similarly to early information. Average (-8.37) and no feedback (-33.84) lead to a negative evaluation, while 'speedy feedback with relevant information content' gives a high positive impact to the overall utility (42.21).

In similar vein, the sample welcome open communication with their suppliers where everything can be addressed (36.00). Even communication that is not open in all respects is seen as positive (7.60), while indirect communication is perceived very negatively (-43.60).

It is best if problems are solved jointly with the supplier (51.90); when the 'supplier understands the problems, but is not always able to solve them' is seen far less attractive (2.04). If the buyer has to solve the problems without the supplier, this is deemed very negative (-53.94).

A 'very personal relationship' is seen as positive (7.64), while a 'neutral, friendly business relationship' is clearly preferred to all other types of relationship by the respondents (14.21). The managers evaluate a 'pure business relationship merely based on order and delivery' as the least attractive relationship type (-21.84).

The three performance attributes in Table 7-29 (i.e., product quality, delivery performance, and price) are highlighted in grey. According to the average utility values, poor performance is seen as negative, good performance is deemed positive, while average performance carries a somewhat positive value for the three factors.

The spread of utility values suggests that not all attributes enjoy an equal importance when selecting suppliers (to be discussed next).

7.6.2.3.2 Average Importance of Supplier Attributes

The ten supplier attributes are not all equally important when selecting suppliers. For the thirty-three managers of the actual sample, the attribute importance has been computed as follows:

Supplier Attribute	Importance (%)
Product Quality	***15.00***
Trust	***12.10***
Delivery Performance	***11.40***
Problem Solving	***10.76***
Complaint Handling	***10.35***
Early Information	*9.93*
Feedback	*8.65*
Openness	*8.60*
Price	*6.66*
Type of Relationship	*6.53*

Table 7-30: Average Importance of Supplier Attributes (Actual Sample)

Table 7-30 lists all supplier attributes according to their percentage importance. The average importance is 10% (i.e., 100% / 10 attributes) and the above-average attributes are highlighted in grey. Based on the conjoint analysis, the managers pay particular attention to product quality (15% importance), followed by trust (12.10%). Third is delivery performance (11.40%), fourth is problem solving (10.87%) and finally complaint handling (10.35%) comes into play. Early information is close to the average importance (9.93%), followed by feedback (8.65%) and openness (8.60%). Price (6.66%) and type of relationship (6.53%) are considerably less important in the supplier selection process.

7.6.2.3.3 The Matrix

The overall utility of a supplier's offer is influenced by the level of performance and relationship quality he is able to provide. The Performance-Relationship Quality Matrix is based on both dimensions, which takes into account the average utility values per attribute level as well as the average importance of each supplier attribute. Table 7-31 displays a summary of average utility values of the twenty-seven hypothetical suppliers in the orthogonal array.

Supplier Profile	Relationship Quality Attributes							Performance Attributes		
	Trust	Complaint Handling	Early Information	Feedback	Openness	Problem Solving	Type of Relationship	Quality	Delivery	Price
Supplier 1	-64.14	-3.74	-37.62	-33.84	7.6	2.04	-21.84	73.33	7.76	-25.79
Supplier 2	55.56	-3.74	-15.75	-33.84	36	51.9	14.21	73.33	-59.79	22.02
Supplier 3	8.58	-48.13	-15.75	-33.84	-43.6	51.9	-21.84	2.54	7.76	3.78
Supplier 4	8.58	51.87	-15.75	-8.37	7.6	2.04	-21.84	2.54	-59.79	22.02
Supplier 5	55.56	51.87	-37.62	-8.37	-43.6	-53.94	7.64	2.54	7.76	-25.79
Supplier 6	8.58	-48.13	53.37	-8.37	7.6	51.9	7.64	73.33	7.76	22.02
Supplier 7	-64.14	51.87	53.37	-8.37	36	51.9	14.21	2.54	52.03	3.78
Supplier 8	8.58	-3.74	-37.62	-8.37	7.6	-53.94	14.21	-75.88	52.03	22.02
Supplier 9	55.56	-48.13	-15.75	-8.37	-43.6	2.04	14.21	73.33	52.03	-25.79
Supplier 10	55.56	51.87	53.37	-33.84	36	-53.94	-21.84	-75.88	7.76	22.02
Supplier 11	8.58	-48.13	-37.62	42.21	36	51.9	14.21	-75.88	7.76	-25.79
Supplier 12	-64.14	-48.13	-15.75	42.21	-43.6	-53.94	7.64	-75.88	-59.79	22.02
Supplier 13	-64.14	-3.74	53.37	42.21	-43.6	2.04	14.21	2.54	7.76	22.02
Supplier 14	55.56	-48.13	53.37	42.21	7.6	2.04	-21.84	-75.88	52.03	3.78
Supplier 15	-64.14	-48.13	-37.62	-8.37	36	-53.94	-21.84	73.33	-59.79	3.78
Supplier 16	8.58	51.87	-37.62	-33.84	-43.6	2.04	14.21	-75.88	-59.79	3.78
Supplier 17	-64.14	51.87	-15.75	-33.84	7.6	51.9	7.64	-75.88	52.03	-25.79
Supplier 18	-64.14	51.87	-37.62	42.21	-43.6	51.9	-21.84	73.33	52.03	22.02
Supplier 19	55.56	-3.74	-37.62	42.21	7.6	51.9	7.64	2.54	-59.79	3.78
Supplier 20	-64.14	-48.13	53.37	-33.84	7.6	-53.94	14.21	2.54	-59.79	-25.79
Supplier 21	55.56	51.87	-15.75	42.21	7.6	-53.94	14.21	73.33	7.76	3.78
Supplier 22	8.58	51.87	53.37	42.21	36	2.04	7.64	73.33	-59.79	-25.79
Supplier 23	-64.14	-3.74	-15.75	-8.37	36	2.04	7.64	-75.88	7.76	3.78
Supplier 24	55.56	-3.74	53.37	-8.37	-43.6	51.9	-21.84	-75.88	-59.79	-25.79
Supplier 25	8.58	-3.74	53.37	-33.84	-43.6	-53.94	7.64	73.33	52.03	3.78
Supplier 26	55.56	-48.13	-37.62	-33.84	36	2.04	7.64	2.54	52.03	22.02
Supplier 27	8.58	-3.74	-15.75	42.21	36	-53.94	-21.84	2.54	52.03	-25.79

Table 7-31: Average Utility Values of All Suppliers (Orthogonal Design of Actual Sample)

The orthogonal design table (refer to Table 7-6 on page 239) and the average utility values of each attribute level (refer to Table 7-29 on page 283) were the basis for the table above. It shows the utility values of each of the hypothetical supplier profiles.

The Performance Utility Index (P_{util}) and the Relationship Quality Utility Index (RQ_{util}) can be calculated when taking the average importance of each attribute into account (refer to Table 7-30 on page 285).[21] The table below displays the values of P_{util} and RQ_{util}.

Supplier Profile	Performance Utility Index (P_{util})	Relationship Quality Utility Index (RQ_{util})
Supplier 1	1016.6526	-1536.3904
Supplier 2	564.9972	1145.2888
Supplier 3	151.7388	-802.5722
Supplier 4	-496.8528	356.5697
Supplier 5	-45.1974	-142.3018
Supplier 6	1335.0672	736.9293
Supplier 7	656.4168	1179.1594
Supplier 8	-398.4048	-803.1012
Supplier 9	1521.3306	-314.8858
Supplier 10	-903.0828	1032.969
Supplier 11	-1221.4974	558.0577
Supplier 12	-1673.1528	-1970.9857
Supplier 13	273.2172	-179.9407
Supplier 14	-519.8832	1013.9063
Supplier 15	443.5188	-2133.6162
Supplier 16	-1794.6312	-285.8284
Supplier 17	-716.8194	-14.6598
Supplier 18	1839.7452	-206.8208
Supplier 19	-618.3312	1298.8101
Supplier 20	-815.2674	-1459.2345
Supplier 21	1213.5888	995.6064
Supplier 22	246.5826	1917.1927
Supplier 23	-1024.5612	-662.1614
Supplier 24	-1991.5674	1131.9994
Supplier 25	1718.2668	-603.1081

[21] The formulas for computing the two indices are:

$P_{util} = (PQ_{util} \times PQ_{imp}) + (DP_{util} \times DP_{imp}) + (PR_{util} \times PR_{imp})$

$RQ_{util} = (TR_{util} \times TR_{imp}) + (CH_{util} \times CH_{imp}) + (EI_{util} \times EI_{imp}) + (FE_{util} \times FE_{imp}) + (OP_{util} \times OP_{imp}) + (PS_{util} \times PS_{imp}) + (RE_{util} \times RE_{imp})$

For more details, please refer to section 7.6.1.3.3 on page 271.

Supplier Profile	Performance Utility Index (P_{util})	Relationship Quality Utility Index (RQ_{util})
Supplier 26	777.8952	-110.7125
Supplier 27	459.4806	-139.5816

Table 7-32: The Performance Utility Index and the Relationship Quality Utility Index of All Suppliers (Actual Sample)

Table 7-32 gives an overview of P_{util} and RQ_{util} of the twenty-seven hypothetical suppliers. Both indices serve as coordinates in the figure below:

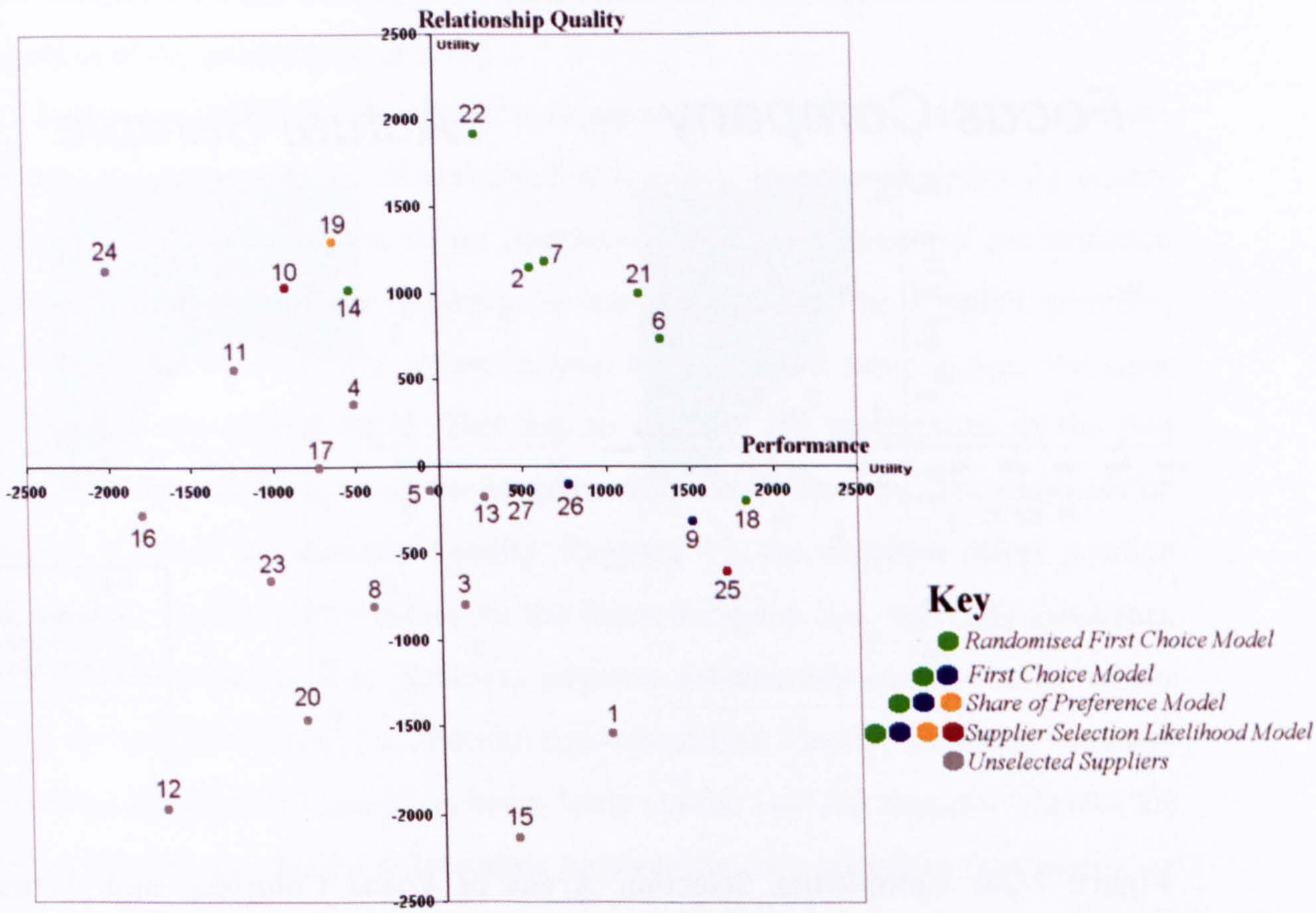


Figure 7-23: Performance-Relationship Quality Matrix (Actual Sample)

Figure 7-23 shows the Performance-Relationship Quality Matrix that groups suppliers according to their average performance utility values (i.e., the X-axis of the figure) and average relationship quality utility values (i.e., the Y-axis). Suppliers 21, 22, 6, 7, 18, 2, and 14 are highlighted by the four analysis models as having potential to be selected (in stated order). It is interesting to observe that, for instance Supplier 22, is preferred over Suppliers 6 and 7 (top right quadrant).

However, the performance levels of Supplier 22 are far lower compared to the other two suppliers. The matrix exposes the influence of the quality of relationships in the supplier selection process. This issue especially will be analysed in the remainder of this chapter.

7.6.3 An Integrated Overview (Focus Company and Actual Sample)

When analysing the results of the two sets of samples, similarities and differences become apparent (see figure below):

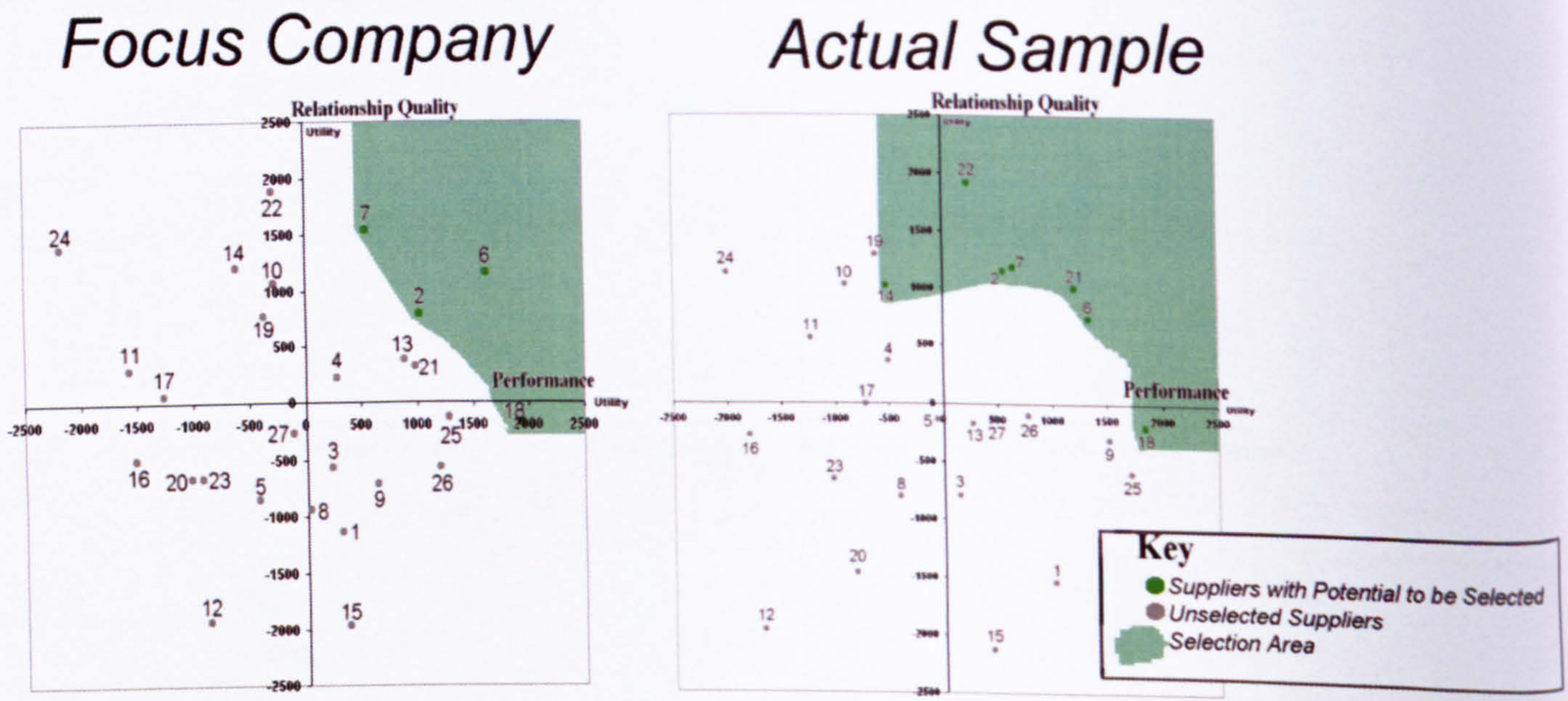


Figure 7-24: Comparing Selection Areas of Focus Company and Actual Sample

Figure 7-24 illustrates the Performance-Relationship Quality Matrixes of the focus company (left-hand side) and the actual sample (on the right). The green areas highlight the 'Selection Area' where all modes of analysis agree on selecting suppliers. Put differently, the suppliers within the area have the potential to be chosen. Outside the green area, selecting a supplier becomes unlikely, given competitive market conditions. The areas could not be calculated accurately, but

serve as good visual guidelines to show the similarities and differences between the two samples.

Both samples correspond in terms of the minimum level of RQ necessary to consider a supplier for selection purposes. For both samples, Supplier 18 could counterbalance the below average RQ utilities with the best possible performance utilities (i.e., bottom right quadrant in both matrixes). The respondents did not select any suppliers that offer lower relationship quality utility values than Supplier 18. In addition, Supplier 18 would not be the first choice for either of the two samples although this supplier outperforms all other suppliers in the test with regard to price, quality, and delivery.

In comparing the two matrixes, it is apparent that the two samples evaluate the performance attributes differently. For instance, whereas Supplier 22 underperforms in the eyes of the focus company and offers a negative performance utility score (i.e., top left quadrant in the left matrix), the supplier provides positive performance utility values in total for the actual sample (i.e., top right quadrant in the right matrix). This has to do with the preferences of the two samples – the two groups evaluate supplier attributes differently. The same can be said in terms of Relationship Quality. Supplier 13, for instance, offers positive relationship quality utility values for the focus company (i.e., top right quadrant), whereas the actual sample perceives negative relationship quality utility values from the supplier overall (i.e., bottom right quadrant). Finally, the focus company perceives Suppliers 13 and 21 as being fairly similar (see left matrix), whereas the actual sample can clearly differentiate between the two suppliers (see matrix on the right). The differences are explained by the different importance and utility values that both samples associate with each profile. In short, the suppliers differ in terms of their attractiveness to both samples.

The actual sample gives greater importance to RQ, which explains why Supplier 14 is still in the selection area (i.e., top left quadrant in right matrix), although it underperforms on the performance dimension. Supplier 19 offers more in terms of RQ (1298.81 positive utility values compared to 1013.91, refer to Table 7-32 on page 289) but a little bit less in terms of performance (-618.33

compared to -519.88). The actual sample did not select any supplier that offers less performance than Supplier 14.

Overall, the focus company has a more unified view in comparison to the actual sample who have a greater area of selection. The reason is that only purchasing managers represent the focus company in the survey, which results in a more coherent group view and the range of opinion is smaller. By contrast, the actual sample reflects a more balanced standpoint. Hence, the actual sample should reflect the industrial practice of today more accurately as it consists of cross-functional team members. The five functional areas of the actual sample are illustrated in terms of supplier attribute importance (see Table 7-33).

Supplier Attribute	Average Importance of Supplier Attributes (in Percent)						
	Purchasing	Top Management	Quality Management	Operations Management	Other Function	Actual Sample Total	Focus Company
Product Quality	*15.37*	*15.01*	*15.26*	*16.67*	*11.67*	*15.00*	*13.77*
Trust	*13.63*	*11.31*	*9.82*	*14.76*	*9.89*	*12.10*	*10.11*
Delivery Performance	*12.71*	*11.06*	*8.25*	*11.87*	*12.21*	*11.40*	*9.67*
Problem Solving	*10.01*	*10.47*	*10.25*	*13.72*	*14.03*	*10.76*	*10.85*
Complaint Handling	*9.65*	*11.59*	*11.21*	*9.95*	*8.88*	*10.35*	*9.08*
Early Information	*8.05*	*10.21*	*12.63*	*12.84*	*10.64*	*9.93*	*12.35*
Feedback	*8.63*	*8.26*	*9.25*	*5.34*	*10.81*	*8.65*	*7.39*
Openness	*8.94*	*7.71*	*9.67*	*7.68*	*7.93*	*8.60*	*8.71*
Price	*6.26*	*6.45*	*7.20*	*3.63*	*10.07*	*6.66*	*11.41*
Type of Relationship	*6.77*	*7.92*	*6.46*	*3.54*	*3.88*	*6.53*	*6.65*
Total Number of Respondents	***14***	***8***	***6***	***2***	***3***	***33***	***9***

Table 7-33: Average Importance of Supplier Attributes of all Functions

The table above gives an overview of the average importance of supplier attributes of the five management functions of the actual sample, as well as their overall average importance (highlighted in grey as a summary of the five columns on the left). The view of the Focus Company is displayed in the outer-column on the right. The order of the supplier attributes is according to the average importance seen by the actual sample overall (grey column). The average importance is 10%, as explained earlier.

When selecting suppliers, purchasing managers of the actual sample deem product quality as most important (15.37%), followed by trust (13.63%), delivery performance (12.71), and problem solving (10.01%). The importance of the remaining supplier attributes is below average (i.e., < 10%). Interestingly, the

price (6.26%) is the least important supplier attribute for the purchasing managers of the actual sample.

For the Focus Company – eight purchasing managers plus an MD who oversees the purchasing department – the importance scores are different. Although the nine respondents deem product quality (13.77%) to be most important, early information (12.35%), price (11.41%) are ranked two and three. Problem solving (10.85%) and trust (10.11%) are ranked four and five. The remaining attributes are of below average importance and the least important supplier attribute is the type of relationship (6.65%).

In terms of performance, the Focus Company is more 'product quality and price-driven,' whereas the purchasing managers of the actual sample focus more on 'product quality and delivery performance.' Overall, the purchasing managers of the Focus Company might represent more the views of the particular organisation than the purchasing managers of the actual sample that represent the views of various firms.

Despite the variations in preferences, the influence of Relationship Quality in selecting suppliers is evident in both samples. The table below contrasts the relationship quality-performance weighting of individual functions and the two samples involved in this study:

RQ / Performance	Weight of Importance (in Percent)						
	Purchasing	Top Management	Quality Management	Operations Management	Other Function	Actual Sample Total	Focus Company
Relationship Quality	*65.68*	*67.47*	*69.29*	*67.83*	*66.06*	*66.92*	*65.14*
Performance	*34.34*	*32.52*	*30.71*	*32.17*	*33.95*	*33.06*	*34.85*
Total	***100.02***	***99.99***	***100***	***100***	***100.01***	***99.98***	***99.99***

Table 7-34: Relationship Quality-Performance Influence in Supplier Selection

The table above provides a snapshot of the influence of Relationship Quality and Performance when selecting suppliers. The basis of the global importance weightings is taken from Table 7-33. The Relationship Quality Weight of 65.68% of the purchasing managers (of the actual sample) is calculated as follows:

Trust (13.63%) + Problem Solving (10.01%) + Complaint Handling (9.65%) + Early Information (8.05%) + Feedback (8.63%) + Openness (8.94%) + Type of Relationship (6.77%) = Overall RQ influence (65.68%)

The Performance Weight of 34.34% of the purchasing managers is computed as follows:

Product Quality (15.37%) + Delivery Performance (12.71%) + Price (6.26%) = Overall Performance influence (34.34%)

The five management functions of the actual sample are compared in Table 7-34, including their view overall (i.e., Actual Sample Total highlighted in grey). The view of the Focus Company is presented in the right-hand column of the table. The quality of the relationship influences the supplier selection decision by about 2/3, whereas the performance attributes account for approximately 1/3.

7.6.4 Reliability and Validity of the Conjoint Analysis

In conjoint analysis surveys, reliability is often measured with 'holdout cards' (Orme and King, 1998). In the online survey, the holdout cards are not used in utility estimation, but for measuring how well conjoint utilities can predict answers. In ACA, utilities are calibrated with holdout cards at the end of the survey. Thus, in ACA-terminology, holdout cards are termed 'calibration concepts.' Each manager is shown what should be the least attractive supplier profile, followed by the most attractive one (as determined from the answers given). These profiles – or concepts – establish a frame of reference and the respondent evaluates how likely the supplier is to select from 0 (i.e., this supplier will not be selected) to 100 (i.e., supplier will be selected). Two more supplier profiles have to be evaluated and they are placed between the two extremes in

terms of the attractiveness (refer to Figure 7-19 on page 227 to see a calibration concept as an example). The data obtained in the final calibration section of the survey was useful in three ways:

1. Some respondents might be unmotivated to take part in the survey or are confused about the task at hand. Respondents whose likelihood responses in the last part of the survey are not related to their utilities computed in the first part of the survey should probably be excluded from the analysis.
2. Respondents who give a low likelihood response to concepts that are custom-designed for them are probably less involved in selecting suppliers.
3. Respondents who allocate a low likelihood rating to the least attractive concept and a high rating to the most attractive one seem to be more sensitive in the preference simulation. Conversely, a manager who gives every concept similar likelihood values appears insensitive and might perceive the simulation as too abstract.

To check the three points, ACA computes the correlation between the expected attractiveness value (based on the utility values obtained in the survey process) and the actual value given by the respondent. In other words, the R^2 (measure of fit) shows how well the utilities can accurately predict the answers in the final calibrating section of the survey. The percentage rate of correct predictions is sometimes called *holdout hit rate* (cf. Orme and King, 1998) and the table below summarises the R^2 values of the focus company and the actual sample:

R^2 (Measure of Fit)	Focus Company (n = 9)	Actual Sample (n = 33)
Range of Values	*73.50% - 99.60%*	*72.60% - 98.40%*
Average Value	*89.11%*	*88.33%*

Table 7-35: Measure of Fit of Focus Company and Actual Sample Respondents

The table above shows the R^2 values of the 42 respondents. The range of values, as well as the average R^2 values, are similar in the two samples. Sawtooth Software reports a holdout hit rate of about 70% in several studies (Anonymous, 1999b); Huber et al. (1991) achieved about 73% when comparing ACA against

the Full Profile method. Orme et al. (1997) achieved about 77%. Similarly, when discussing the reliability of pairwise versus single-concept conjoint surveys, Orme and King (1998) report average holdout hit rates of 79.3% and 79.7% respectively. Orme (1998a: 5) summarises that "holdout choices can be predicted with a hit rate of roughly 75% to 85%." Given the levels of previously reported reliability measures, the high values of Stage III (in Table 7-35) confirm that the models of both samples fit the data well. One reason why the values are so high might be that the same sampling pool was used throughout the three research stages and Stage III was built onto the knowledge gained in the two previous stages (e.g., important RQ constructs in the research context, typical measures of supplier selection, the meaning of all attributes involved).

Another way of measuring the reliability of conjoint analysis is to check whether the part-worth utilities (i.e., the utility values of individual attribute levels) conform to *a priori* expectations (cf. Orme and King, 1998). Three of the ten attributes qualify for this test: product quality, delivery performance, and price. Manufacturers evaluate their suppliers in terms of the three attributes. Stage II showed that higher levels of quality, delivery and price result in 'A-Suppliers,' lower levels result in 'B-' and 'C-Suppliers.' A-Suppliers are favoured over the latter two categories.

With regard to the remaining seven attributes, the researcher was uncertain which attribute levels will be most, second, and least preferred by the respondents. In practice, these are not measured by the sample in any way. Therefore, the researcher ordered the levels of the three known attributes as follows:

Pre-evaluation	Product Quality Levels	Delivery Performance Levels	Price Levels
Most attractive	*100%-Top*	*On-time*	*Less expensive*
Average	*Average*	*Average*	*Market price*
Least attractive	*Poor*	*Delayed*	*More expensive*

Table 7-36: A Priori Expectations of Path-Worth Utilities

Table 7-36 shows the expectations of the researcher when ordering the levels of the three performance attributes in terms of their attractiveness to the respondents. If the conjoint analysis had been unreliable, the actual results would not have

corresponded to the a priori expectations. If, for instance, respondents desire lower quality levels or delayed deliveries, the anomalies are called 'reversals' (Orme and Johnson, 1997). In this piece of research, the outcome is as expected and the reversals error is not a problem (refer to Table 7-20 on page 268 for the focus company results and to Table 7-29 on page 283 for the results of the actual sample). This check re-confirms the reliability of the research instrument.

In terms of validity, knowing 'what has been measured' is crucial, "because only valid measures are able to reflect the measured phenomenon and allow to transfer results of the model into the real world of the marketer" (Herrmann et al., 2001: 298). This point holds particularly true, when one includes qualitative attributes. Typically, researchers try to shed light on the qualitative side in focus groups first (cf. Louviere et al., 2000). In this study, the meaning of all attributes was validated prior to embarking on CA (i.e., in Stage II). Therefore, the meanings of the attributes were transparent to the researcher as well as to the respondents. In addition, the menu-bar served as an ongoing reference point of attribute meanings. In terms of whether the results can be transferred to the 'real world,' the researcher asked how well the results (see Figure 7-13 on page 219) reflected the views of the respondent (refer to Figure 7-14). After showing the individual test results, the respondent was asked to evaluate the outcome from 0% to 100% realism in 10% incremental steps. This process represents the field validation of the survey on a perceptional scale. The results are shown below:

Evaluation of CA Survey Results	Focus Company (n = 9)	Actual Sample (n = 33)
100%	2	8
90%	6	22
80%	1	3

Table 7-37: Evaluation of CA Survey Results

Table 7-37 shows the evaluation of the test results by the respondents. Whereas ten respondents deemed the results of the CA survey 100% real, the majority of twenty-eight respondents gave the survey a 90% realism value. Four managers found the results 80% real; none of the respondents selected 70% or less for their

answers. The positive evaluation of the results inspires great confidence in the validity of the on-line simulation.

Finally, the respondents had the opportunity to send their comments to the researcher directly (see Figure 7-15 on page 221). At the end of the survey, some respondents included their comments before sending off the survey to the researcher. All comments were very positive and four quotes illustrate how well the managers welcomed the research approach:

Managing Director / Engineering: "The structure of the test is excellent. I have the feeling that you will need more than 15 minutes to complete the test. Before clicking to the next page, you will have to reflect on the answers. Particularly towards the end, making the decision to select one of the two suppliers becomes complicated. In the final cases, the 'have-to-have criteria' are included in both cards [i.e., profiles] and I had to think over my selection decision before clicking on 'next.' I am really grateful that I had the opportunity to take part in the test. Our system is presently too rigid and it neglects the fact that you will have to be able to 'step into the shoes' of the supplier when problems arise in the relationship. Quality, delivery, and price do not capture this aspect and therefore our decisions are often based on subjective feelings. I have to admit that it would be better to measure this supplier aspect. The test results not only made me think about our selection system, but even more so, encouraged me to enhance our approach to supplier selection."

Purchasing / Engineering: "Very good! I would like to invite my colleagues in Quality Management and R&D to run it too. Please send me more access-keys!"

Purchasing / Electronics: "The simulation objectively confirms what I subjectively knew all along."

Managing Director / Engineering: "These days, selecting long-term suppliers is not so much influenced by quality, price, and delivery. Today, this is a standard. Selecting long-term suppliers is largely influenced by other factors. The results of the simulation made me think!"

Operations / Electronics: "It is surprising to see the influence of the soft factors when selecting long-term and reliable suppliers. I have to agree with the results; the simulation was very interesting and stimulating."

7.7 Discussion of Findings Against the Body of Knowledge

The conjoint analysis was able to unearth interesting insights in many ways. First, running a conjoint analysis survey on-line is an appropriate research instrument. Respondents welcomed the 'innovative approach,' which seamlessly integrates into the daily routine when evaluating and selecting suppliers at the workplace.

Second, one can observe the influence of relationship quality attributes in the supplier selection process (see, e.g., Table 7-34 on page 293). The results of Stage III do not imply that quality and delivery are unimportant, nor do the results suggest that suppliers have a chance to be selected by neglecting the performance attributes altogether. The results, however, indicate that manufacturers consider a great number of factors when selecting suppliers and that quality, delivery, and price are not the key differentiators (see, e.g., Table 7-30 on page 285). All ten supplier factors have an influence on the selection of suppliers. RQ factors are evidently important, but these are not yet officially considered. Instead, manufacturers try to objectify the intangible issues in discussions amongst the decision makers within the DMU before making a choice.

Third, the detailed analysis of supplier attributes uncovered which attribute levels the respondent prefers when selecting suppliers. Taking the participants of the actual study as an example (refer to Table 7-29 on page 283), it is apparent that the three performance attributes, when performed well, are most attractive to the respondents; when these are performed poorly, they are unattractive factors, and average performances represent average preferences. This result may have been expected. What is somewhat surprising, however, is the way in which some of the relationship quality attributes are evaluated. With regard to complaint handling, for instance, 'average complaint handling where the supplier needs to be persuaded that a fault exists' is associated with negative utility values. The same is true when 'information is not always provided in time to react' (average

attribute level), the utility value is very negative. Clearly, the sample expects early information to anticipate and to deal with upcoming problems. Feedback is another attribute that is preferred if it is 'speedy and relevant.' 'Average feedback' or 'no feedback' are both associated with negative utility values.

With regard to 'trust,' 'openness,' and 'problem solving,' the utility values are more extreme. This means that a positive attribute level is seen as very positive, a negative attribute level is very unattractive, and an average level is somewhere in the middle. Therefore, the way in which the supplier is able to perform on either of the three attributes can make a big difference to the overall offer. Interestingly, Doney and Cannon (1997) explored the potential link between trust and supplier selection. They pursued a general approach and inadequately defined a particular purchasing scenario. Their conclusion is that trust does not have an impact on supplier selection. However, the empirical findings of Stage III cast doubt on their claim and lend credence to current evidence suggesting that trust has to be considered an important influential factor. This is so, as long as the attribute, the research context and the purchasing scenario are all clearly and meaningfully defined entities.

The result of 'relationship type' might be a bit of a surprise. A 'pure business relationship merely based on order and delivery' is associated with a negative utility value. This finding is consistent with Dwyer et al.'s (1987: 12) claim that "relational exchange participants can expected to derive complex personal, non-economic satisfactions." A 'pure business relationship' is unable to provide any satisfaction that is non-economic. By contrast, a 'very personal relationship on the professional level' is preferred over the other, but the positive value is not great. The favourite type is a 'neutral, friendly business relationship' (i.e., the average level), which indicates that a certain distance to the supplier is preferred by the respondents.

Fourth, another finding is that different functions in the selection process vary in terms of how the supplier attributes appeal to them (refer to Table 7-33 on page 292). For instance, Quality Management favours product quality (15.26%), followed by early information (12.63%), complaint handling (11.21%), and problem solving (10.25%). The influence of the remaining attributes on the

supplier selection decision is of less importance. On the whole, one can conclude that Quality Management is greatly influenced by the supplier's ability to manufacture high-quality products. If problems arise at the supplier's site, quality managers expect early information about this. If the product is faulty, the supplier can excel in how complaints are handled; if a problem arises at the manufacturer's site, the supplier is expected to work with the quality manager on the solution jointly. By contrast, purchasing managers concentrate on trust (13.63%) and delivery performance (12.71%), besides product quality (15.37%) and problem solving (10.01%).

Fifth, the two samples differ in terms of the importance they attribute to the supplier factors. Although respondents of the actual sample deemed price as important in conversations (i.e., in Stages I and II), it actually has a relatively small influence where the selection of suppliers is concerned (6.66%). The focus company, consisting of the purchasing department, is far more price driven (11.41%). With regard to delivery performance, one could observe an impact of 11.40% on the actual sample, whereas the focus company is influenced by it to a value of 9.67% (i.e., below average importance).

One could argue that the focus company represents the views of purchasing managers, whereas the actual sample is more balanced. However, even compared to the purchasing managers of the actual sample (i.e., price importance of 6.26% and delivery performance impact of 12.71%), the differences from the focus company still stand. This means that the focus sample represents the views of a particular organization that had to deal with different management issues. One must remember the situation that prevailed at the time of data collection, where the MD was urged to enhance the supplier management techniques of the company (refer to page 232). Stage III was able to make clear the differences between the two sample groups.

Sixth, a model was able to be developed on the basis of the CA results. The Performance-Relationship Quality Matrix highlights the 'Selection Area' where suppliers have the potential to be selected by the respondents (refer to Figure 7-24 on page 290). In this visual way of contrasting relationship quality and performance issues, the influence of RQ on the supplier selection process can be

detected. Put differently, a certain degree of under-performance can be counterbalanced by providing additional relationship quality aspects.

Overall and in summary, one can say that quality and delivery are fulfilled by many suppliers today. Thus, relationship quality is the new differentiator. Gulati (1998) argues in more theoretical terms that the *social* or *relational embeddedness* is capable of influencing the subsequent behaviour of the relationship parties. The present research was able to trace this association in a real-life example. For a supplier, this means that more options exist for modifying the offering in terms of Relationship Quality than Performance. It should be re-emphasised that performance factors need to be fulfilled to a certain extent. Only then will Relationship Quality be able to overcompensate for performance shortcomings that can lead to a real difference for suppliers in the selection process.

7.8 Limitations of Stage III

The last stage of the PhD project explored the potential RQ-Loyalty link when manufacturers were selecting their suppliers. Before elaborating on the implications for further research etc., the limitations of Stage III should be noted:

1. One of the goals of the PhD project was to include a consistent sample across all research stages. It would be interesting to explore how RQ relates to the way suppliers are selected in a re-buy situation as well as in a new task purchasing scenario. However, it is necessary to determine who is involved in the additional purchasing situations. In a routine re-buy scenario, the purchasing manager may make the decision alone; in a new task situation the weighting might be more on R&D managers. Stage III was only able to examine the potential link of RQ on Loyalty in a modified re-buy scenario.
2. The sample is too small to conduct meaningful functional comparisons. Furthermore, the sample is biased towards the purchasing management side. Purchasing managers are always involved in selecting suppliers and tend, therefore, to dominate research projects. Although managers of different functions seem to agree on most of the results, it would be

fruitful to analyse the functional variations where the sample is more balanced.

3. The researcher aimed at involving at least two managers per company in the survey. The goal has only been met for six companies. In the remaining twenty-one organisations, only one key informant per company DMU took part. The intention of Stage III was not to compare DMUs, but to capture the opinions of DMU members. The aim was fulfilled. Comparing DMUs would have been an interesting investigation nevertheless, but the sample did not allow the researcher to do so.
4. In the integrated discussion at the end of this chapter (i.e., where the focus company and the actual study are compared), the weight was too much on purchasing managers. This means that the results are distorted towards the purchasing function. It would have been more advantageous to include more respondents per company in order to conduct comparisons on a company level.
5. Group decision making was not captured in Stage III, although it would have been a rewarding experience (cf. Stoddard and Fern, 2002; Xanthopulos et al., 2000; Chandrashekaran et al., 1996). Again, if more managers per company had been involved in the study, the researcher could have conducted the conjoint analysis at a DMU level. In this way, observing group interaction in the selection process would have been possible.
6. Stage III assumed the equal importance and influence of all functions when selecting suppliers. The CA was based on decisions of individuals and the decision as a group was not captured. In practice, some managers might be more influential in the group decision process and might overrule the opinion of others. This could particularly hold true when one considers that MDs are involved when evaluating suppliers. However, even in the case of MDs, the influence of RQ in the selection process is apparent (refer to Table 7-34 on page 293).
7. The study captures and represents only a snapshot in time and suppliers are compared on their given status quo. The conjoint analysis does not

recognise the potential of suppliers to improve on the ten important supplier attributes.

8. The study could not observe whether managers change their attitudes over time. It would have been particularly interesting to conduct a conjoint analysis with the focus company at a later point. This approach would have enabled the researcher to capture a potential shift in the purchasing focus. In order to capture trends in supplier selection, more time points have to be measured with the same respondents in a longitudinal study.
9. Some factors, such as innovative contribution or cost savings, might be important factors for certain organisations. The researcher excluded factors like these and focussed on the ten factors that are important for all companies that took part in the research project. This procedure allowed comparability of companies and it made the task manageable overall. The process could be improved by offering respondents the opportunity to add, e.g., two individual factors. In this way, eight attributes would represent the general factors and two additional factors would be particularly important for a given company. Thus, the CA would be more tailor-made. Unfortunately, this option is technically not possible at the moment. Particularly when running the ACA software on-line, additions would have to be included 'on the fly.' Besides, it would be problematic to compare companies in a sample.
10. The conjoint analysis is based on the assumption that suppliers are selected in a competitive market. Hence, the competitive context is a critical part of the simulation. Oligopolistic or monopolistic market climates are not considered, which is a limitation. However, one could argue that manufacturers have to select a given supplier in a monopolistic market anyhow, considering the lack of competitive offerings. Consequently, the effect of relationship quality might not come into play at all. Observing the potential link in oligopolistic markets would have been of limited value in this exploratory study but would be worthwhile pursuing in another project. Therefore, no external influences have been investigated. The study aimed to explore the RQ-Loyalty link uncoloured

by external effects. Two situations that have been described as 'Locked-in' and 'Locked-out' in this thesis (refer to Figure 2-26 on page 60) would be worthy options to explore in addition. Both alternatives can be achieved with strenuous efforts of the manufacturer and maybe relationship quality could explain when it appears worthwhile to invest this effort. The Theory of Planned Behaviour (Ajzen, 1985), which recognises subjective control over intentions, would be a theory to apply.

11. Finally, Stage III is based on an experiment/simulation and no actual selection of real suppliers in a real business situation was observed. It would be fruitful to observe the process of evaluating suppliers, then to measure the intention of individual managers to select a certain supplier, and to observe the actual supplier selection process in a group context afterwards. The design of the present research did not accommodate such an investigation.

7.9 Summary and Conclusions

One major limitation of Stage II was the speculative link between the quality of relationships and loyalty. Stage III had to overcome the limitation and to focus solely on the RQ-Loyalty connection.

When a buyer makes a decision about a supplier, the decision is based on trade-offs among various supplier characteristics. The buyer might have a 'wish list,' e.g., low price, high quality, delivery on-time. However, in the real world a choice needs to be made between suppliers, none of whom may conform to the 'wish list ideal.' Thus, any one supplier will probably not exhibit all of the best characteristics and none of the worst. The buyer decides which characteristics (or attributes) are important and which are unimportant. In conjoint analysis (CA) terminology, attributes are the key dimensions of products or services; levels are those specific points along the key dimensions. By presenting attribute level combinations, the respondent is placed in a position to trade between the advantages associated with some factors and the disadvantages associated with others.

Adaptive Conjoint Analysis (ACA) is based on the trade-off of supplier characteristics described above and presents choices to the respondent in exactly this way. In the last stage of the PhD project, ten supplier attributes are included: Three factors that represent the official selection criteria (price, delivery performance, and product quality) and seven factors that reflect the quality of relationships (complaint handling, early information, feedback, openness, problem solving, trust, and type of relationship). The subject is asked to choose between different combinations of features (i.e., attributes with various levels). The respondent would probably find it very difficult to articulate the thought process, particularly when intangible attributes are involved. Therefore, the results are analysed through a sophisticated mathematical programme to establish the relative ranking of features that lie behind the respondents' choices. The preferences are reflected in utility values. Utility estimation is an automatic part of the ACA interview. Respondent utilities are calculated during each interview, without the

researcher's involvement and, therefore, results can be displayed to the subject immediately after the CA has finished.

The limited cognitive demand placed upon the respondents is an advantage of ACA. In this way, the conjoint analysis better represents real life conditions, and thus, provides a more realistic picture of which suppliers a manager will select in the real purchase situation.

Besides the data collection, the data will need to be analysed. The Market Simulator is at the heart of the ACA programme and lets the researcher conduct 'what-if' analyses of a representative set of supplier profiles. Four different models have been used for the analysis (the First Choice Model, the Share of Preference Model, the Randomised First Choice Model, and the Supplier Selection Likelihood Model) in addition to the average utility values and average importance of supplier attributes.

Based on the findings, it is surprising that companies only evaluate price, product quality, and delivery performance formally, when selecting suppliers. This research has shown that managers only attribute 1/3 importance to the three classic measures. Relationship quality influences the decision 2/3 in the process. Previous research was not able to empirically trace the influence of the soft and intangible side of relationships. This side is often hidden under phrases like "it is my experience when evaluating suppliers that I do this or that" or "despite the official guidelines, I normally trust my feelings when they are telling me to do X, Y, or Z." This research made the subjective side more objective and was able to demonstrate that relationship quality is an important differentiator in the supplier selection process.

Overall, the experimental design of Stage III represents highly realistic approximations of real decisions in a realistic choice context. Parker (1994: 4) called this circumstance the *ecological validity*, which tries "to make the research fitting to the real world." The positive comments of the respondents confirm that this goal has been achieved. However, the last stage of the PhD project has its limitations that indicate fruitful avenues for future researchers to pursue.

CHAPTER EIGHT

8 SUMMARY AND CONCLUSIONS 308

8.1 INTRODUCTION 308

8.2 PHD PROJECT PROGRESS 308

8.3 CONTRIBUTION OF THE RESEARCH 313

8.4 LIMITATIONS OF THE STUDY 320

8.5 SUGGESTIONS FOR FUTURE RESEARCH 321

8 Summary and Conclusions

8.1 Introduction

It is evident that supplier management is critical to German manufacturers. This PhD study confirms the strong impact of relationship quality on the customer's loyalty, lending empirical support to the call in recent years for relationship marketing in industrial markets. In the last chapter of the thesis, the PhD project's progress will be the first topic for discussion, leading on to the project's contributions as well as to its limitations. Suggestions for future research will conclude this thesis.

8.2 PhD Project Progress

Based on the literature review, the following research question was empirically investigated in three research stages:

In commercial customer-supplier relationships, what is relationship quality (RQ) from the customer's standpoint and how does it relate to the customer's loyalty?

Stage I was based on a sample of managers that were responsible for supplier management in three German industry sectors: process, electronics, and engineering. The results of the stage indicate: Firstly, the importance of managing suppliers is increasing, being *very important* today. This trend is likely to remain for some time to come. Secondly, managers are interested in a research project related to managing suppliers. Thirdly, managers perceive various degrees of relationship with their suppliers and often the term 'partnership' was used to describe them (see Table 5-7 on page 111). Fourthly, the selection criteria put forth by the literature (price, quality and delivery) are still the most popular ones for selecting suppliers in Germany. Fifthly, some manufacturers mentioned softer/intangible aspects when selecting suppliers. The potential link of these aspects to the customer's loyalty was still very speculative. Sixthly, commonalties exist with regard to the steps taken in the selection procedure itself (Table 5-5 on page 108), which can be described as a bidding process. It typically starts with a) an idea from in-house technical departments, b) with a specific customer order, or c) with an everyday purchasing requirement. Then the purchasing manager solicits offers from potential suppliers and the procedure continues with various evaluation stages. The cross-functional sourcing team, which often consists of three functions, selects the supplier as the final step.

Overall, Stage I showed that the research question is not only theoretically sound, but is also relevant to practice.

Stage II explored the quality of relationships with suppliers in detail. The process sector was excluded from this and the following stage. The case studies consisted of the analysis of company documents, a plant visit and in-depth interviews.

In 48 interviews, 96 RQ constructs were elicited. The notion of relationship quality is often discussed in the literature. However, there has been little empirical work carried out to identify the attributes of quality in supplier relationships. The research covered in this thesis addressed this omission by examining the German electronics and engineering sectors. The findings of the case study approach revealed that the quality of supplier relationships is associated with a great

number of constructs (refer to Table 6-8 on page 166). Some of these are idiosyncratic, meaning that individual managers differentiate between the quality of supplier relationships in particular aspects. Other constructs are shared by many respondents and are consequently regarded as common constructs. Regardless of whether they are common constructs or not, all constructs are personal constructs, having deeply held psychological dimensions when evaluating the quality of supplier relationships. By means of the repertory grid technique, the researcher was not only able to uncover them but also to empirically differentiate between common attributes of high quality supplier relationships and those associated with other RQ classes. The seven most important constructs – or differentiators – were selected for Stage III (i.e., *trust*, *feedback*, *openness*, *early information*, *problem solving*, *complaint handling*, and *type of relationship*) along with the three official selection criteria (i.e., *quality*, *delivery*, and *price*). Officially, supplier selection is solely based on latter three criteria.

This stage also explored the structure of relationships in-depth. Generally, the objective level is the basis of the supplier-manufacturer relationship and is sufficient for straight re-buy situations. For modified re-buy and new task situations, the subjective level needs to be established. Here, the objective level is a given and the subjective level makes the difference between suppliers. The subjective level is associated with individuals; by contrast, the objective level relates to the supplying organisation. This explains why the relationship quality deteriorates as soon as individuals change organisation – be it on the manufacturer's or the supplier's side.

The objective factors appear to be hygiene factors, as they are unable to differentiate suppliers well enough. This means that almost all suppliers fulfil the three basic performance criteria. At a time where managing suppliers has changed towards partnering based on high-quality relationships, selection criteria need to be brought in line with the new quality-idea. Put differently, the soft side of a business relationship must not be ignored, and the soft side of relationships is the key competitive indicator. Suppliers have to gear up to it internally.

This research has shown that hard criteria might be 'order qualifiers' and the soft criteria 'order winners' (cf. Hill, 1995). However, whether and to what extent

subjective factors influence supplier selection was left open for speculation at Stage II.

Overall, the researcher captured the commonalities of knowledge that underlie practice with individual repertory grids and, therefore, constitute an important source of insight that informed the subsequent research stage.

In Stage III, conjoint analysis (CA) was conducted among respondents in the electronic and engineering sectors in Germany. De Boer et al. (1998) argue that in supplier selection decisions, quantitative and qualitative criteria have to be evaluated, but current decision models assess only quantitative aspects. CA is a trade-off technique and this research included ten factors that are partly quantitative and partly qualitative. The attribute definitions as well as the meaningful levels were elicited in the previous stage. It is apparent that a shared group meaning among the respondents exists as experts use terminology and concepts in the same way. However, the researcher integrated a menu-bar into the research design that served as an ongoing reference point of the on-line survey. The fact that the menu-bar has hardly been referred to, plus the fact that the attributes do not correlate with each other in the analysis, shows that the meanings of the ten factors have not been confused with each other. In short, it was confirmed that the ten supplier attributes represent discrete entities in the respondent's mind.

These factors can be presented in various ways. For instance, two factors could be traded-off against each other at a time. This approach would attempt to force unrealistic trade-offs. An actual choice of suppliers involves evaluating the characteristics of the suppliers based on their attributes and selecting one or more suppliers that best suit the needs of the firm, according to Verma and Pullman (1998). Therefore, managers evaluate supplying alternatives in a more holistic way.

The researcher settled for the Adaptive Conjoint Analysis (ACA). ACA is a systematic approach to identifying the relative weights of attributes among which the decision maker makes trade-offs when choosing an alternative from a possible set of alternatives. Respondents make judgments as to the degree of preference

between a pair, starting from the levels of an attribute and eventually building their judgmental preference for suppliers step-by-step. It does this by first asking respondents for explicit importance ratings, followed by trade-off tasks that only include those attributes and levels each respondent rates as most important. Thus, the interview is tailored to each participant.

Early on, it was decided that focusing on a particular purchasing scenario would yield the best results for this study. For instance, the structure of the DMU is influenced by the purchasing situation itself – this was a crucial point for designing Stage III. To this end, the modified re-buy scenario was perfectly suited to conduct the simulation. De Boer et al. (2001: 79) speculate "in modified re-buys,..., the selection concerns a choice between different sets of supplier characteristics, e.g., its processes, employees, culture, etc., rather than merely the specific products of services they provide." This study not only verifies this claim but also goes beyond it, showing that 2/3 of the selection are explained by relationship quality attributes.

The findings have significant theoretical and practical implications for what the constructs of relationship quality are and how relationship quality affects manufacturers when selecting suppliers. Aiming to establish a long-term relationship with the manufacturer is a top-priority for suppliers. Long-term relationships built on personal linkages represent a barrier for new suppliers and symbolise 'domesticated markets;' a point developed by Arndt (1979).

The influence of RQ in the supplier selection process has clearly been traced through the conjoint analysis. Homburg (1995: 312) argues that "companies start taking a look at their suppliers from a strategic perspective, often discovering that price is a rather superficial criterion for selecting suppliers." The statement has been verified by the present investigation. Consequently, suppliers need to perform well on additional factors that extend the set of official criteria in order to be one of the few selected. The style of research experiment portrayed in Stage III allowed the creation of decision situations in a 'real-world context' rather than waiting for them to occur naturally.

Overall, methodological triangulation is one of the strengths of the study and New and Payne's (1995) work has shown that the triangulation of qualitative and quantitative data proves particularly useful in management research. In this spirit, Johnston and Speakman (1982: 144) conclude that triangulation "afford us an opportunity to break from tradition to build research paradigms that encourage a more creative approach to our problems." In this vein, the researcher advanced the research instruments used in Stage II and Stage III. In other words, contributions have been made that go beyond the field of supplier management. The contribution of the research will be debated next.

8.3 Contribution of the Research

The research led to contributions in various areas as the findings have significant theoretical and practical implications for how high quality relationships can be developed and how these relationships influence the manufacturer's selection process. The contributions will be presented in terms of their methodological, theoretical and practical advancements.

8.3.1 Contribution – Methodology

The research contributed to methodological progress of the repertory grid technique (Stage II) as well as conjoint analysis (Stage III).

Typically, collecting repertory grid data is done in a matrix format similar to the one presented in Appendix 7 (refer to page 337). This design has major limitations. First of all, a researcher would like the respondent to evaluate all elements on the newly elicited construct. Experience shows that when leaving the evaluation phase to the end, respondents do not spend enough time on assessing each construct on its own merits. However, the classical matrix design is somewhat disconnected from the overall repertory grid flow and so, some researchers leave the rating of all elements on all constructs to the end. But even when evaluating a given construct after the elicitation, the respondent is able to see the assessments of previous constructs. Therefore, classic designs trigger the

'halo effect' – or a systematic error, in other words – where respondents allocate evaluations according to previous assessments.

The researcher created a new research instrument that is based on the standard matrix, but changed the form completely (refer to Figure 6-7 and Figure 6-8 on page 145). The design integrated well into the overall repertory grid exercise. The respondents got the opportunity to evaluate all elements with regard to a newly elicited construct. Although the respondent could have checked back what the judgement was for previous constructs, no respondent did so. It was not unusual to hear from respondents "I have the feeling that I evaluate all suppliers similarly in terms of the new factors. The good suppliers are always good; the bad are always bad." Sometimes the researcher checked this statement together with the respondent after the repertory grid session was concluded. When they had an overview of all constructs, most respondents were surprised to find that the evaluation was not as expected. Therefore, the respondents evaluated the elements by solely focussing on one construct at a time. The halo effect was eliminated with the new repertory grid instrument and appeared to work well under management research conditions.

When analysing repertory grid data, scholars new to the field (as was the researcher of this thesis) are surprised to find that not much published material exists in terms of analysing multiple grids in a study. Therefore, some researchers tend to ignore the data in the grids and conduct a frequency count only. However, the frequency count is not a measure of importance, but a measure of whether a construct is a common one or not. Clearly, the data in the grids play a crucial role in the technique.

The researcher analysed the data from different angles in order to determine the level of importance for each construct when describing the quality of supplier relationships. Besides the frequency count and the overall-check as to whether the rating scales had used crudely, the researcher computed the weighted variability index. This approach was taken by Goffin (1992) and it takes the spread of ratings into account. Next, the researcher calculated the mean differences of all constructs. This approach has some similarity to Khan's (1993) way of analysis. The aggregated mean differences show how well a given construct differentiates

between the two extreme groups of relationship qualities. The greater the difference, the greater the power of differentiation. In this rigorous way of analysing, the researcher was able to determine the importance levels of each construct. To the knowledge of the researcher, analysing multiple grids in this complex way has not been carried out. The approach enhances the way in which multiple grids can be compared.

The next contribution has to be recorded for Stage III. The researcher applied the conjoint analysis with the ACA software. The software is very well established on the market and has been used extensively over the last two decades. However, particularly when rich and meaningful attributes are included, the potential risk is that the attribute labels are not meaningful enough for the respondents. In order to exclude this risk from the on-line survey, the researcher created a menu-bar that included all attributes on separate buttons (besides other issues). The menu-bar served as an ongoing reference point and respondents had the opportunity to consult it at any point in the simulation, should the need arise. Respondents hardly used the menu-bar, which confirms that a shared meaning exists among the sample subjects. Considering the fact that none of the ten attributes correlates with others, this also confirms that the CA was able to measure discrete entities. Hence, none of the respondents confused any labels with the associated meanings (refer to Appendix 14 on page 346).

The menu-bar was applied as a precautionary measure. Due to the deep understanding gained in Stage II it could have been left out in the following stage, with hindsight. However, for conducting on-line CA surveys where the researcher is unsure whether the attribute labels are meaningful or not to the respondents, the inclusion of a similar menu-bar might prove to be very helpful. To the knowledge of the researcher, reference points that are capable of reminding subjects about the attribute meaning at any time have not been used before. This addition is thus deemed as a contribution to the CA research instrument.

8.3.2 Contribution – Theory

Like all living systems, relationships are complex, and exploring them demands a clearly defined research context. First of all, supplier relationships represent a particular type of business relationship. The thesis was able to determine the crucial relationship dimensions and to develop a Relationship Model (refer to Figure 6-15 on page 175). The model illustrates the components of a relationship and places them into their appropriate environment.

The subjective and objective relationship levels are under the influence of certain triggers of change. Respondents describe the exchange of individuals on the manufacturer's or supplier's side as a major trigger. As a result, the relationship quality levels transform. This phase of transition is represented in a model that has been used to discuss relationship changes with respondents (refer to Figure 6-16 on page 178).

Although the quality of relationships has been recognised as an important aspect of supplier management, no empirical work exists that tries to uncover what the quality of supplier relationships is. In other words, the amount of relationship quality is a dimensionless, yet crucial, aspect of supplier characteristics and supplier choice. This thesis provides a first real insight into the quality of supplier relationships and how this is associated with the manufacturer's loyalty. The link has been investigated and with it, the quality of supplier relationships has been made measurable.

Moreover, the Five-Step Supplier Selection Process Model was developed that accounts for the relationship quality influence. Therefore, it goes beyond previously presented models (cf. De Boer et al., 2001 in Figure 5-9 on page 116 and Lemke et al., 1999b; Lemke et al., 2000c). Illustrating the distinctive steps and how they relate to the well-established Robinson et al. (1967) purchasing scenarios is an advancement of the buying behaviour literature. Although the model might not be extended beyond the German electronics and engineering sectors, it could give a fair picture of the variety of steps in other industry sectors also.

Ford (1984: 101) has the impression that "judgements of suppliers' technical and commercial skills are not made 'in isolation,' but are closely associated with buyers' assessment of the quality of the relationships that have been established by suppliers." This impression has to be put into context. While this research indicates that a straight re-buy situation is entirely based on simple objective measures, Ford's claim particularly holds true in more complex scenarios where the manufacturer is less experienced with the purchasing problem. In particular, relationship quality has a significant influence in modified re-buy situations, such as New Product Development (refer to Table 7-33 on page 292 and Table 7-34).

Explaining the modified re-buy scenario from a practical viewpoint that can be operationalised by researchers was another contribution. This thesis developed the Performance-Relationship Quality Matrix in this particular purchasing context that – like a radar which is able to scan competitive supplier offers in the market – is able to project a supplier selection area for a given sample or a particular manufacturer (see Figure 7-24 on page 290).

It could be argued, that RQ might have an even greater influence in new task purchasing situations. However, this PhD research was exclusively designed for detecting the RQ impact in modified re-buy scenarios and, without further testing, the results should be generalised with care. To this end, the findings could serve as a basis to operationalise the RQ concept in future research focusing on different purchasing scenarios.

Current evaluation systems are not appropriate and more than price, quality and delivery are needed for a strategic partnership, as Spekman (1988) contends. This statement is also true when selecting long-term suppliers. Browsing through the literature, one quickly gets the impression that the selection is purely based on price, quality, and delivery. However, investigating this topic in-depth furnishes a different perspective and one is able to realize that other factors also enter the purchasing process.

Unfortunately, practitioners failed to measure the subjective and intangible factors and so, these have not been codified officially. Instead, manufacturers rely on their DMU members that discuss the subjective side. Afterwards, the subjective conclusions need somehow to be compared to the official and tangible

numbers. Academics have hardly recognized this empirically and could not put forward concrete relationship quality factors that have an influence on the supplier selection decision. The present PhD project was not only able to bring the intangible aspects of supplier relationships to light and to observe their influence in selection processes, but also to objectify these aspects on scientific grounds.

8.3.3 Contribution – Practice

While academicians and practitioners alike have been giving significant attention to the subject of building and maintaining long-term relationships with key parties, there is little current knowledge regarding the content and benefits of such relationships. Kanter (1994: 108) concludes, "intercompany relationships are a key business asset, and knowing how to nurture them is an essential managerial skill."

The combination of telephone survey, case studies, and conjoint analysis was able to establish not only formal procedures over the selected sample, but also an indication of supplier management practice on the ground. Thus, this research was conducted in a context mindful of the practice of supplier management. By understanding the behaviours associated with varying levels of relationship quality and outcomes of supplier selection, manufacturers and suppliers would be better attuned to the subtle behaviours of their exchange partners and positioned to elicit positive exchanges and avoid less productive encounters. Therefore, the findings of this research have implications for manufacturers and suppliers alike.

The results could aid the sourcing team in taking more and relevant alternative criteria into account when selecting suppliers. Factors like problem solving, complaint handling abilities etc. are all important supplier attributes and lend credence to anecdotal accounts offered in the popular press. When analysing what constitutes preferred suppliers, it became apparent that RQ has a major impact. The final choice is dependent on the evaluation of the preceding evaluation steps. The DMU has to take the earlier steps into account when evaluating alternative suppliers.

This study provides additional selection criteria in today's industrial environment and it recommends supplementing the well-established selection criteria (price, delivery, quality) with the softer RQ attributes. Therefore, the findings could provide manufacturers with a guideline as to how to adjust their purchasing strategy. The quality of relationships has been made measurable and this can serve as a tool for capturing the soft side of their supplier relationships early on.

The findings are not only relevant to manufacturers, they also have strong ramifications for suppliers. For instance, trust is an influential factor in relationship quality. As we now know, the quality of supplier relationships has an impact on the supplier selection process. Unfortunately for suppliers, trust needs to be earned, and yet, it is the very foundation of a relationship. In this respect, out-suppliers (i.e., suppliers outside of the supply base) have a disadvantage. The study was able to show how RQ relates to the way suppliers are selected. In this way, the selection process becomes explicit, as the soft side of relationships has been objectified. Suppliers should build their marketing strategy on the identified trade-offs in this study and stress those that provide the greatest return. Consequently, suppliers need to hone their competitive strategy accordingly and will need to ensure that the combination of product quality, delivery, complaint handling, openness etc. they offer is attractive to manufacturers.

The results could provide suppliers with a guideline as to how to adjust their marketing strategy. This will help them to establish a loyal customer base in industry.

8.4 Limitations of the Study

This section addresses the overall limitations of the PhD project. The individual stages have been criticised in the appropriate chapters earlier (please refer to pages 118, 189, and 302 respectively).

As in most industrial marketing research, compromises became necessary. First of all, one must not ignore an element of country bias as the research was conducted in Germany alone.

Second, due to budgetary constraints and the well-recognised difficulty of collecting data in the industrial sector (e.g., Moriarty, 1983), the research was limited to initially three, but later two, industry sectors. The sample was biased towards the engineering sector and the results might hold particularly true in this specific German business context.

Third, the study focussed on medium-sized companies. It would have been interesting to compare the results against the opinions of small as well as large organisations. Involving only one type of company size is a limitation of this PhD project.

Fourth, the companies involved do not necessarily represent their industry sectors to the full extent. All three research stages are based on the same volunteer sample. For the purposes of the present research, this sample appeared appropriate. The participating firms were believed to be at the 'leading edge' of purchasing practice, based on their previous interest and participation in other IBFA-D research projects, such as benchmarking and focussed studies. Additionally, the initial survey instrument employed by Goffin et al. (1997) was 23 pages long; so a high level of interest in purchasing research was required to gain a firm's cooperation.

Having targeted companies that are leading in supplier management, the 'focus company', might reflect the other side of the supplier management spectrum and differences from the actual sample became apparent. Unfortunately, this study could not include a representative cross-section of the industry sectors that reflect all kinds of supplier management abilities.

Fifth, this piece of research predominately attracted the interest of purchasing managers and Managing Directors. Although the relationship quality attributes were meaningful for other functional areas also, a higher proportion of different organisational functions would have been advantageous to the study. Similarly, although the RQ impact on supplier selection was observed, having had a greater number of managers from other functional areas would have made the results more complete and balanced.

Sixth, it needs to be recognised that this research is based on an opportunistic sample. Hence, if another opportunistic sample were to have been considered, the results could be different from the ones presented in this thesis. For instance, the outcome might only reflect the views of German medium-sized companies and generalising beyond this scope is certainly limited. Also, the time of data collection might have had an influence on the answers of the respondents. For instance, if the research would have been conducted in another phase of the economical cycle (e.g., a recession), customers might have set the priorities of supplier attributes differently in Stage III. The same can be said if the business environment were to be altered, e.g., considering a monopolistic supplier market compared to the competitive market on which this study is based.

Finally, supplier relationships are a two-sided affair. Unfortunately, the present research could only capture the perspectives of manufacturers. Neglecting the views of the supplying side is a shortcoming of this research.

8.5 Suggestions for Future Research

A rich set of implications flows from the results of this research and has been discussed above. The last section of the thesis builds on the limitations identified, indicating where future researchers might like to direct their attention.

The current research increases knowledge about the development of high-quality supplier relationships and how they influence manufacturers when selecting suppliers. RQ has been made measurable. The exploratory qualitative nature of this PhD project could lay the groundwork for a quantitative mode where a scholar measures how RQ relates to Loyalty in a large sample. The

conjoint analysis of Stage III would be a suitable technique to collect the data in a large-scale follow-up study.

The research was conducted exclusively in Germany. However, what is relationship quality in another country and how does it relate to the customer's loyalty in other nations? It is necessary to repeat the research in other countries in order to remove the element of country bias. In similar vein, the research should be conducted with companies other than medium-sized ones in order to capture the views of managers that deal with small or large organisations. Also, the views presented in this research are coloured by the industry sectors involved. Other industry sectors should be targeted in order to remove the potential industry bias. The relationship quality attributes are personal constructs of managers who are responsible for managing and selecting suppliers. The findings of this study could hold true in other business environments also and a further exploration might prove interesting and rewarding. Therefore, all the types of replication suggested above have the potential to strengthen the results of this PhD project and to generalise them beyond the present research context.

The respondents of the present investigation are largely male. It is likely that managers that deal with supplier management in the selected German industry sectors are typically male. However, future research should explore whether male-male, male-female, and female-female constellations in the supplier relationship have an influence on what is perceived to be relationship quality in the business context. The study of Smith (1998) might serve as a good starting point for this exploration. Considering the increasing proportion of female managers at higher levels of the hierarchical structure, it appears interesting to explore whether the subjective relationship level is affected by the sex of the individuals involved.

Unfortunately, this study could only explore the RQ-Loyalty link in modified re-buy scenarios. Therefore, the findings are likely to be more pronounced in this research context than in other ones. A fruitful research avenue would be to conduct a similar study in other purchasing contexts: In straight re-buy situations, RQ might play a minor role; however, in a new task buy, RQ might gain in importance. Both possibilities are worth exploring in order to contrast results with the present findings.

Stage II was able to identify the eleven most important relationship quality constructs. The researcher decided to select seven soft RQ factors in order to keep the research manageable. It would be advantageous to mix some of the constructs selected for this study with the remaining four constructs. Clearly, testing the influence of all eleven RQ constructs on the supplier selection process would be a rewarding research avenue.

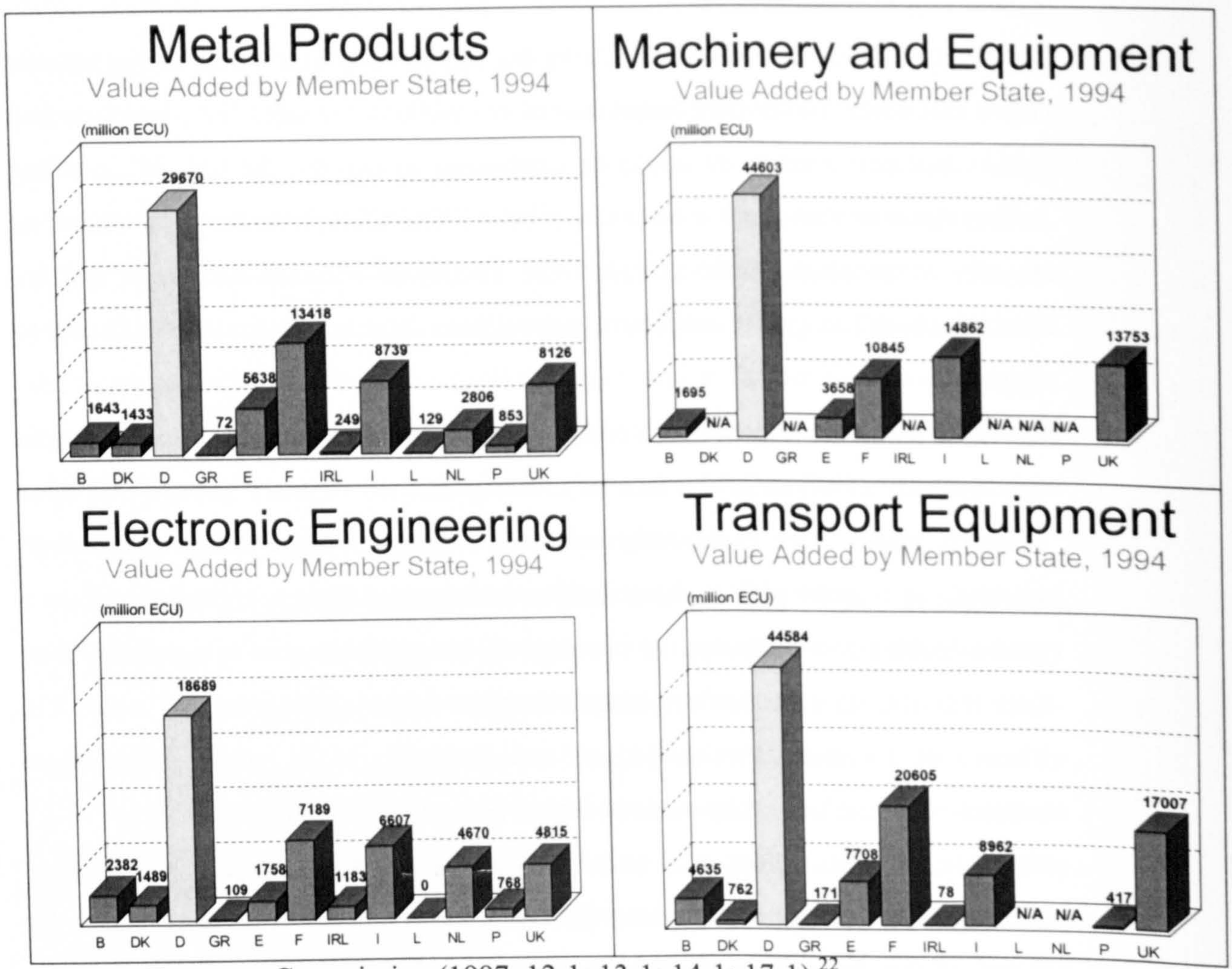
Stage III was centred on exploring the RQ-Loyalty link where manufacturers have full control over their behaviour in competitive climates (i.e., intention and behaviour correspond). It would be interesting to explore the link in situations where the manufacturer's control is weakened. Therefore, how does RQ impact on loyalty in an oligopolistic market? The Theory of Planned Behaviour (Ajzen, 1985), which recognises subjective control over intentions, would be a theory to apply.

This study did not set out to capture group activities, although three managers are typically involved in the task in the two German industry sectors. All three research stages were exclusively based on individual managers as the unit of analysis, so was the philosophical and methodological approach. Exploring how a group decides on which supplier to select, from a possible pool of suppliers, is an area that warrants further empirical attention. From a psychological angle, the Theory of Reasoned Action (Ajzen and Fishbein, 1975), that acknowledges subjective norms in a group context, would be a suitable perspective.

Finally, a relationship is a situation that involves two sides. The present investigation was able to capture the opinions of the manufacturing side; the views of the supplying parties have been excluded. It would be interesting to explore, what RQ comprises from the suppliers' standpoint and how it is related to their loyalty. As buyers and sellers follow their own aims, the high quality ingredients they expect could be different. Again, the speculative character of these assumptions points to a fruitful research stream where a dyadic research framework could be adopted. It is hoped that future researchers will respond to the challenges raised by this thesis.

9 Appendices

Appendix 1: Value Added by Member State in Manufacturing (Engineering, and Electrics and Electrical Parts), 1994



Source: European Commission (1997: 12-1; 13-1; 14-1; 17-1).[22]

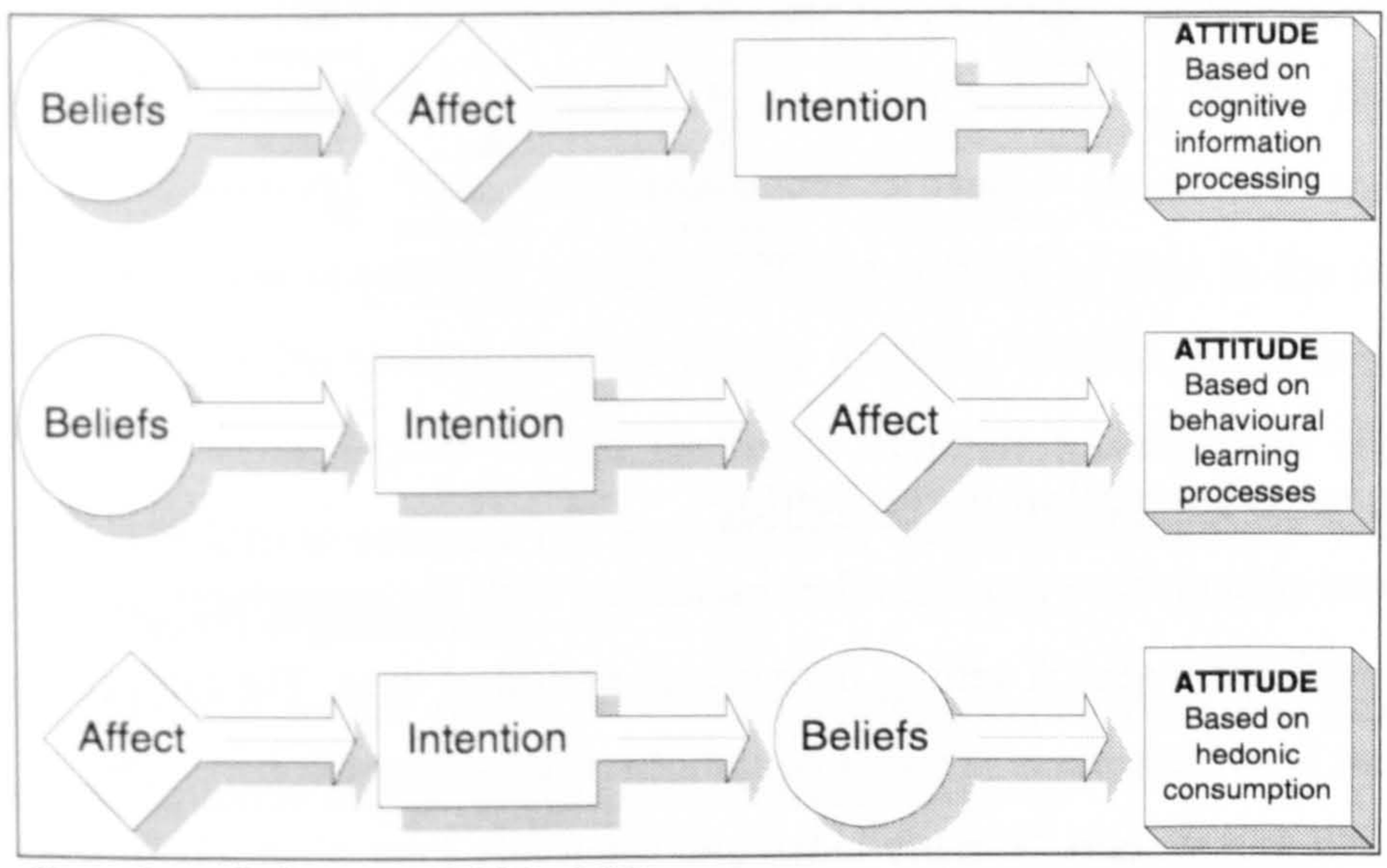
[22] The industry manufacturing *metal products* consists of: constructional steelwork; boilers and metal containers; forging; hand tools; light metal packaging; and steel drums. The *machinery and equipment* sector includes: machinery for mechanical power; liquid pumps; other general purpose machinery; agricultural machines and tractors; metalworking machine tools; food, drink and tobacco processing machinery; textile machinery; plastics and rubber machinery; and domestic appliances. The *electronic engineering* sector comprises: computer and office equipment; electronic components; telecommunications equipment; and consumer electronics. The *transport equipment* sector consists of: motor vehicles; motor vehicle parts and accessories; mopeds and motorcycles; bicycles; shipbuilding; railway rolling stock; and aerospace equipment.

Appendix 2: Selected Industry Sectors

Industry Sector	Definition/Categories
Electronics	*Office Machinery, Data Processing Equipment, PCs, Electrical Components and Electronic Equipment*
Engineering	*Heavy Engineering, Mechanical Engineering, Motor Vehicles and Parts, Other Transport Equipment, Instrument Engineering*
Process	*Chemical, Pharmaceutical, Metal Manufacture, Man-made Fibres*

Note: *Stage I* took all three industry sectors into account. *Stages II* and *III* concentrated exclusively on Electronics and Engineering.

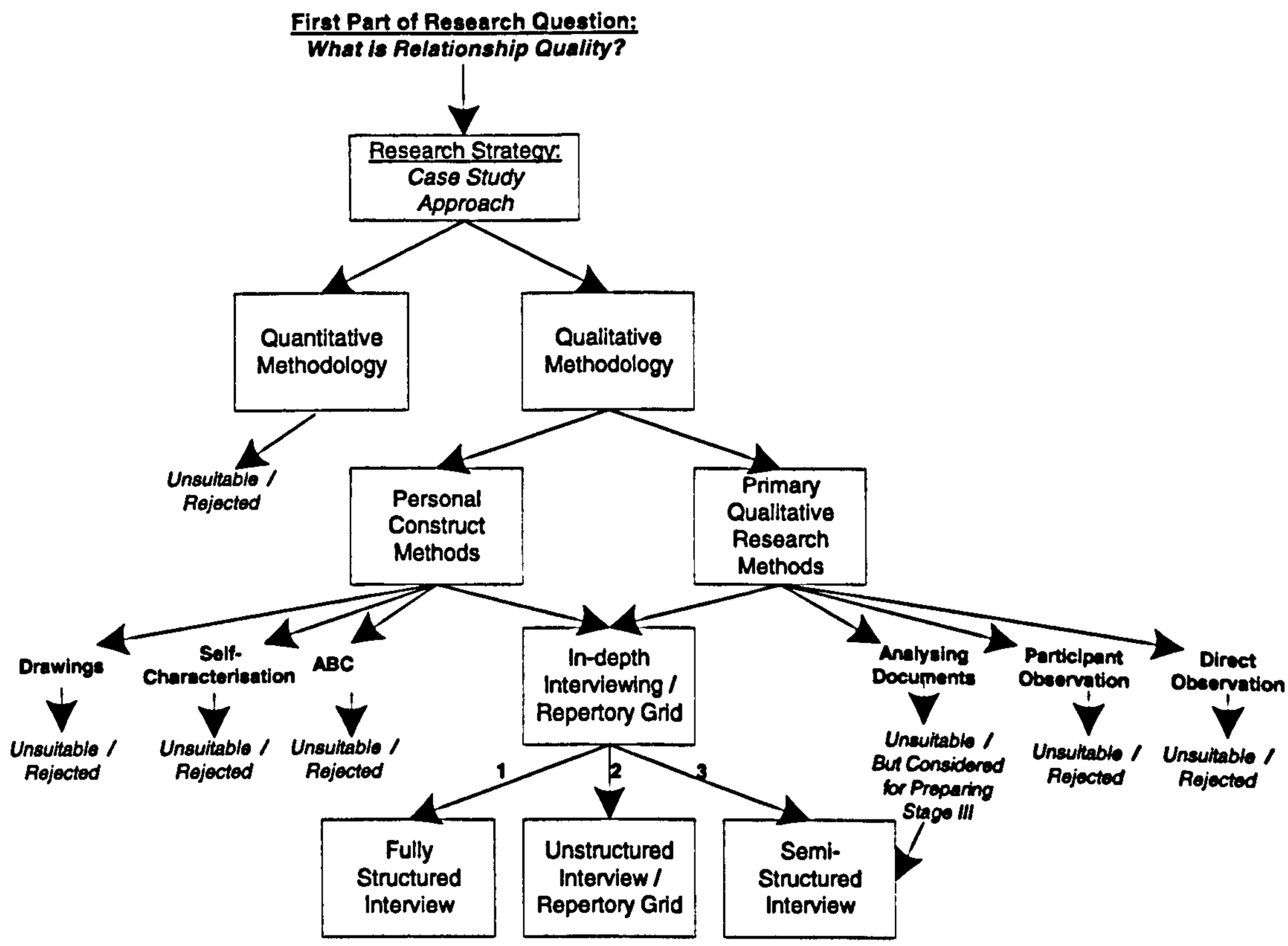
Appendix 3: Three Hierarchies of Effects on Attitude



Source: Based on Solomon (1996: 161).

Note: Solomon (1996) originally included the term behaviour rather than intention in his diagram. In this context, he (ibid.: 160) defines behaviour as "the person's intentions to do something with regard to an attitude object." Therefore, the term 'behaviour' has been replaced by 'intention' in order to avoid misunderstandings and to be consistent in this thesis.

Appendix 4: Rejected Research Techniques of Stage II



Participant Observation in the Setting

Participant observation provides the researcher with the opportunity to familiarise himself with the research setting over a long period of time. The typical aim of the researcher is to become a member of the observed group (Robson, 1993) in order to establish and sustain "a many-sided and relatively long-term relationship with a human association in its natural setting for the purpose of developing a scientific understanding of that association" (Lofland and Lofland, 1995: 18). Consequently, this technique has been widely adopted in anthropology (Kuper, 1996) as well as in ethnography (see e.g., Atkinson and Hammersley, 1994), as the investigator 'hears,' 'sees' and 'begins to experience' reality as the participants do (Marshall and Rossman, 1999).

Participant observation is typically differentiated into four types, according to Burgess (1984, as cited in Waddington, 1994: 108):

- The *complete participant*, who operates covertly, concealing any intention to observe the setting;

- The *participant-as-observer*, who forms relationships and participates in activities but makes no secret of an intention to observe events;
- The *observer-as-participant*, who maintains only superficial contacts with the people being studied (e.g., by asking them occasional questions); and
- The *complete observer*, who merely stands back and 'eavesdrops' on the proceedings.

The quality of supplier relationships, the subject of the second research stage, is shaped by the perception of managers (i.e., their individual construct systems), which cannot physically be observed from an external third-person perspective. In order to make the participant observation applicable to the present investigation, the researcher would have to become an insider by experiencing the management of suppliers at first-hand for an extended period of time (i.e., in the form of a *participant-as-observer*). This circumstance is a major constraint, as getting organisational access in terms of spending a large amount of time in the company became to conduct the investigation is highly unlikely. Furthermore, even if the researcher became an expert in one particular supplier management setting, it would not allow him to compare his perception of 'relationship quality' with other experts in different organisations.

Altogether, the nature of the research phenomenon renders the participant observation technique inappropriate and is thus rejected.

Direct observation

The 'participant observation' method discussed above has some bearing on the 'direct observation' technique to be introduced here. Broadly speaking, direct observation "entails the systematic noting and recording of events, behaviours, and artefacts (objects) in the social setting chosen for study" (Marshall and Rossman, 1999: 107). Because the 'direct observation' method can be seen as synonymous to the 'complete observer' form of the participant observation technique, the restraints identified in the previous section also hold for the 'direct observation' option. In particular, the direct observer relies on his senses to detect behavioural aspects and the surroundings where the observation takes place.

Typically, the researcher notes the physical settings for answering questions such as "what is the colour of the floor, walls, ceiling? How large is a room?,..., What are the sounds or smells?" (Neuman, 1997: 361). In addition, non-judgemental notes need to be taken on how actors (i.e., managers) in the social setting behave, making it possible to interpret the field notes later with regard to the research problem.

It is highly doubtful whether the managers' perceptions about the quality of supplier relationships can be inferred from pure observations. For this reason, the direct observation method has little applicability for investigating 'relationship quality' and is thus rejected.

Analysing documents and material culture

Reviewing documents is typically a supplementary method to observation and interviewing techniques (Marshall and Rossman, 1999). Although the term 'document' includes written work such as books and letters, it also covers non-written documents such as films, pictures and drawings (Robson, 1993). The analytic approach, which is often applied, is termed 'content analysis.' This type of analysis is similar to a 'structured observation,' according to Robson (ibid.).

As the analysing of documents is so closely related to other observation techniques discussed earlier, it shares many of their shortcomings of the intended investigation. In order to potentially explore the quality of supplier relationships by analysing documents (in the wider sense), the researcher has to 'observe' the communication flows between manufacturers and suppliers. Communication can be in writing (e.g., letters, faxes, emails) or non-written forms (e.g., telephone, videoconferencing, face-to-face conversation).

On the one hand, letters and fax documents might appear too formal and standardised for directly sensing the quality of supplier relationships. On the other hand, e-mails could be an informal means of supplier-manufacturer communication.

With regard to non-written documents, it appears unrealistic to obtain a sufficient number of uncensored recordings of telephone communications or videoconferences (if such a system were in place).

Last but not least, participating in 'real-time' supplier-manufacturer face-to-face communications depends on gaining permission to taking part in negotiations as an observer. However, analysing this type of communication is unsuitable for exploring the quality of relationships, as discussed earlier in terms of 'participant observation' and 'direct observation.'

The major weakness of the document analysis technique, as Marshall and Rossman (1999: 117) warn, "is the span of inferential reasoning.,..., Care should be taken, therefore, in displaying the logic of interpretation used in inferring meaning from the artefacts."

Overall, the document analysis technique is unsuitable for exploring the personal constructs of relationship quality in Stage II and is thus rejected for this reason. However, as a supplementary method, it seems fruitful to obtain documents regarding the criteria and the process of selecting suppliers in order to inform the researcher about the background to Stage III. So, documents about supplier selection can be obtained – not to explore the quality of relationships, but to prepare the research stage that will follow.

ABC

ABC is a structured approach to exploring the personal meaning of symptoms important for individuals. As the letters of the term 'ABC' might suggest, the analysis is conducted in three 'therapeutic steps,' as Tschudi (1977) advised: *A*, would be concerned with a question such as *what is my present and my preferred position?*; *B*, the respondent *lists the disadvantages of the present as well as the advantages of the preferred position*; *C*, the manager *lists the advantages of the present as well as the disadvantages of the preferred position.*

By reviewing the items listed under each heading, it is possible to identify how the present personal position differs from the preferred position. ABC, as Tindall (1994: 85) explains, "is particularly useful for revealing possible underlying tensions (core constructs) that prevent us from making the change."

Put differently, ABC is designed to help clients to develop personally to a desired state in a therapeutic situation. This type of analysis might be appropriate in client-centred therapy, as "here, the person can regain a sense of self-

acceptance and thus continue to grow towards self-fulfilment and self-enhancement" (Brunas-Wagstaff, 1998: 46). This is not the issue of the present research and the ABC method is thus rejected.

Self-Characterisation

An individual can characterise himself verbally or in writing (Kelly, 1955b) and is best applied in a 'clinical setting.' As a method to analyse the 'client's life role,' the technique "can give a rich picture of the way someone construes both themselves and their world," as Burr and Butt (1992: 125) point out.

The focus of the technique is 'the self,' and Jackson and Bannister (1985), for instance, applied the method to explore how 9-year-old and 13-year-old children construe their 'self' by providing a personality description of themselves. It is therefore a suitable approach to identify personal constructs in a psychological therapy context on an individual basis. This technique seems unsuitable for the current purposes and is rejected.

Drawings

Sometimes, drawings are used to express personal constructs. These are freed from language, and meaning is conveyed beyond the words. Tindall (1994: 87) sees clear links to art therapy, where "people can choose to represent themselves in all sorts of ways." The interpretation of the non-verbal expressions appears as an inappropriate method to explore the quality of supplier relationships and is rejected as a consequence.

Appendix 5: In-depth Interviewing – Schedule and Additional Information of Repertory Grid Technique

Choice of the Elements

The elements of the test are nine suppliers and the selection of the elements followed the subsequent guidelines:

1. The nine companies will include three with which the respondent has a relationship of 'high quality'; three with a 'low quality'; and three with an 'average quality.'
2. The suppliers will be elicited from the respondent – this equates to *personal elements* in repertory grid terminology.
3. All nine companies are well known to the respondent.
4. The names of the companies will be kept confidential and the respondent will have to be informed about this issue at the beginning.

Presentation of the Elements

The name of each of the nine suppliers (elements) will be written on a separate card and an individual number has to be noted on the back of it. The elements (i.e., names of suppliers) will be written into the 'figure list' on the matrix in randomised order.

Selection of the Triads

The selection of cards in each triad will be randomised, but will follow a systematic approach.

Handling of the Constructs

The respondents name their personal constructs, which will be entered into the blank spaces of the newly designed research instrument.

Explanation to the Subject

The respondents will be informed about the purpose and format of the interview, as detailed below.

Interviewer. The next part of the interview will use a particular technique in order for you to compare some of your suppliers. Firstly, can you please name three suppliers with which you have a relationship of high quality?

Respondent. [Names 3 companies where relationship quality is high].

Interviewer. [Writes names on cards]. Can you now name 3 companies with which your relationship is of low quality?

Respondent. [Names 3 companies where relationship quality is low].

Interviewer. [Writes names on cards]. Finally, can you now name 3 companies with which your relationship is of average quality – so, between the first two groups you've just mentioned?

Respondent. [Names 3 companies where relationship quality is average].

Interviewer. [Writes names on cards and presents the first triad]. Please look at these 3 cards and think about the relationship you have with those suppliers. How are two of them similar to each other and different from the third in terms of the relationship you have with them?

Respondent. [Provides construct pole].

Interviewer. [Writes attribute on left-hand side of the "matrix"]. OK, what does ... [attribute] really mean to you; how can I understand it better – which steps or behaviour does ... [attribute] express?

Respondent. [Describes/defines attribute as well as the behaviour, which expresses the construct pole].

Interviewer. [Notes keywords in case tape recording is not clear]. When the relationship with the two suppliers is similar in respect to ...[attribute; construct pole], how does the relationship with...[name of third supplier] differ in this regard?

Respondent. [Provides contrast pole].

Interviewer. [In the same line of the "matrix," interviewer writes attribute on the right-hand side, so that the construct pole and contrast pole fully represent the construct on one line]. OK, what does ... [attribute] really mean to you; how can I visualise ... [attribute] – what is the behaviour here?

Respondent. [Describes/defines attribute as well as the behaviour, which expresses the contrast pole].

Interviewer. [Places "matrix" in front of respondent]. You explained the relationships of suppliers in terms of ...[construct]. Now, with regard to ...[construct], I would like you to rate the 9 suppliers on a scale of +2 to -2. +2 represents... [attribute, construct pole] and -2 stands for... [attribute, contrast pole].

Respondent. [Rates elements/suppliers on all relationship quality attributes].

Interviewer. [Introduces next triad and elicits the next construct].

Respondent. [Names and describes attributes and describes behaviours associated with attributes].

[Test continues until either: no more constructs can be elicited; the time limit is exceeded; or a certain number of constructs is elicited].

Appendix 6: In-depth Interviewing – Schedule of Semi-structured Questions

The semi-structured interview will be outlined in terms of the questions to be asked. However, as the conversation will be guided by questions in a semi-structured design, ad-hoc probing questions will be asked around the core questions listed here.

Interviewer. [Takes matrix off the desk]. Thank you very much for completing the 'table.' Finally, I have only a few more questions to ask you. We discussed supplier relationship qualities and compared the ones with a high level to the ones with lower levels of qualities – how should we understand the relationship with a supplier in general?

Respondent. [Describes supplier-manufacturer relationships in general terms – the aim is to get the full picture of the respondent's perception of 'what does a relationship with the supplier' means].

Interviewer. In your experience, which purchasing situation would require additional information about the product/component/material as well as a re-evaluation of suppliers for making the purchasing decision?

Respondent. [Describes purchasing situations in general terms – the aim is to identify 'modified re-buy' scenarios in the specific business context as outlined by Robinson et al. 1967. If necessary, probing questions will be asked in order to clarify this issue].

Interviewer. In these situations, do you prefer buying from existing suppliers or do you look specifically for new vendors or do you have none of these preferences at all – and what are the reasons?

Respondent. [Explaining his typical preference(s) in terms of focussing on 'existing suppliers,' on 'new suppliers' or on 'existing and new suppliers'].

Interviewer. Which specific selection criteria do you evaluate when choosing suppliers in these purchasing situations?

Respondent. [Naming the selection criteria. Probing questions will be asked in conjunction with the selection criteria provided in the prior telephone interview in Stage I. Furthermore, the researcher tries to obtain the 'official supplier selection criteria list,' if such a list exists].

Interviewer. In these purchasing situations, who is typically involved in the selection process?

Respondent. [Naming members of buying centre. This is to double-check whether all the individuals named in the telephone interviews in Stage I are typically involved in modified re-buy situations. In other words, this is a snowball sampling technique for Stage III].

Interviewer. What are the typical steps taken in selecting suppliers in these purchasing situations?

Respondent. [Describing supplier selection process in modified re-buy situations].

Interviewer. Finally, I have got three models I would like to discuss with you. These were developed after the telephone conversation and I would like to get your expert view on them [Interviewer presents models in succession a) the Relationship Model, b) the Change of Relationships Model, and c) the Supplier Selection model].

Respondent. [Discusses the three models with the interviewer].

Interviewer. Thank you very much once again Mr./Mrs. ... [respondents name] for having taken your time to answer all my questions. Have you got any

questions you would like to ask me or do you have anything on your mind you are unsure about?

Respondent. [Asking questions, if needed].

Interviewer. [Providing answers, if questions asked. Interviewer leaves contact details and assures respondent about a) keeping his promise of confidentiality as well as b) sending the results after completion of the research project. After the last interview, the interviewer will commence with the plant tour].

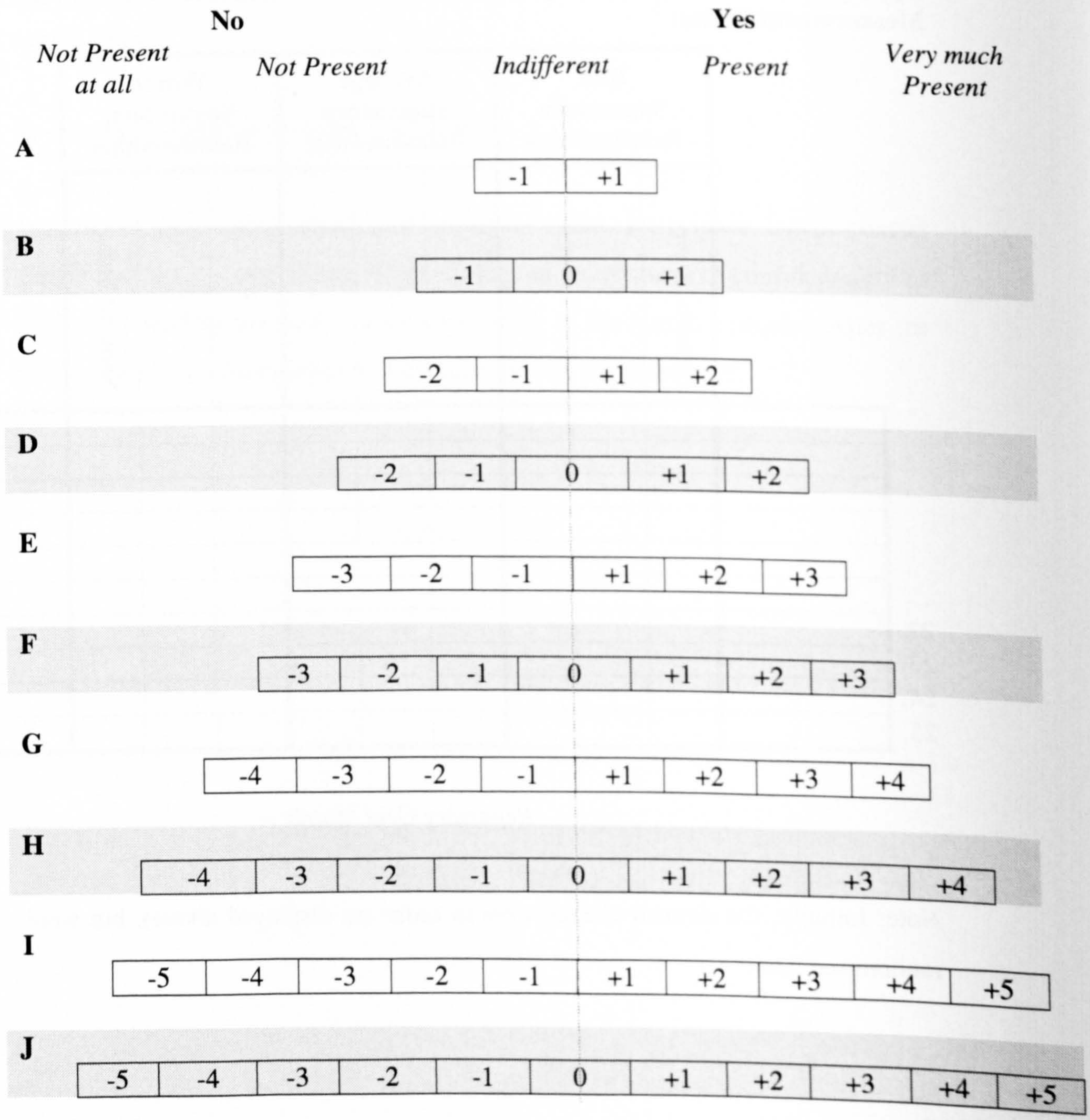
Appendix 7: Initial Repertory Grid Research Instrument (Matrix and Measurement Scales)

	Best Superstore Relationships			Average Superstore Relationships			Worst Superstore Relationships			
	Name of Store	...	...	...	...	...	...	...	Name of Store	
...										
22.										
23.										
24.										
25.										

– *Repertory Grid Matrix* –

–

Note: Initially, the element classes were in order (as displayed above), but were randomised later.



– Measurement Scales –

Note: The researcher tried different scales and discovered that scale 'D' (i.e., from +2 – -2) is the most appropriate measurement approach.

Appendix 8: First Choice – Supplier Shares of Preference (Actual Sample)

Supplier Profile	First Choice (%)	Standard Errors
Supplier 1		
Supplier 2	*6.06*	*4.15*
Supplier 3		
Supplier 4		
Supplier 5		
Supplier 6	*15.15*	*6.24*
Supplier 7	*12.12*	*5.68*
Supplier 8		
Supplier 9	*3.03*	*2.98*
Supplier 10		
Supplier 11		
Supplier 12		
Supplier 13		
Supplier 14	*6.06*	*4.15*
Supplier 15		
Supplier 16		
Supplier 17		
Supplier 18	*12.12*	*5.68*
Supplier 19		
Supplier 20		
Supplier 21	*24.24*	*7.46*
Supplier 22	*18.18*	*6.71*
Supplier 23		
Supplier 24		
Supplier 25		
Supplier 26	*3.03*	*2.98*
Supplier 27		
Total Number of Respondents	***33***	***33***

Appendix 9: Supplier Shares of Preference (Actual Sample)

Supplier Profile	Share of Preference (%)	Standard Error
Supplier 1	*0.64*	*0.10*
Supplier 2	*7.89*	*1.14*
Supplier 3	*0.73*	*0.12*
Supplier 4	*1.55*	*0.19*
Supplier 5	*1.09*	*0.14*
Supplier 6	*10.87*	*1.12*
Supplier 7	*12.19*	*1.02*
Supplier 8	*0.75*	*0.09*
Supplier 9	*3.30*	*0.58*
Supplier 10	*2.93*	*0.41*
Supplier 11	*1.28*	*0.19*
Supplier 12	*0.07*	*0.01*
Supplier 13	*2.48*	*0.38*
Supplier 14	*4.51*	*0.99*
Supplier 15	*0.25*	*0.03*
Supplier 16	*0.25*	*0.03*
Supplier 17	*1.22*	*0.20*
Supplier 18	*8.00*	*1.44*
Supplier 19	*3.91*	*0.49*
Supplier 20	*0.18*	*0.02*
Supplier 21	*11.98*	*1.17*
Supplier 22	*13.26*	*1.82*
Supplier 23	*0.60*	*0.11*
Supplier 24	*0.77*	*0.13*
Supplier 25	*3.27*	*0.44*
Supplier 26	*3.80*	*0.78*
Supplier 27	*2.25*	*0.40*
Total Number of Respondents	*33*	*33*

Appendix 10: Randomised First Choice (Actual Sample)

Supplier Profile	Randomised First Choice (%)	Standard Error
Supplier 1	*0.32*	*0.09*
Supplier 2	*8.62*	*1.40*
Supplier 3	*0.38*	*0.11*
Supplier 4	*0.97*	*0.19*
Supplier 5	*0.61*	*0.13*
Supplier 6	*12.40*	*1.44*
Supplier 7	*13.67*	*1.22*
Supplier 8	*0.36*	*0.08*
Supplier 9	*2.78*	*0.67*
Supplier 10	*2.55*	*0.44*
Supplier 11	*0.67*	*0.17*
Supplier 12	*0.01*	*0.01*
Supplier 13	*1.83*	*0.45*
Supplier 14	*4.23*	*1.14*
Supplier 15	*0.08*	*0.03*
Supplier 16	*0.06*	*0.02*
Supplier 17	*0.82*	*0.22*
Supplier 18	*8.56*	*1.69*
Supplier 19	*3.55*	*0.56*
Supplier 20	*0.02*	*0.01*
Supplier 21	*13.75*	*1.41*
Supplier 22	*14.72*	*2.07*
Supplier 23	*0.31*	*0.12*
Supplier 24	*0.40*	*0.14*
Supplier 25	*2.84*	*0.51*
Supplier 26	*3.55*	*0.94*
Supplier 27	*1.96*	*0.53*
Total Number of Respondents	***33***	***33***

Appendix 11: Supplier Selection Likelihood (Actual Sample)

Supplier Profile	Supplier Selection Likelihood (%)	Standard Errors
Supplier 1	*22.48*	*2.53*
Supplier 2	*70.78*	*2.88*
Supplier 3	*23.52*	*2.56*
Supplier 4	*38.88*	*3.26*
Supplier 5	*31.83*	*2.90*
Supplier 6	*78.36*	*2.53*
Supplier 7	*82.79*	*1.43*
Supplier 8	*25.74*	*2.68*
Supplier 9	*53.45*	*3.28*
Supplier 10	*51.32*	*3.55*
Supplier 11	*34.77*	*3.05*
Supplier 12	*3.96*	*0.98*
Supplier 13	*48.70*	*3.25*
Supplier 14	*57.71*	*3.17*
Supplier 15	*10.66*	*1.38*
Supplier 16	*10.95*	*1.23*
Supplier 17	*31.11*	*3.21*
Supplier 18	*69.92*	*2.63*
Supplier 19	*58.16*	*3.46*
Supplier 20	*8.04*	*0.96*
Supplier 21	*80.97*	*2.06*
Supplier 22	*80.09*	*2.14*
Supplier 23	*21.37*	*3.12*
Supplier 24	*25.02*	*2.76*
Supplier 25	*55.40*	*2.95*
Supplier 26	*54.40*	*3.26*
Supplier 27	*44.57*	*3.32*
Total Number of Respondents	***33***	***33***

Appendix 12: The Top-7 Suppliers (Actual Sample)

Attribute	Supplier 21	Supplier 22	Supplier 6	Supplier 7	Supplier 18	Supplier 2	Supplier 14
Trust	*3 = Complete Trust*	*2 = Trust the supplier, but not in all respects*	*2 = Trust the supplier, but not in all respects*	*1 = Total Mistrust*	*1 = Total Mistrust*	*3 = Complete Trust*	*3 = Complete Trust*
Complaint Handling	*1 = Very good complaint handling*	*1 = Very good complaint handling*	*3 = Very poor complaint handling*	*1 = Very good complaint handling*	*1 = Very good complaint handling*	*2 = Average complaint handling where the supplier needs to be persuaded/convinced that a fault exists*	*3 = Very poor complaint handling*
Early Information	*2 = Information is not always provided in time to react*	*3 = Early information that allows one to deal with upcoming problems early on*	*3 = Early information that allows one to deal with upcoming problems early on*	*3 = Early information that allows one to deal with upcoming problems early on*	*1 = No active information*	*2 = Information is not always provided in time to react*	*3 = Early information that allows one to deal with upcoming problems early on*
Feedback	*1 = Speedy feedback with relevant information content*	*1 = Speedy feedback with relevant information content*	*2 = Average feedback where information is not always relevant*	*2 = Average feedback where information is not always relevant*	*1 = Speedy feedback with relevant information content*	*3 = No feedback*	*1 = Speedy feedback with relevant information content*
Openness	*2 = Open communication, but not in all respects*	*3 = Open communication where everything can be addressed openly*	*2 = Open communication, but not in all respects*	*3 = Open communication where everything can be addressed openly*	*1 = Indirect communication where everything needs to be addressed in a diplomatic manner*	*3 = Open communication where everything can be addressed openly*	*2 = Open communication, but not in all respects*
Problem Solving	*3 = Buyer needs to solve problems alone as the supplier is either not able to solve them or does not understand the problems at all.*	*2 = Supplier understands the problems, but is not always able to solve them*	*1 = Problems are solved jointly with the supplier*	*1 = Problems are solved jointly with the supplier*	*1 = Problems are solved jointly with the supplier*	*1 = Problems are solved jointly with the supplier*	*2 = Supplier understands the problems, but is not always able to solve them*
Type of Relationship	*2 = Neutral, friendly business relationship*	*3 = Very personal relationship on the 'professional level'*	*3 = Very personal relationship on the 'professional level'*	*2 = Neutral, friendly business relationship*	*1 = Pure business relationship merely based on 'order and delivery'*	*2 = Neutral, friendly business relationship*	*1 = Pure business relationship merely based on 'order and delivery'*

Table will continue on next page.

Table continued from previous page.

Attribute	Supplier 21	Supplier 22	Supplier 6	Supplier 7	Supplier 18	Supplier 2	Supplier 14
Product Quality	*1 = 100%-Top quality*	*1 = 100%-Top quality*	*1 = 100%-Top quality*	*2 = Average product quality*	*1 = 100%-Top quality*	*1 = 100%-Top quality*	*3 = Poor product quality that leads to an above-average scrap rate*
Delivery Performance	*2 = Average delivery performance which is on-time usually but delayed sometimes*	*3 = Delivery is always delayed*	*2 = Average delivery performance which is on-time usually but delayed sometimes*	*1 = Delivery is always on-time*	*1 = Delivery is always on-time*	*3 = Delivery is always delayed*	*1 = Delivery is always on-time*
Price	*2 = Average (market price)*	*3 = Above market price (more expensive)*	*1 = Less than market price (less expensive)*	*2 = Average (market price)*	*1 = Less than market price (less expensive)*	*1 = Less than market price (less expensive)*	*2 = Average (market price)*

Appendix 13: Correlations of Actual Sample Respondents

Number*	233	225	121	124	234	196	120	108	111	194	197	123	178	109	112	187	192	122	184	199	119	205	208	221	223	226	227	201	136	180	133	220
233	1																															
225	0.678539	1																														
121	0.600097	0.863358	1																													
124	0.57862	0.841602	0.898708	1																												
234	0.716165	0.82604	0.900955	0.839295	1																											
196	0.591867	0.677838	0.664096	0.685078	0.730343	1																										
120	0.673939	0.854024	0.722894	0.771492	0.794459	0.714299	1																									
108	0.676622	0.690364	0.721136	0.743226	0.79063	0.672679	0.559231	1																								
111	0.572777	0.842578	0.864854	0.848366	0.882716	0.60687	0.784232	0.635413	1																							
194	0.413484	0.525258	0.660078	0.631746	0.711735	0.663046	0.568564	0.67434	0.526957	1																						
197	0.67606	0.880043	0.925245	0.90293	0.881814	0.777486	0.83448	0.782099	0.844656	0.676978	1																					
123	0.606722	0.666823	0.674831	0.798164	0.642608	0.560697	0.757957	0.553048	0.691047	0.465625	0.791422	1																				
178	0.732325	0.828922	0.790694	0.743429	0.841093	0.71081	0.795894	0.743321	0.69205	0.534947	0.816224	0.687287	1																			
109	0.675574	0.724366	0.688674	0.689387	0.780833	0.695021	0.845137	0.529487	0.779621	0.474104	0.735679	0.730014	0.763965	1																		
112	0.639646	0.848739	0.867042	0.859185	0.75505	0.744462	0.741119	0.700685	0.745983	0.486327	0.916899	0.691734	0.742688	0.674338	1																	
187	0.612525	0.832015	0.892459	0.901795	0.8125	0.610695	0.778351	0.682083	0.865963	0.552316	0.911577	0.765403	0.699723	0.709576	0.87591	1																
192	0.715809	0.894177	0.875295	0.807699	0.900459	0.773509	0.833891	0.748816	0.840033	0.656076	0.860799	0.601496	0.858147	0.750459	0.795045	0.821996	1															
122	0.673551	0.778576	0.738173	0.751822	0.7514	0.618998	0.804553	0.725917	0.739212	0.591417	0.806548	0.753964	0.757434	0.743764	0.678908	0.744787	0.752171	1														
184	0.510549	0.687954	0.655226	0.68089	0.726575	0.824933	0.738296	0.738045	0.608373	0.689793	0.808481	0.580783	0.713064	0.607908	0.705397	0.632224	0.751682	0.730334	1													
199	0.515758	0.759759	0.818075	0.852786	0.812391	0.75963	0.819589	0.727076	0.751777	0.768523	0.930334	0.743197	0.69007	0.662108	0.791	0.836619	0.76462	0.807357	0.868219	1												
119	0.409533	0.692137	0.749936	0.814507	0.745637	0.650914	0.720891	0.643479	0.760677	0.54932	0.798972	0.636667	0.573242	0.690473	0.751783	0.794531	0.688087	0.747878	0.74469	0.877578	1											
205	0.734637	0.809926	0.779869	0.841399	0.881985	0.795934	0.839589	0.832891	0.790646	0.712597	0.862084	0.736141	0.775955	0.80558	0.757744	0.780979	0.803965	0.861683	0.764446	0.856043	0.793577	1										
208	0.544882	0.809695	0.896555	0.877003	0.855627	0.720505	0.769269	0.73985	0.821189	0.731835	0.938037	0.803075	0.755192	0.716344	0.806503	0.842087	0.781879	0.840139	0.807289	0.939713	0.858418	0.848443	1									
221	0.552658	0.846665	0.865716	0.850403	0.814419	0.686716	0.767477	0.721003	0.754895	0.691779	0.893334	0.69209	0.75681	0.684336	0.807214	0.830972	0.766724	0.868663	0.759041	0.897671	0.831813	0.840382	0.933956	1								
223	0.571449	0.805148	0.89901	0.910306	0.865917	0.720802	0.74983	0.776941	0.868592	0.665155	0.926805	0.80354	0.746968	0.749044	0.799344	0.876161	0.809135	0.815066	0.751134	0.883991	0.80475	0.865049	0.928547	0.852084	1							
226	0.585982	0.76244	0.800007	0.800657	0.855033	0.68112	0.838326	0.670235	0.739656	0.641969	0.869551	0.709392	0.756696	0.705786	0.739682	0.800901	0.77071	0.811418	0.753163	0.907567	0.833853	0.836375	0.878127	0.888875	0.829434	1						
227	0.62753	0.857722	0.860713	0.78912	0.800067	0.612377	0.710938	0.735694	0.755934	0.565579	0.867123	0.692358	0.751236	0.603452	0.75859	0.796096	0.766784	0.812197	0.661559	0.789938	0.657356	0.826393	0.851161	0.839822	0.876342	0.77901	1					
201	0.617397	0.896392	0.827985	0.889095	0.821525	0.605105	0.804116	0.763534	0.85335	0.595535	0.880892	0.77833	0.765773	0.612405	0.796792	0.845873	0.820049	0.780262	0.691035	0.805113	0.687673	0.81967	0.842268	0.806997	0.842917	0.784929	0.838591	1				
136	0.627657	0.802984	0.897944	0.918183	0.839543	0.68648	0.764609	0.742303	0.855014	0.670645	0.927411	0.786681	0.706543	0.664907	0.860243	0.949804	0.836907	0.804935	0.71342	0.884112	0.801974	0.810212	0.897231	0.867888	0.896301	0.845875	0.790454	0.881593	1			
180	0.721438	0.882127	0.845283	0.82447	0.83534	0.745714	0.855665	0.634089	0.793986	0.65216	0.874325	0.660287	0.722204	0.742713	0.8209	0.853387	0.860508	0.820829	0.744039	0.841474	0.758533	0.843962	0.833731	0.889876	0.803838	0.833484	0.815628	0.785774	0.868173	1		
133	0.635052	0.846741	0.900034	0.860947	0.846326	0.709735	0.759715	0.774124	0.818469	0.577071	0.941703	0.746569	0.817049	0.707732	0.837903	0.891418	0.832368	0.856214	0.779718	0.876801	0.782183	0.824138	0.908527	0.901298	0.940689	0.855239	0.906358	0.821683	0.894712	0.853557	1	
220	0.717171	0.869679	0.901453	0.908098	0.881778	0.732531	0.74185	0.879094	0.847643	0.648838	0.93893	0.72772	0.815239	0.675837	0.881638	0.909693	0.8853	0.755839	0.741566	0.834594	0.754564	0.84914	0.865984	0.826193	0.882156	0.761961	0.820952	0.892726	0.915084	0.81527	0.894962	1
172	0.547975	0.770892	0.815881	0.784684	0.6943	0.556959	0.574398	0.664754	0.657849	0.542749	0.804177	0.757808	0.791855	0.555608	0.725716	0.675021	0.657118	0.682267	0.571244	0.666545	0.522434	0.651609	0.82905	0.782978	0.770149	0.612399	0.775433	0.777361	0.721497	0.641913	0.782179	0.794213

All correlations are significant at the .01 level.

*Note: The 'Number' is an internal coded random number of each respondent.

Appendix 14: Correlation of Attribute Levels (Actual Sample)

AL*	A.	B.	C.	D.	E.	F.	G.	H.	I.	J.	K.	L.	M.	N.	O.	P.	Q.	R.	S.	T.	U.	V.	W.	X.	Y.	Z.	AA.	BB.	CC.	DD.
A.	1																													
B.	-0.17672	1																												
C.	-0.58708	-0.46237	1																											
D.	0.201973	-0.07727	-0.17378	1																										
E.	0.13899	0.340279	0.086321	-0.41995	1																									
F.	-0.31119	-0.05549	0.121408	-0.44169	-0.50706	1																								
G.	-0.23988	-0.33698	0.411424	-0.27924	-0.03457	0.203719	1																							
H.	0.273628	0.141127	-0.02192	0.359061	0.342843	-0.48652	-0.18889	1																						
I.	-0.02295	0.358433	-0.20638	-0.20676	0.113687	0.166145	-0.59039	-0.54169	1																					
J.	0.004935	0.097309	-0.22395	-0.02337	-0.19738	0.176721	0.004394	-0.17033	0.055897	1																				
K.	0.031598	0.114891	0.189379	-0.26381	0.443365	-0.03724	0.081563	0.161397	0.04775	-0.53086	1																			
L.	0.043181	0.078642	0.116316	0.208272	0.246161	-0.32044	-0.17737	0.32488	-0.00534	-0.66521	-0.10413	1																		
M.	0.000549	0.110517	-0.10482	0.330965	-0.06519	-0.23132	-0.08726	0.429104	-0.34359	-0.23691	0.103088	0.151788	1																	
N.	0.155424	-0.04245	0.055528	-0.30305	0.249215	0.092735	-0.16313	-0.2501	0.461123	0.207008	0.017123	-0.10628	-0.55344	1																
O.	-0.06237	0.250621	0.116838	-0.11447	0.332451	-0.04418	0.136901	0.139873	0.011726	-0.08439	0.193516	0.168152	-0.46782	-0.25915	1															
P.	0.17842	0.253546	-0.38402	0.01834	0.073951	-0.12606	-0.03005	0.239959	-0.20019	0.173871	-0.1988	0.010365	0.309261	-0.0428	-0.26049	1														
Q.	0.054437	-0.11418	0.401944	0.08724	0.308129	-0.161	0.027608	0.206741	0.054105	-0.15436	0.369903	0.108991	-0.14407	0.081181	0.392653	-0.48958	1													
R.	-0.14194	0.291904	-0.01014	-0.22223	0.197516	0.088984	-0.13904	-0.07908	0.283399	-0.15089	0.15708	0.137217	-0.14457	0.127796	0.161962	-0.43168	-0.2985	1												
S.	0.091828	0.325854	-0.1416	0.002736	0.180878	0.006634	-0.30179	0.210954	0.199171	-0.22084	0.15942	0.294372	0.009829	0.035473	0.190174	-0.14501	0.154831	0.264033	1											
T.	-0.01354	0.139054	-0.18611	-0.08434	-0.01749	0.031865	0.085966	-0.1351	0.015864	0.127745	0.023075	-0.21482	0.05034	-0.10744	-0.01152	0.165509	-0.23772	0.038106	-0.55334	1										
U.	-0.03216	-0.25142	0.38277	0.002358	0.211718	-0.19017	0.221559	0.120141	-0.17106	0.071193	0.04405	-0.01334	-0.05326	0.161466	0.013572	0.054018	0.272318	-0.24477	-0.61376	-0.16435	1									
V.	0.328114	-0.16173	-0.06997	-0.06277	0.221987	-0.21677	0.050025	0.041811	-0.03052	-0.21857	0.239668	0.051173	-0.12917	0.014806	0.166363	-0.32803	0.142333	0.234303	-0.00691	0.01319	0.04232	1								
W.	-0.25853	0.377355	0.110604	-0.05649	0.155091	0.112342	-0.29805	-0.02682	0.423846	0.01667	0.117775	0.088277	0.020026	0.192795	0.036403	0.058237	0.187029	0.019965	0.173123	-0.10929	0.072179	-0.66738	1							
X.	-0.00903	0.20131	0.051049	0.056056	0.208212	-0.10316	0.161948	0.444706	-0.34528	0.111877	-0.04429	0.126476	0.155754	-0.06593	0.131664	0.397451	0.026027	-0.15697	0.122106	0.030637	0.010158	-0.48325	0.002794	1						
Y.	-0.10786	-0.20851	0.054286	-0.19118	-0.22459	0.262533	0.39633	-0.0422	-0.41403	0.12668	-0.2036	-0.14458	-0.16081	-0.12153	0.051117	0.188009	-0.23475	-0.19813	-0.20055	-0.18194	0.209782	0.033135	-0.25457	-0.04062	1					
Z.	-0.21288	0.395727	0.2409	0.01474	0.440541	-0.18156	-0.26973	0.265881	0.275723	-0.31928	0.52691	0.21718	0.115129	0.086241	0.221671	-0.26561	0.3331	0.409252	0.210737	0.022614	0.069051	-0.11477	0.442991	0.19108	-0.64158	1				
AA.	0.523392	0.085708	-0.30947	0.089804	0.278292	-0.26843	-0.18458	0.098274	0.200892	0.150798	-0.11312	0.13378	0.01203	0.19292	0.00904	0.1761	0.20995	-0.17739	0.223655	0.080829	-0.17379	0.191498	-0.03428	0.065887	-0.46939	-0.16563	1			
BB.	0.069277	0.284802	-0.17198	-0.06538	0.137524	0.037237	-0.15969	0.285377	-0.037	-0.02213	0.027805	0.132492	0.120777	0.07963	-0.04619	0.354378	-0.32976	0.231553	0.477706	-0.18712	-0.32363	-0.12697	0.229521	0.09894	0.216859	-0.04589	0.024191	1		
CC.	-0.16728	-0.15361	0.288405	-0.23698	-0.0507	0.319395	0.141073	-0.31319	0.200022	0.249792	-0.0353	-0.22826	-0.43063	0.32169	0.124659	-0.50289	0.437477	-0.01213	0.00111	-0.30937	0.250425	0.12391	-0.00809	-0.16121	0.007912	-0.0072	0.005349	-0.50271	1	
DD.	0.156604	0.108003	-0.04538	0.234432	0.308695	-0.49061	-0.05362	0.266699	-0.06613	-0.31355	0.253908	0.255025	0.286548	-0.27602	0.158455	0.11953	0.182732	-0.11542	-0.30593	0.436257	0.185005	0.053728	-0.03741	0.230377	-0.40908	0.386818	0.133093	-0.42988	-0.43432	1

All correlations are significant at the .01 level.

*Attribute Levels (AL):

A. Total Mistrust	P. Problems are be solved jointly with the supplier
B. Trust the supplier, but not in all respects	Q. Supplier understands the problems, but is not always able to solve them
C. Complete Trust	R. Buyer needs to solve problems alone as the supplier is either not able to solve them or does not understand the problems at all
D. Very good complaint handling	S. Pure business relationship merely based on 'order and delivery'
E. Average complaint handling where the supplier needs to be persuaded/convinced that a fault exists	T. Neutral, friendly business relationship
F. Very poor complaint handling	U. Very personal relationship on the 'professional level'
G. No active information	V. 100%-Top quality
H. Information is not always provided in time to react	W. Average product quality
I. Early information that allow to deal with upcoming problems early on	X. Poor product quality that leads to an above-average scrap rate
J. Speedy feedback with relevant information content	Y. Delivery is always on-time
K. Average feedback where information is not always relevant	Z. Average delivery performance which is on-time usually but delayed sometimes
L. No feedback	AA. Delivery is always delayed
M. Indirect communication where everything needs to be addressed in a diplomatic manner	BB. Less than market price (less expensive)
N. Open communication, but not in all respects	CC. Average (market price)
O. Open communication where everything can be addressed openly	DD. Above market price (more expensive)

10 References

A

- **Aijo**, Toivo S. (1996): *The Theoretical and Philosophical Underpinnings of Relationship Marketing: Environmental Factors Behind the Changing Marketing Paradigm.* European Journal of Marketing. Vol. 30, no. 2, February, pp. 8-18.
- **Ajzen**, Icek (1985): *From Intentions to Actions: A Theory of Planned Behavior.* In: **Kuhl**, Julius and **Beckmann**, Jürgen (1985): *Action Control: From Cognition to Behavior.* Springer: Berlin, pp. 11-39.
- **Ajzen**, Icek (1989): *Attitude Structure and Behavior.* In: **Pratkanis**, Anthony R.; **Breckler**, Steven J. and **Greenwald**, Anthony G. (1989): *Attitude Structure and Function.* Lawrence Erlbaum Associates: London, pp. 241-274.
- **Ajzen**, Icek (1996): *Attitudes and Behaviour.* In: **Manstead**, Antony S. R. and **Hewstone**, Miles (1996): *The Blackwell Encyclopedia of Social Psychology.* Blackwell: Oxford, pp. 52-57.
- **Ajzen**, Icek and **Fishbein**, Martin (1980): *Understanding Attitudes and Predicting Social Behavior.* Prentice-Hall: Englewood Cliffs, New Jersey.
- **Ajzen**, Icek and **Fishbein**, Martin (1977): *Attitude-Behavior Relations: A Theoretical Analysis and Review of Empirical Research.* Psychological Bulletin. Vol. 84, no. 5, September, pp. 888-918.
- **Akinc**, U. (1993): *Selecting a Set of Vendors in a Manufacturing Environment.* Journal of Operations Management, Vol. 11, pp. 107-122.
- **Allport**, Gordon W. (1955): *Becoming: Basic Considerations for a Psychology of Personality.* Yale University Press: London.
- **Ambler**, Tim (1997): *Do Brands Benefit Consumers?.* International Journal of Advertising. Vol. 16, no. 3, pp. 167-198.
- **Anderson**, David R.; **Sweeney**, Dennis J. and **Williams**, Thomas A. (1998): *Quantitative Methods for Business.* South-Western College Publishing: Cincinnati, Ohio. 7th edition.
- **Anderson**, Erin; **Chu**, Wujin and **Weitz**, Barton (1987): *Industrial Purchasing: An Empirical Exploration of the Buyclass Framework.* Journal of Marketing. Vol. 51, no. 3, July, pp. 71-86.
- **Anderson**, James C. (1995): *Relationships in Business Markets: Exchange Episodes, Value Creation, and Their Empirical Assessment.* Journal of the Academy of Marketing Science. Vol. 23, no. 4, Fall, pp. 346-350.
- **Anderson**, James C.; **Håkansson**, Håkan and **Johanson**, Jan (1994): *Dyadic Business Relationships Within a Business Network Context.* Journal of Marketing. Vol. 58, October, pp. 1-15.

- **Anonymous** (1999a): *European Marketing Data and Statistics 1999.* London: Euromonitor Plc, 1999.
- **Anonymous** (1999b): *ACA/Hierarchical Bayes Technical Paper.* Sawtooth Software Working Paper.
- **Arber**, Sara (1993): *Designing Samples.* In: **Gilbert**, Nigel (1993): *Researching Social Life.* Sage: London, pp. 68-92.
- **Ariño**, A. and **de la Torre**, J. (1998): *Learning form Failure: Towards an Evolutionary Model of Collaborative Ventures.* Organization Science. Vol. 9, no. 3, pp. 306-325.
- **Arndt**, Johan (1979): *Towards a Concept of Domesticated Markets.* Journal of Marketing. Vol. 43, no. 4, Fall, pp. 69-75.
- **Arnold**, John; **Cooper**, Cary L. and **Robertson**, Ivan T. (1998): *Work Psychology: Understanding Human Behaviour in the Workplace.* Financial Times / Pitman Publishing: London. 3rd edition.
- **Ashmos**, Donde P.; **Duchon**, Dennis and **McDaniel**, Reuben R. Jr. (1998): *Participation in Strategic Decision Making: The Role of Organizational Predisposition and Issue Interpretation.* Decision Sciences. Vol. 29, no. 1, Winter, pp. 25-51.
- **Asmus**, David and **Griffin**, John (1993): *Harnessing the Power of Your Suppliers.* The McKinsey Quarterly. No. 3, pp. 63-78.

B

- **Babbie**, Earl (1995): *The Practice of Social Research.* Wadsworth: London. 7th edition.
- **Backhaus**, Klaus (1992): *Investitionsgütermarketing.* Verlag Franz Vahlen: München. 3rd edition.
- **Baily**, Peter (1998): *Purchasing Principles and Practices.* In: **Lock**, Dennis (1998): *The Gower Handbook of Management.* Gower: Aldershot. 4th edition, pp. 783-805.
- **Baker**, Susan and **Jenkins**, Mark (1993): *The Role of Personal Values in the Design and Conduct of Management Research: Perspectives on Managerial and Consumer Cognition.* Working Paper (Cranfield University / School of Management). SWP 4/93.
- **Barnes**, James G. (1994): *Close to the Customer: But is it Really a Relationship?* Journal of Marketing Management. Vol. 10, pp. 561-570.
- **Becker**, Jörg (1997): *Beschaffungscontrolling – Supply Chain Management.* CONTROLLER MAGAZIN. No. 6, pp. 414-420.
- **Bendapudi**, Neeli and **Berry**, Leonard L. (1997): *Customers' Motivations for Maintaining Relationships with Service Providers.* Journal of Retailing. Vol. 73, no. 1, Spring, pp. 15-37.
- **Bender**, M.P. (1974): *Provided versus Elicited Constructs: An Explanation of Warr and Coffman's Anomolous Finding.* British Journal of Social and Clinical Psychology, Vol. 13, pp. 329-330.

- **Bennett**, Roger (1996): *Relationship Formation and Governance in Consumer Markets: Transactional Analysis Versus the Behaviourist Approach.* Journal of Marketing Management. Vol. 12, pp. 417-436.
- **Berger**, L. Peter and **Luckmann**, Thomas (1966): *The Social Construction of Reality: A Treatise in the Sociology of Knowledge.* Penguin Books: London.
- **Berry**, Leonard L. (1983): *Relationship Marketing.* Paper Presented at the Conference "Emerging Perspectives on Services Marketing" American Marketing Association, pp. 25-28.
- **Birch**, David (2001a): *Made For Each Other?* SupplyManagement, 15. February, pp. 42-43.
- **Birch**, David (2001b): *Should We Make Or Buy?* SupplyManagement, 18. January, pp. 36-37.
- **Blaikie**, Norman (1995): *Approaches to Social Enquiry.* Polity Press: Cambridge.
- **Blau**, Peter Michael ([1964] 1992): *Exchange and Power in Social Life.* Transaction Publishers: London. 2nd edition.
- **Blois**, Keith J. (1996): *Relationship Marketing in Organizational Markets - When is it Appropriate?* Journal of Marketing Management. Vol. 12, pp. 161-173.
- **Blois**, Keith J. (1997): *Are Business-to-Business Relationships Inherently Unstable?* Journal of Marketing Management. Vol. 13, no. 5, July, pp. 367-382.
- **Boles**, James S.; **Johnson**, Julie T. and **Barksdale**, Hiram C. Jr. (2000): *How Salespeople Build Quality Relationships: A Replication and Extension.* Journal of Business Research. Vol. 48, pp. 75-81.
- **Bove**, Liliana L. and **Johnson**, Lester W. (2001): *Customer Relationships with Service Personnel: Do We Measure Closeness, Quality or Strength?* Journal of Business Research. Vol. 54, no. 3, December, pp. 189-197.
- **Breckler**, Steven J. (1984): *Empirical Validation of Affect, Behavior, and Cognition as Distinct Components of Attitude.* Journal of Personality and Social Psychology. Vol. 47, no. 6, pp. 1191-1205.
- **Brennan**, R. (1997): *Buyer/Supplier Partnering in British Industry: The Automotive and Telecommunications Sectors.* Journal of Marketing Management, Vol. 13 No. 8, pp. 759-775.
- **Brinkler**, B.; **Fassbender**, H.; **Glement**, F.; **Lewis**, W. W.; **Palmade**, V. and **Sautter**, M. T. (1997): *Germany and France: Confronting the Costs of Social Policies.* McKinsey Quarterly. No. 2, pp. 180-194.
- **Brodie**, Roderick J.; **Coviello**, Nicole E.; **Brookes**, Richard W. and **Little**, Victoria (1997): *Towards a Paradigm Shift in Marketing? An Examination of Current Marketing Practices.* Journal of Marketing Management. Vol. 13, no. 5, July, pp. 383-406.
- **Brown**, C. A. and **Detoy**, C. J. (1988): *A Comparison of the Personal Constructs of Management in New and Experienced Managers.* In: **Banyard**, Philip and **Grayson**, Andrew (1996): *Introducing Psychological Research: Sixty Studies that Shape Psychology.* London: Macmillan, pp. 426-432.

- **Brunas-Wagstaff**, Jo (1998): *Personality: A Cognitive Approach.* London: Routledge.
- **Bubb**, Peter Lawrence and **Rest**, David John van (1973): *Loyalty as a Component of the Industrial Buying Decision.* Industrial Marketing Management. Vol. 3, pp. 25-32.
- **Burr**, Vivien (1995): *An Introduction to Social Constructionism.* Routledge: London.
- **Burr**, Vivien and **Butt**, Trevor (1992): *Invitation to Personal Construct Psychology.* Whurr: London.
- **Burt**, D.N. (1989): *Managing Supplies up to Speed.* Harvard Business Review, Vol. 67 No. 4, pp. 127-35.
- **Buttle**, Francis (January 1996): *SERVQUAL: Review, Critique, Research Agenda.* European Journal of Marketing. Vol. 30, no. 1, pp. 8-32.

C

- **Campbell**, Donald T. (1955): *The Informant in Quantitative Research.* The American Journal of Sociology. Vol. 60, pp. 339-342.
- **Carroll**, John S. and **Johnson**, Eric J. (1990): *Decision Research*: A Field Guide. Sage: London.
- **Cartwright**, Dorwin and **Zander**, Alvin (1960): *The Structural Properties of Groups: Introduction.* In: **Cartwright**, Dorwin and **Zander**, Alvin (1960): *Group Dynamics: Research and Theory.* Tavistock Publications: London. 2nd edition, pp. 641-668.
- **Chandrashekaran**, Murali; **Walker**, Beth A.; **Ward**, James C. and **Reingen**, Peter H. (1996): *Modeling Individual Preference Evolution and Choice in a Dynamic Group Setting.* Journal of Marketing Research. Vol. 33, no. 2, May, pp. 211-223.
- **Charmaz**, Kathy (1995): *Grounded Theory.* In: **Smith**, Jonathan A.; **Harré**, Rom and **Langenhove**, Luk Van (1995): *Rethinking Methods in Psychology.* Sage: London, pp. 27-49.
- **Cherrington**, David J. (1994): *Organizational Behavior: The Management of Individual and Organizational Performance.* Allyn and Bacon: London. 2nd edition.
- **Choi**, Thomas Y. and **Hartley**, Janet L. (1996): *An Exploration of Supplier Selection Practices Across the Supply Chain.* Journal of Operations Management. Vol. 14, pp. 333-343.
- **Chopra**, Sunil and **Meindl**, Peter (2001): *Supply Chain Management: Strategy, Planning, and Operation.* Prentice Hall: Upper Saddle River, New Jersey.
- **Christopher**, Martin (1997): *Marketing Logistics.* Butterworth-Heinemann: Oxford.
- **Christopher**, Martin (1998): *Logistics and Supply Chain Management: Strategies for Reducing Costs and Improving Services.* Pitman Publishing: London. 2nd edition.

- **Christopher**, Martin and **Jüttner**, Uta (1998): *Developing Strategic Partnerships in the Supply Chain*. Paper Presented at "The Second Worldwide Research Symposium on Purchasing and Supply Chain Management." London, England (01.-03. April 1998), pp. 88-107.
- **Christopher**, Martin; **Payne**, Adrian and **Ballantyne**, David (1991): *Relationship Marketing: Bringing Quality, Customer Service, and Marketing Together*. Butterworth-Heinemann: Oxford.
- **Churchill**, Gilbert A. Jr. (1999): *Marketing Research: Methodological Foundations*. The Dryden Press: London. 7th edition.
- **Comer**, James M. and **Zirger**, B. J. (1997): *Building a Supplier-Customer Relationship Using Joint New Product Development*. Industrial Marketing Management. Vol. 26, no. 2, pp. 203-211.
- **Conant**, Jeffrey S.; **Mokwa**, Michael P. and **Varadarajan**, P. Rajan (1990): *Strategic Types, Distinctive Marketing Competencies and Organizational Performance: A Multiple Measures-Based Study*. Strategic Management Journal. Vol. 11, no. 5, September, pp. 365-383.
- **Cooper**, Martha C.; **Lambert**, Douglas M. and **Pagh**, Janus D. (1997): *Supply Chain Management: More Than a New Name for Logistics*. The International Journal of Logistics Management. Vol. 8, no. 1, pp. 1-14.
- **Creswell**, John W. (1994): *Research Design - Qualitative & Quantitative Approaches*. Sage: London.
- **Creswell**, John W. (1998): *Quanlitative Inquiry And Research Design: Choosing Among Five Traditions*. Sage: London.
- **Cronin**, J. Joseph and **Taylor**, Steven A. (1994): *SERVPERF Versus SERVQUAL: Reconciling Performance-Based and Perceptions-Minus-Expectations Measurement of Service Quality*. Journal of Marketing. Vol. 58, no. 1, January, pp. 125-131.
- **Cronin**, J. Joseph and **Taylor**, Steven A. (1992): *Measuring Service Quality: A Reexamination and Extension*. Journal of Marketing. Vol. 56, July, pp. 55-68.
- **Crosby**, Lawrence A.; **Evans**, Kenneth R. and **Cowles**, Deborah (1990): *Relationship Quality in Services Selling: An Interpersonal Influence Perspective*. Journal of Marketing. Vol. 54, no. 3, July, pp. 68-81.
- **Cuhls**, Kerstin; **Blind**, Knut and **Grupp**, Hariolf (1998): *Delphi '98 - Studie zur globalen Entwicklung von Wissenschaft und Technik: Methoden- und Datenband*. FhG-ISI: Karlsruhe.
- **Cyert**, Richard M.; **Simon**, Herbert A. and **Trow**, Donald B. (1956): *Observation of a Business Decision*. Journal of Business. Vol. 29, no. 4, pp. 237-248.

D

- **Daugherty**, Patricia J. and **Dröge**, Cornelia (1997): *Organizational Structure in Divisionalized Manufacturers: The Potential for Outsourcing Logistical Services.* International Journal of Physical Distribution & Logistics Management. Vol. 27, No. 5/6, pp. 337-349.
- **Day**, George S. (1970): *Buyer Attitudes and Brand Choice Behavior.* The Free Press: New York.
- **De Boer** Luitzen; **Labro**, Eva and **Morlacchi**, Pierangela (2001): *A Review of Methods Supporting Supplier Selection.* European Journal of Purchasing & Supply. Vol. 7, pp. 75-89.
- **De Boer**, Luitzen (1998): *Operations Research in Support of Purchasing: Design of a Toolbox for Supplier Selection.* BETA: Enschede, The Netherlands.
- **De Boer**, Luitzen; **Wegen**, Leo van der and **Telgen**, Jan (1998): *Outranking Methods in Support of Supplier Selection.* European Journal of Purchasing & Supply Management. Vol. 4, no. 2-3, pp. 109-118.
- **De Wulf**, Kristof; **Odekerken-Schröder**, Gaby and **Iacobucci**, Dawn (2001): *Investments in Consumer Relationships: A Cross-Country and Cross-Industry Exploration.* Journal of Marketing. Vol. 65, no. 4, October, pp. 33-50.
- **Delanty**, Gerard (1997): *Social Science: Beyond Constructivism and Realism.* University of Minnesota Press: Minneapolis.
- **Dick**, Alan S. and **Basu**, Kunal (1994): *Customer Loyalty: Toward an Integrated Conceptual Framework.* Journal of Academy of Marketing Science. Vol. 22, no. 2, pp. 99-113.
- **Dillman**, Don A. (1978): *Mail and Telephone Surveys: The Total Design Method.* John Wiley & Sons: New York.
- **Dillman**, Don A. (2000): *Mail and Internet Surveys – The Tailored Design Method.* John Wiley & Sons: New York. 2nd edition.
- **Dolan**, Robert J. (1990): *Conjoint Analysis: A Manager's Guide.* Harvard Business School - Case Study. No. 9-590-059.
- **Donaldson**, Bill and **O'Toole**, Tom (1997): *Relationship Governance - The Link Between Structure and Performance Outcomes in Industrial Markets.* Paper Presented at the Special Conferences "New and Evolving Paradigms – The Emerging Future of Marketing." Dublin, Ireland (12-15 June 1997), pp. 576-590.
- **Doney**, Patricia M. and **Cannon**, Joseph P. (1997): *An Examination of the Nature of Trust in Buyer-Seller Relationships.* Journal of Marketing. Vol. 61, April, pp. 35-51.
- **Dorsch**, Michael J.; **Swanson**, Scott R. and **Kelley**, Scott W. (1998): *The Role of Relationship Quality in the Stratification of Vendors as Perceived by Customers.* Journal of the Academy of Marketing Science. Vol. 26, no. 2, Spring, pp. 128-142.

- **Drew**, Paul (1995): *Conversation Analysis*. In: **Smith**, Jonathan A.; **Harré**, Rom and **Langenhove**, Luk Van (1995): *Rethinking Methods in Psychology*. Sage: London, pp. 64-79.
- **Dröge**, Cornelia; **Halstead**, Diane and **Mackoy**, Robert D. (1997): *The Role of Competitive Alternatives in the Postchoice Satisfaction Formation Process*. Journal of the Academy of Marketing Science. Vol. 25, no. 1, Winter, pp. 18-30.
- **Dutta**, S.; **Bergen**, M.; **Heide**, J. and **John**, G. (1995): *Understanding Dual Distribution: The Case of Reps and House Accounts*. The Journal of Law, Economics & Organization. Vol. 11, no. 1, pp. 189-204.
- **Dwyer**, F. Robert; **Schurr**, Paul H. and **Oh**, Sejo (1987): *Developing Buyer-Seller Relationships*. Journal of Marketing. Vol. 51, no. 2, April, pp. 11-27.
- **Dyer**, Jeffrey H.; **Cho**, Dong Sung and **Chu**, Wujin (1998): *Strategic Supplier Segmentation: The Next "Best Practice" in Supply Chain Management*. California Management Review. Vol. 40, no. 2, Winter, pp. 57-77.

E

- **Eagly**, Alice H. and **Chaiken**, Shelly (1993): *The Psychology of Attitudes*. Harcourt Brace Jovanovich College Publishers: London.
- **Eisenhardt**, Kathleen M. (1989): *Building Theories from Case Study Research*. Academy of Management Review. Vol. 14, no. 4, pp. 532-550.
- **Elbing**, Alvar (1978): *Behavioral Decisions in Organizations*. Scott, Foresman and Company: London. 2nd edition.
- **Ellram**, Lisa M. (1990): *The Supplier Selection Decision in Strategic Partnerships*. Journal of Purchasing and Materials Management, Vol. 26 No. 4, pp. 8-14.
- **Ellram**, Lisa M. (1995): *Partnering Pitfalls and Success Factors*. International Journal of Purchasing and Materials Management, pp. 36-44.
- **Ellram**, Lisa M. (1991a): *A Managerial Guideline for the Development and Implementation of Purchasing Partnerships*. International Journal of Purchasing and Materials Management. Vol. 27, no. 3, August, pp. 2-8.
- **Ellram**, Lisa M. (1991b): *Life-Cycle Patterns in Industrial Buyer-Seller Partnerships*. International Journal of Physical Distribution & Logistics Management. Vol. 21, no. 9, pp. 12-21.
- **Ellram**, Lisa M. and **Hendrick**, Thomas E. (1995): *Partnering Characteristics: A Dyadic Perspective*. Journal of Business Logistics. Vol. 16, no. 1, pp. 41-64.
- **Engel**, James F.; **Blackwell**, Roger D. and **Miniard**, Paul W. (1995): *Consumer Behavior. The Dryden Press: London*. 8th edition.
- **Eriksson**, Kent and **Vaghult**, Anna Löfmarck (2000): *Customer Retention, Purchasing Behavior and Relationship Substance in Professional Services*. Industrial Marketing Management. Vol. 29, no. 4, July, pp. 363-372.
- **European Commission** (1997): Panorama of EU Industry 97. ECSC-EC-EAEC: Brussels. Vol. 2.

- **Evans**, James R. (1997): *Production/Operations Management: Quality, Performance, and Value*. West Publishing Company: Minneapolis/Saint Paul. 5th edition.
- **Evans**, James R. and **Lindsay**, William M. (1996): *The Management and Control of Quality*. West Publishing Company: New York. 3rd edition.

F

- **Fazio**, Russel H. (1986): *How Do Attitudes Guide Behavior?* In: **Sorrentino**, Richard M. and **Higgins**, E. Tory (1986): *Handbook of Motivation and Cognition: Foundations of Social Behavior*. John Wiley & Sons: Chichester, pp. 204-243.
- **Fazio**, Russell H.; **Powell**, Martha C. and **Herr**, Paul M. (1983): *Toward a Process Model of the Attitude-Behavior Relation: Accessing One's Attitude Upon Mere Observation of the Attitude Object*. Journal of Personality and Social Psychology. Vol. 44, no. 4, pp. 723-735.
- **Federal Statistic Office** (1998): *Statistical Yearbook 1997 for the Federal Republic of Germany*. Statistisches Bundesamt: Wiesbaden.
- **Festinger**, Leon (1950): *Informal Social Communication*. In: **Cartwright**, Dorwin and **Zander**, Alvin (1960): *Group Dynamics: Research and Theory*. Tavistock Publications: London. 2nd edition, pp. 286-299.
- **Fishbein**, Martin and **Ajzen**, Icek (1972): *Attitudes and Opinions*. Annual Review of Psychology. Vol. 23, pp. 487-544.
- **Fishbein**, Martin and **Ajzen**, Icek (1975): *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. Addison-Wesley: London.
- **Flynn**, Barbara B.; **Schroeder**, Roger G. and **Sakakibara**, Sadao (1994): *A Framework for Quality Management Research and an Associated Measurement Instrument*. Journal of Operations Management. Vol. 11, pp. 339-366.
- **Ford**, D.; **Håkansson**, H. and **Johanson**, J. (1986): *How do Companies Interact?* In: **Ford**, David (1997): *Understanding Business Markets: Interaction, Relationships and Networks*. The Dryden Press: London. 2nd edition, pp. 55-67.
- **Ford**, David (1980): *The Development of Buyer-Seller Relationships in Industrial Markets*. European Journal of Marketing. Vol. 14, no. 5/6, pp. 339-353.
- **Ford**, David (1984): *Buyer/Seller Relationships in International Industrial Markets*. Industrial Marketing Management. Vol. 13, no. 2, May, pp. 101-112.
- **Fournier**, Susan; **Dobscha**, Susan and **Mick**, David Glen (1998): *Preventing the Premature Death of Relationship Marketing*. Harvard Business Review. Vol. 76, no. 1, January-February, pp. 42-51.
- **Foxall**, Gordon R. and **Goldsmith**, Ronald E. (1994): *Consumer Psychology for Marketing*. Routledge: London.
- **Fransella**, Fay and **Bannister**, Don (1977): *A Manual for Repertory Grid Technique*. Academic Press: London.

- **Friedrich**, S.A., **Hinterhuber**, H.H. and **Rodens**, B. (1995): *Supply Chain Management: Partnerschaft für den Konsumenten.* Gablers Magazin, Vol. 9 No. 11/12, pp. 58-63.

G

- **Gallouj**, Camal (1997): *Asymmetry of Information and the Service Relationship: Selection and Evaluation of the Service Provider.* International Journal of Service Industry Management. Vol. 8, no. 1, pp. 42-64.
- **Gammack**, John g. and **Stephens**, Robert A. (1994): *Repertory Grid Technique in Constructive Interaction.* In: **Cassell**, Catherine and **Symon**, Gillian (1994): *Qualitative Methods in Organizational Research: A Practical Guide.* Sage: London, pp. 72-90.
- **Garvin**, David A. (1987): *Competing on the Eight Dimensions of Quality.* Harvard Business Review. Vol. 65, no. 6, November-December, pp. 101-109.
- **Gattorna**, J. L. and **Walters**, D. W. (1996): *Managing the Supply Chain: A Strategic Perspective.* MACMILLAN PRESS: London.
- **Gensch**, Dennis H. (1984): *Targeting the Switchable Industrial Customer.* Marketing Science. Vol. 3, no. 1, Winter, pp. 41-54.
- **Gentry**, J.J. (1996): *Carrier Involvement in Buyer-Supplier Strategic Partnerships.* International Journal of Physical Distribution & Logistics Management, Vol. 26 No. 3, pp. 14-25.
- **Gergen**, Kenneth J. (1998): *Constructionism and Realism: How Are We to Go On?* In: **Parker**, Ian (1998): *Social Constructionism, Discourse and Realism.* Sage: London, pp. 147-155.
- **Geyskens**, Inge; **Steenkamp**, **Jan-Benedict** E. M. and **Kumar**, Nirmalya (1999): *A Meta-Analysis of Satisfaction in Marketing Channel Relationships.* Journal of Marketing Research. Vol. 36, no. 2, May, pp. 223-238.
- **Godefroid**, Peter (1995): *Investitionsgüter-Marketing.* Friedrich Kiehl Verlag: Ludwigshafen (Rhein).
- **Goffin**, K. (2002): *Repertory Grid Technique.* In **Partington**, D. (2002), *Essential Skills for Management Research.* Sage, London.
- **Goffin**, Keith (1992): *Planning Product Support for Medical Products.* Unpublished Ph.D. thesis.
- **Goffin**, Keith; **Szwejczewski**, Marek and **New**, Colin (1997): *Managing Suppliers: When Fewer Can Mean More.* International Journal of Physical Distributions & Logistics Management. Vol. 27, no. 7, pp. 422-436.
- **Graham**, T. Scott; **Daugherty**, Patricia J. and **Dudley**, William N. (1994): *The Long-Term Strategic Impact of Purchasing Partnerships.* International Journal of Purchasing and Materials Management. Vol. 30, no. 4, Fall, pp. 13-18.
- **Gravetter**, Frederick J. and **Wallnau**, Larry B. (1996): *Statistics for the Behavioral Sciences.* West Publishing: New York. 4th edition.

- **Grayling**, A. C. (1998): *Epistemology: Introduction.* In: **Grayling**, A. C. (1998): *Philosophy 1: A Guide Through The Subject.* Oxford University Press: Oxford, pp. 7-10.
- **Green**, Paul E. and **Srinivasan**, V. (1990): Conjoint Analysis in Marketing Research: New Developments and Directions. Journal of Marketing. Vol. 54, October, pp. 3-19.
- **Green**, Paul E. and **Srinivasan**, V. (1978): *Conjoint Analysis in Consumer Research: Issues and Outlook.* Journal of Consumer Research. Vol. 5, no. 2, September, pp. 103-123.
- **Green**, Paul E. and **Wind**, Yoram (1975): *New Way to Measure Consumers' Judgments.* Harvard Business Review. Vol. 53, July-August, pp. 107-117.
- **Groves**, Gwyn and **Valsamakis**, Vassilios (1998): *Supplier-Customer Relationships and Company Performance.* The International Journal of Logistics Management. Vol. 9, no. 2, pp. 51-64.
- **Gulati**, Ranjay (1998): *Alliances and Networks.* Strategic Management Journal. Vol. 19, no. 4, April, pp. 293-317.
- **Gummesson**, Evert (1994): *Making Relationship Marketing Operational.* International Journal of Service Industry Management. Vol. 5, no. 5, pp. 5-20.
- **Gummesson**, Evert (1997a): *Relationship Marketing as a Paradigm Shift: Some Conclusions from the 30R Approach.* Management Decision. Vol. 35, no. 4, pp. 267-272.
- **Gummesson**, Evert (1997b): *Relationship Marketing – The Emperor's New Clothes or a Paradigm Shift?* Marketing and Research Today. Vol. 25, no 1, February, pp. 53-60.

H

- **Haddock**, Geoffrey and **Zanna**, Mark P. (1998): *On the Use of Open-Ended Measures to Assess Attitudinal Components.* British Journal of Social Psychology. Vol. 37, no. 2, June, pp. 129-149.
- **Hair**, Joseph F. Jr.; **Anderson**, Rolph E.; **Tatham**, Ronald L. and **Black**, William C. (1998): *Multivariate Data Analysis.* Prentice Hall: Upper Saddle River, New Jersey. 5th edition.
- **Halliday**, Sue Vaux (1997): *Launched at a Time of Sea-Change - The Challenge to Relationship Marketers to Become Reflexive Practitioners.* Paper Presented at the Special Conferences "New and Evolving Paradigms - The Emerging Future of Marketing." Dublin, Ireland (12.-15. June 1997), pp. 424-437.
- **Halligan**, Peter W. and **Marshall**, John C. (1997): *Cognitive Neuropsychology: The Good, the Bad and the Bizarre.* In: **Fuller**, Ray; **Walsh**, Patricia **Noonan** and McGinley, Patrick (1997): *A Century of Psychology: Progress, Paradigms and Prospects for the New Millennium.* Routledge: London, pp. 271-295.

- **Hammersley**, Martyn (1996): *The Relationship between Qualitative and Quantitative Research: Paradigm Loyalty versus Methodological Eclecticism.* In: **Richardson**, John T. E. (1996): *Handbook of Qualitative Research Methods for Psychology and the Social Sciences*. The British Psychological Society: Leicester, pp. 159-174.
- **Harland**, C.M. (1996): *Supply Chain Management – Relationships, Chains and Networks*. British Journal of Management, Vol. 7, Special Issue (March), pp. S63-S80.
- **Harland**, Christine (1998): *Supply Network Strategy: Observations on Structure, Infrastructure and Operations Performance*. Paper Presented at "The Second Worldwide Research Symposium on Purchasing and Supply Chain Management." London, England (01.-03. April 1998), pp. 248-267.
- **Harré**, Rom and **Gillett**, Grant (1994): *The Discursive Mind*. Sage: London.
- **Harrison**, A. (1990): *Co-makership as an Extension of Quality Care*. International Journal Quality & Reliability Management, Vol. 7 No. 2, pp. 15-22.
- **Hartley**, Jean F. (1994): *Case Studies in Organizational Research*. In: **Cassell**, Catherine and **Symon**, Gillian (1994): *Qualitative Methods in Organizational Research: A Practical Guide*. Sage: London, pp. 208-229.
- **Harvey**, Lee and **MacDonald**, Morag (1993): *Doing Sociology: A Practical Introduction*. MACMILLAN: London.
- **Hastings**, Colin (1996): *The New Organization: Growing the Culture of Organizational Networking*. McGraw-Hill: London.
- **Hatch**, Mary Jo (1997): *Organization Theory - Modern, Symbolic, and Postmodern Perspectives*. Oxford University Press: Oxford.
- **Hayes**, Nicky (1996): *Foundations of Psychology: An Introductory Text*. Thomas Nelson & Sons: Walton-on-Thames Surrey.
- **Heide**, Jan B. and **Weiss**, Allen M. (1995): *Vendor Consideration and Switching Behavior for Buyers in High-Technology Markets*. Journal of Marketing. Vol. 59, no. 3, July, pp. 30-43.
- **Heiman**, Gary W. (1996): *Basic Statistics for the Behavioral Sciences*. Houghton Mifflin Company: Boston. 2nd edition.
- **Henkel**, H.-O. (1997): *Von der Forschungs- zur Innovationspolitik*. Wissenschaftsmanagement. No. 1, January/February, pp. 10-13.
- **Henry**, Jane (1998): *Discovering Subjective Meanings: Depth Interviewing*. In: **Miell**, Dorothy and **Wetherell**, Margaret (1998): *Doing Social Psychology*. The Open University: Milton Keynes, pp. 287-320.
- **Herrmann**, Andreas; **Schmidt-Gallas**, Dirk and **Huber**, Frank (2001): *Adaptive Conjoint Analysis: Understanding the Methodology and Assessing Reliability and Validity*. 2nd edition. In: **Gustafsson**, Anders; **Herrmann**, Andreas and **Huber**, Frank (2001): *Conjoint Measurement: Methods and Applications*. Springer: Berlin. 2nd edition, pp. 279-304.
- **Hessenberger**, Manfred (1991): *Lieferantenauswahl*. QZ – ZEITSCHRIFT FÜR INDUSTRIELLE QUALITÄTSSICHERUNG. Vol. 36, no. 10, pp. 575-578.

- **Hibbard**, Jonathan D.; **Kumar**, Nirmalya and **Stern**, Louis W. (2001): *Examining the Impact of Destructive Acts in Marketing Channels*. Journal of Marketing Research. Vol. 38, no. 1, February, pp. 45-61.
- **Higginson**, James K. and **Alam**, Ashraful (1997): *Supply Chain Management Techniques in Medium-to-Small Manufacturing Firms*. SCM. Vol. 8, no. 2, pp. 19-32.
- **Hill**, Terry (1995): Manufacturing Strategy: Text and Cases. MACMILLAN: London. 2nd edition.
- **Hirschman**, Albert Otto (1970): *Exit, Voice, and Loyalty - Responses to Decline in Firms, Organizations, and States*. Harvard University Press: Cambridge, Massachusetts.
- **Hitt**, Michael A. and **Middlemist**, R. Dennis (1979): *A Methodology to Develop the Criteria and Criteria Weightings for Assessing Subunit Effectiveness in Organizations*. Academy of Management Journal. Vol. 22, no. 2, June, pp. 356-374.
- **Holmlund**, Maria and **Kock**, Sören (1996): *Buyer Dominated Relationships in a Supply Chain - A Case Study of Four Small-Sized Suppliers*. International Small Business Journal. Vol. 15, no. 1, issue 57, October-December, pp. 26-40.
- **Homburg**, Christian (1995): *Single Sourcing, Double Sourcing, Multiple Sourcing...? Ein ökonomischer Erklärungsansatz*. Zeitschrift für Betriebswirtschaft. Vol. 65, no. 8, pp. 813-834.
- **Homburg**, Christian and **Rudolph**, Bettina (2001): *Customer Satisfaction in Industrial Markets: Dimensional and Multiple Role Issues*. Journal of Business Research. Vol. 52, pp. 15-33.
- **Homburg**, Christian; **Workman**, John P. and **Krohmer**, Harley (1999): *Marketing's Influence within the Firm*. Journal of Marketing. Vol. 63, no. 2, April, pp. 1-17.
- **Huber**, Joel (1987): *Conjoint Analysis: How We Got Here and Where We Are*. Sawtooth Software Working Paper.
- **Huber**, Joel (1997): *What We Have Learned from 20 Years of Conjoint Research: When to Use Self-Explicated, Graded Pairs, Full Profiles or Choice Experiments*. Paper presented on the Sawtooth Software Conference.
- **Huber**, Joel C.; **Wittink**, Dick R.; **Fiedler**, John A. and **Miller**, Richard L. (1993): *The Effectiveness of Alternative Preference Elicitation Procedures in Predicting Choice*. Journal of Marketing Research. Vol. 30, February, pp. 105-114.
- **Huber**, Joel, Wittink, **Dick** R. and **Johnson**, Richard M. (1992): *Learning Effects in Preference Tasks: Choice-Based Versus Standard Conjoint*. Paper presented on the Sawtooth Software Conference.
- **Huber**, Joel; **Orme**, Bryan K. and **Miller**, Richard (1999): *Dealing with Product Similarity in Conjoint Simulations*. Paper presented on the Sawtooth Software Conference, February.
- **Huczynski**, Andrzej and **Buchanan**, David (1991): *Organizational Behaviour - An Introductory Text*. Prentice Hall: London. 2nd edition.

- **Hunt**, Shelby D.; **Sparkman**, Richard D., Jr. and **Wilcox**, James B. (1982): *The Pretest in Survey Research: Issues and Preliminary Findings*. Journal of Marketing Research. Vol. 19, no. 2, May, pp. 269-273.
- **Hussey**, Jill and **Hussey**, Roger (1997): *Business Research*. Macmillan Press: London.

J

- **Jackson**, Barbara Bund (1985): *Build Customer Relationships That Last*. Harvard Business Review. Vol. 85, no. 6, November-December, pp. 120-128.
- **Jackson**, S. R. and **Bannister**, D. (1985): *Growing into Self*. In: **Bannister**, D. (1985): *Issues and Approaches in Personal Construct Theory*. London: Academic Press.
- **Jacoby**, Jacob and **Kyner**, David B. (1973): *Brand Loyalty Vs. Repeat Purchasing Behavior*. Journal of Marketing Research. Vol. X, February, pp. 1-9.
- **Janesick**, Valerie J. (1994): *The Dance of Qualitative Research Design: Metaphor, Methodolatry, and Meaning*. In: **Denzin**, Norman K. and **Lincoln**, Yvonna S. (1998): *Strategies of Qualitative Inquiry*. Sage: London, pp. 35-55.
- **Janis**, Irving L. (1982): *Groupthink: Psychological Studies of Policy Decisions and Fiascoes*. Houghton Mifflin: Boston. 2nd edition.
- **Jap**, Sandy D.; **Manolis**, Chris and **Weitz**, Barton A. (1999): *Relationship Quality and Buyer-Seller Interactions in Channels of Distribution*. Journal of Business Research. Vol. 46, pp. 303-313.
- **Johnson**, Richard M. (1987): *Accuracy of Utility Estimation in ACA. Sawtooth* Software Working Paper.
- **Johnson**, Richard M. (2001): *History of ACA*. Sawtooth Software Working Paper.
- **Johnston**, Wesley J. and **Spekman**, Robert E. (1982): *Industrial Buying Behavior: A Need for an Integrative Approach*. Journal of Business Research. Vol. 10, no. 2, June, pp. 135-146.
- **Jones**, Thomas O. and **Sasser**, W. Earl Jr. (1995): *Why Satisfied Customers Defect*. Harvard Business Review, November-December, pp. 88-99.

K

- **Kalwani**, M.U. and **Narayandas**, N. (1995): *Long-Term Manufacturer Supplier Relationships: Do They Pay Off for Supplier Firms?* Journal of Marketing, Vol. 59 No. 1, pp. 1-16.
- **Katsikeas**, Constantine S. and **Leonidou**, Leonidas C. (1996): *International Supplier Selection: The Relevance of Import Dependence*. Journal of Global Marketing. Vol. 9, no. 3, pp. 23-45.

- **Keefe**, Daniel J. (1980): *The Relationship of Attitudes and Behavior: A Constructivist Analysis*. In: **Cushman**, Donald P. and **McPhee**, Robert D. (1980): *Message-Attitude-Behavior Relationship: Theory, Methodology, and Application*. Academic Press: London.
- **Kelly**, George A. (1955a): *The Psychology of Personal Constructs: Volume One - A Theory of Personality*. Routledge: London.
- **Kelly**, George A. (1955b): *The Psychology of Personal Constructs: Volume Two - Clinical Diagnosis and Psychotherapy*. Routledge: London.
- **Kelly**, George A. (1963): *A Theory of Personality: The Psychology of Personal Constructs*. W. W. Norton & Company: London.
- **Kerlinger**, Fred N. (1992): *Foundations of Behavioral Research*. Harcourt Brace College Publishers: London. 3rd edition.
- **Khan**, Amin (1993): *Perceived Service Quality in the Air Freight Industry*. Unpublished Ph.D. thesis.
- **Kinkel**, Steffen and **Wengel**, Jürgen (1997): *Neue Produktionskonzepte: Eine Diskussion macht noch keinen Sommer*. PI-Mitteilungen (FhG-ISI). No. 4, February.
- **Kohli**, Ajay (1989): *Determinants of Influence in Organizational Buying: A Contingency Approach*. Journal of Marketing. Vol. 53, no. 3, July, pp. 50-65.
- **Kolarik**, William J. (1995): *Creating Quality: Concepts, Systems, Strategies, and Tools*. McGraw-Hill: London.
- **Kolay**, M. K. (1993): *Suppliers Asset Base – Appreciating or Depreciating?* International Journal of Operations & Production Management. Vol. 13, no. 8, pp. 72-86.
- **Kotler**, Philip (1994): *Marketing Management - Analysis, Planning, Implementation, and Control*. Prentice Hall International: London. 8th edition.
- **Kotler**, Philip; **Armstrong**, Gary; **Saunders**, John and **Wong**, Veronica (1999): *Principles of Marketing*. Prentice Hall Europe: London. 2nd European edition.
- **Koza**, Mitchell and **Lewin**, Arie (2000): *Managing Partnerships and Strategic Alliances: Raising the Odds of Success*. European Management Journal. Vol. 16, no. 2, April, pp. 146-151.
- **Krause**, D.R. and **Ellram**, L.M. (1997) *Success Factors in Supplier Development*. International Journal of Physical Distribution & Logistics Management, Vol. 27 No. 1, pp. 39-52.
- **Kvale**, Steinar (1996): *InterViews: An Introduction to Qualitative Research Interviewing*. Sage: London.

L

- **La Londe**, B.J. and **Masters**, J.M. (1994): *Emerging Logistics Strategies: Blueprints for the Next Century*. International Journal of Physical Distribution & Logistics Management, Vol. 24 No. 7, pp. 35-47.
- **Ladwig**, James G. (1996): *Academic Distinctions: Theory and Methodology in the Sociology of School Knowledge*. Routledge: London.
- **Lambert**, D.M., **Emmelhainz**, M.A. and **Gardner**, J.T. (1996): *Developing and Implementing Supply Chain Partnerships*. International Journal of Logistics Management, Vol. 7 No. 2, pp. 1-17.
- **Lamming**, Richard (1993): *Beyond Partnership: Strategies for Innovation and Lean Supply*. Prentice Hall: London.
- **Landeros**, R., **Reck**, R. and **Plank**, R.E. (1995): *Maintaining Buyer-Supplier Partnerships*. International Journal of Purchasing and Materials Management, Vol. 31, no. 3, Summer, pp. 3-11.
- **Lapersonne**, Eric; **Laurent**, Gilles and **Goff**, Jean-Jacques le (1995): *Consideration Sets of Size One: An Empirical Investigation of Automobile Purchases*. International Journal of Research in Marketing. Vol. 12, pp. 55-66.
- **Larson**, Mary (1996): *In Pursuit of a Lasting Relationship*. Journal of Business Strategy. Vol. 17, no. 6, November-December, pp. 31-33.
- **Larson**, P.D. (1994): *Buyer-Supplier Co-operation, Product Quality and Total Costs*. International Journal of Physical Distribution & Logistics Management, Vol. 24 No. 6, pp. 4-9.
- **Lassar**, Walfried and **Zinn**, Walter (1995): *Informal Channel Relationships in Logistics*. Journal of Business Logistics. Vol. 16, no. 1, pp. 81-106.
- **Lau**, Geok-Theng; **Goh**, Mark and **Phua**, Shan Lei (1999): *Purchase-Related Factors and Buying Center Structure: An Empirical Assessment*. Industrial Marketing Management. Vol. 28, no. 6, November, pp. 573-587.
- **Lee**, Huei and **Wellan**, Dee M. (1993): *Vendor Survey Plan: A Selection Strategy for JIT/TQM Suppliers*. International Journal of Physical Distribution & Logistics Management. *Vol. 23, no. 7, pp.* 39-45.
- **Leenders**, M.R., **Nollet**, J. and **Ellram**, L.M. (1994): *Adapting Purchasing to Supply Chain Management*. International Journal of Physical Distribution & Logistics Management, Vol. 24 No. 1, pp. 40-2.
- **Leenders**, Michiel R. and **Fearon**, Harold E. (1997): *Purchasing and Supply Management*. Irwin: London. 11th edition.
- **Lemke**, Fred; **Goffin**, Keith and **Szwejczewski**, Mark (forthcoming): *Supplier Partnership is Key, But What Exactly Is It? An Exploratory Study*. International Journal of Physical Distribution & Logistics Management.

- **Lemke**, Fred; **Goffin**, Keith, **Szwejczewski**, Marek; **New**, Colin; **Pfeiffer**, Rolf and **Lohmüller**, Bertram (1999a): *Supplier Management in Manufacturing Companies: An Empirical Investigation in Germany and the UK.* Paper Presented at the 8th International IPSERA Conference "Perspectives on Purchasing and Supply for the Millennium." Belfast and Dublin, UK and Ireland (28-31 March 1999), pp. 533-542.
- **Lemke**, Fred; **Goffin**, Keith; **Szwejczewski**, Marek; **New**, Colin; **Pfeiffer**, Rolf and **Lohmüller**, Bertram (1999b): *Effective Supplier Management: Lessons from Leading German and UK Companies. Management Today.* Supply Chain Excellence - A Monthly Report on Supply Chain Strategies for Competitive Advantage, September, pp. 4-8.
- **Lemke**, Fred; **Goffin**, Keith; **Szwejczewski**, Mark; **New**, Colin; **Pfeiffer**, Rolf and **Lohmüller**, Bertram (2000a): *Lieferantenselektion: Mit leistungsfähigen Gleichgesinnten verbünden.* Beschaffung Aktuell. No. 2, February, pp. 34-37.
- **Lemke**, Fred; **Goffin**, Keith; **Szwejczewski**, Marek; **New**, Colin; **Pfeiffer**, Rolf and **Lohmüller**, Bertram (2000b): *Supplier Base Management: The Contrast between Germany and the UK.* Working Paper (Cranfield University / School of Management). January, SWP 1/00.
- **Lemke**, Fred; **Goffin**, Keith; **Szwejczewski**, Marek; **Pfeiffer**, Rolf and **Lohmüller**, Bertram (2000c): *Supplier Base Management: Experiences from the UK and Germany.* The International Journal of Logistics Management, Vol. 11, no. 2, December, pp. 45-58.
- **Lemke**, Jay L. (1995): *Textual Politics: Discourse and Social Dynamics.* Taylor&Francis: London.
- **Leuthesser**, Lance (1997): *Supplier Relational Behavior: An Empirical Assessment.* Industrial Marketing Management. Vol. 26, no. 3, May, pp. 245-254.
- **Leuthesser**, Lance and **Kohli**, Ajay K. (1995): *Relational Behaviour in Business Markets – Implications for Relationship Management.* Journal of Business Research. Vol. 34, no. 3, pp. 221-233.
- **Leverick**, Fiona and **Cooper**, Rachel (1998): *Partnerships in the Motor Industry: Opportunities and Risks for Suppliers.* Long Range Planning. Vol. 31, no. 1, February, pp. 72-81.
- **Levitt**, Theodore (1965): *Exploit the Product Life Cycle.* Harvard Business Review. Vol. 43, November-December, pp. 81-94.
- **Levy**, Leon H. and **Dugan**, Robert D. (1956): *A Factorial Study of Personal Constructs.* Journal of Consulting Psychology. Vol. 20, no. 1, pp. 53-57.
- **Levy**, Paul; **Bessant**, John; **Sang**, Bob and **Lamming**, Richard (1995): *Developing Integration Through Total Quality Supply Chain Management.* Integrated Manufacturing Systems. Vol. 6, no. 3, pp. 4-12.
- **Lofland**, John and **Lofland**, Lyn H. (1995): *Analyzing Social Settings: A Guide to Qualitative Observation and Analysis.* Wadsworth: London. 3rd edition.
- **Loudon**, David L. and **Bitta**, Albert J. Della (1988): *Consumer Behavior - Concepts and Applications.* McGraw-Hill: London. 3rd edition.

- **Louviere**, Jordan J. (1988): *Analyzing Decision Making: Metric Conjoint Analysis*. Sage: London.
- **Louviere**, Jordan J.; **Hensher**, David A. and **Swait**, Joffre D. (2000): *Stated Choice Methods: Analysis and Application*. Cambridge University Press: Cambridge.
- **Luce**, Mary Frances; **Payne**, John W. and **Bettman**, James R. (1999): *Emotional Trade-Off Difficulty and Choice*. Journal of Marketing Research. Vol. 36, no. 2, May, pp. 143-159.
- **Luce**, R. D. and **Tukey**, J. W. (1964): *Simultaneous Conjoint Measurements: A New Type of Fundamental Measurement*. Journal of Mathematical Psychology, Vol. 1, pp. 1-27.
- **Lyons**, T.F., **Krackenberg**, A.R. and **Henke**, J.W. (1990): *Mixed Motive Marriages: What's Next for Buyer-Supplier Relations*. Sloan Management Review, Vol. 29 No. 3, pp. 29-36.

M

- **Macbeth**, D. (1998): *Partnering – Why Not?* Paper Presented at The Second Worldwide Research Symposium on Purchasing and Supply Chain Management, London, England (01.-03. April 1998), pp. 351-362.
- **Manstead**, Antony S. R. (1996): *Attitude Theory and Research*. In: **Manstead**, Antony S. R. and **Hewstone**, Miles (1996): *The Blackwell Encyclopedia of Social Psychology*. Blackwell: Oxford, pp. 47-52.
- **Marshall**, Catherine and **Rossman**, Gretchen B. (1999): *Designing Qualitative Research*. Sage: London. 3rd edition.
- **Matthyssens**, Paul and **Bulte**, Christophe Van den (1994): *Getting Closer and Nicer: Partnerships in the Supply Chain*. Long Range Planning. Vol. 27, no. 1, February, pp. 72-83.
- **McDonald**, Malcolm and **Payne**, Adrian (1996): *Marketing Planning for Services*. Butterworth-Heinemann: Oxford.
- **McFadzean**, Elspeth and **Money**, Arthur (1994): *The Theory of Strategic Problem Solving*. Working Paper (Henley Management College).
- **McQuiston**, Daniel H. (1989): *Novelty, Complexity, and Importance as Causal Determinants of Industrial Buyer Behavior*. Journal of Marketing. Vol. 53, no. 2, April, pp. 66-79.
- **Menon**, Mohan K.; **McGinnis**, Michael A. and **Ackerman**, Kenneth B. (1998): *Selection Criteria for Providers of Third-Party Logistics Services: An Exploratory Study*. Journal of Business Logistics. Vol. 19, no. 1, pp. 121-137.
- **Miles**, Matthew B. and **Huberman**, A. Michael (1994): *Qualitative Data Analysis: An Expanded Sourcebook*. Sage: London. 2nd edition.
- **Miller**, George A. (1956): *The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information*. The Psychological Review. Vol. 63, no. 2, March, pp. 81-97.

- **Mohanty**, R. P. and **Deshmukh**, S. G. (1993): *Use of Analytic Hierarchic Process for Evaluating Sources of Supply.* International Journal of Physical Distribution & Logistics Management. Vol. 23, no. 3, pp. 22-28.
- **Mohr**, J. and **Nevin**, J.R. (1990): *Communication Strategies in Marketing Channels: A Theoretical Perspective.* Journal of Marketing, Vol. 54, pp. 36-51.
- **Monczka**, R.M., **Trent**, R.J. and **Callahan**, T.J. (1993): *Supply Base Strategies to Maximize Supplier Performance.* International Journal of Physical Distribution & Logistics Management, Vol. 23 No. 4, pp. 42-54.
- **Monczka**, Robert M.; **Callahan**, Thomas J. and **Nichols**, Ernest L. Jr. (1995): *Predictors of Relationships Among Buying and Supplying Firms.* International Journal of Physical Distribution & Logistics Management. Vol. 25, no. 10, pp. 45-59.
- **Monczka**, Robert; **Trent**, Robert and **Handfield**, Robert (2002): *Purchasing and Supply Chain Management.* South-Western: Mason, OH. 2nd edition.
- **Moore**, Kevin R. and **Cunningham**, William A. III (1999): *Social Exchange Behavior in Logistics Relationships: A Shipper Perspective.* International Journal of Physical Distribution & Logistics Management. Vol. 29, no. 2, pp. 103-121.
- **Morgan**, Robert M. and **Hunt**, Shelby D. (1994): *The Commitment-Trust Theory of Relationship Marketing.* Journal of Marketing. Vol. 58, July, pp. 20-38.
- **Moriarty**, Rowland T. (1983): *Conceptual Models of Organizational Buying Behavior.* Harvard Business School Working Paper. No. 80-36.
- **Moriarty**, Rowland T. and **Bateson**, John E. G. (1982): *Exploring Complex Decision Making Units: A New Approach.* Journal of Marketing Research. Vol. 19, no. 2, May, pp. 182-191.
- **Myers**, David G. (1998): *Psychology.* Worth: New York. 5th edition.

N

- **Nachtweh**, Klaus Peter (1998): *Das Umfeld des Einkaufs: Prozeß- und zielorientierte Lieferantenauswahl.* BESCHAFFUNG AKTUELL. No. 2, pp. 41-43.
- **Neely**, Andy (1998): Measureing Business Performance: Why, What and How. Profile Books: London.
- **Naudé**, Pete and **Buttle**, Francis (2000): *Assessing Relationship Quality.* Industrial Marketing Management. Vol. 29, no. 4, July, pp. 351-361.
- **Neuman**, W. Lawrence (1997): *Social Research Methods: Qualitative and Quantitative Approaches.* Allyn and Bacon: London. 3rd edition.
- **New**, C. C. and **Szwejczewski**, M. (1995): *Performance Measurement and the Focused Factory: Empirical Evidence.* International Journal of Operations & Production Management. Vol. 15, no. 4, pp. 63-79.

- **New**, Colin; **Goffin**, Keith; **Szwejczewski**, Marek and **Pfeiffer**, Rolf (1998a): *Comparative Operational Performance of UK and German Manufacturing Plants*. International Journal of Business Performance Management. Vol. 1, no. 1, pp. 65-78.
- **New**, Colin; **Szwejczewski**, Marek; **Goffin**, Keith; **Pfeiffer**, Rolf and **Lohmüller**, Bertram (1998b): *Vergleich der Leistungsdaten von Unternehmen: Großbritannien/Deutschland*. Der Betriebswirt. No. 4, pp. 22-25.
- **New**, S.J. and **Payne**, P. (1995): *Research Frameworks in Logistics: Three Models, Seven Dinners and a Survey*. International Journal of Physical Distribution & Logistics Management, Vol. 25 No. 10, pp. 60-77.
- **New**, Stephen J. (1996): *A Framework for Analysing Supply Chain Improvement*. International Journal of Operations & Production Management. Vol. 16, no. 4, pp. 19-34.
- **New**, Steve and **Burnes**, Bernard (1998): *Developing Effective Customer-Supplier Relationships: More than One Way to Skin a Cat*. International Journal of Quality & Reliability Management. Vol. 15, no. 4, pp. 377-388.
- **Newell**, Rosemarie (1993): *Questionnaires*. In: **Gilbert**, Nigel (1993): *Researching Social Life*. Sage: London, pp. 94-115.
- **Norman**, Geoffrey R. and **Streiner**, David L. (2000): *Biostatistics: The Bare Essentials*. B.C. Decker: London. 2nd edition.
- **Novack**, R.; **Langley**, C. and **Rinehart**, L. (1995): *Creating Logistics Value: Themes for the Future*. Council of Logistics Management: Oak Brook.
- **Novack**, R.; **Rinehart**, L. and **Langley**, C. (1994): *An Internal Assessment of Logistics Value*. Journal of Business Logistics. Vol. 15, no. 1, pp. 113-152.

O

- **O'Connell**, Daniel and **Kowal**, Sabine (1995): *Basic Principles of Transcription*. In: **Smith**, Jonathan A.; **Harré**, Rom and **Langenhove**, Luk Van (1995): *Rethinking Methods in Psychology*. Sage: London, pp. 93-105.
- **Oliver**, Christine (1997): *The Influence of Institutional and Task Environment Relationships on Organizational Performance*: The Canadian Construction Industry. Journal of Management Studies. Vol. 34, no. 1, January, pp. 99-124.
- **Oliver**, Richard L. (1997): *Satisfaction - A Behavioral Perspective on the Consumer*. McGraw-Hill: London.
- **Oppenheim**, A. N. (1992): *Questionnaire Design, Interviewing and Attitude Measurement*. Printer: London. 2nd edition.
- **Orme**, Bryan K. (1996): *Which Conjoint Method Should I Use?* Sawtooth Software Working Paper.
- **Orme**, Bryan K. (1998a): *Sample Size Issues for Conjoint Analysis Studies*. Sawtooth Software Working Paper.
- **Orme**, Bryan K. (1998b): *The Benefits of Accounting for Respondent Heterogeneity in Choice Modeling*. Sawtooth Software Research Paper Series.

- **Orme**, Bryan K. (2000): *The Sawtooth Software Market Simulator.* Sawtooth Software: Sequim, WA.
- **Orme**, Bryan K. and **Johnson**, Richard M. (1997): *Using Utility Constraints to Improve the Predictability of Conjoint Analysis.* Sawtooth Software Working Paper.
- **Orme**, Bryan K. and **King**, Christopher (1998): *Conducting Full-Profile Conjoint Analysis over the Internet.* Sawtooth Software Working Paper.
- **Orme**, Bryan K.; **Alpert**, Mark I. and **Christensen**, Ethan (1997): *Assessing the Validity of Conjoint Analysis – Continued.* Sawtooth Software Working Paper.
- **Ortuzar**, Jean de Dios and **Willumsen**, Luis G. (1994): *Modelling Transport.* Wiley: Chichester. 2nd edition.

P

- **Parasuraman**, A.; **Zeithaml**, Valarie A. and **Berry**, Leonard L. (1985): *A Conceptual Model of Service Quality and Its Implications for Future Research.* Journal of Marketing. Vol. 49, no. 4, Fall, pp. 41-50.
- **Parasuraman**, A.; **Zeithaml**, Valarie A. and **Berry**, Leonard L. (1988): *SERVQUAL - A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality.* Journal of Retailing. Vol. 64, no. 1, Spring, pp. 12-40.
- **Parker**, Ian (1994): *Qualitative Research.* In: **Banister**, Peter; **Burman**, Erica; **Parker**, Ian; **Taylor**, Maye and **Tindall**, Carol (1994): *Qualitative Methods in Psychology: A Research Guide.* Open University Press: Buckingham, pp. 1-16.
- **Parker**, Ian (1998): Realism, Relativism and Critique in Psychology. In: **Parker**, Ian (1998): *Social Constructionism, Discourse and Realism.* Sage: London, pp. 1-9.
- **Partington**, David (1998): *Building Grounded Theories of Managerial Behaviour From Interview Data.* Working Paper (Cranfield University / School of Management). SWP 18/98.
- **Patterson**, Paul G. and **Dawes**, Philip L. (1999): *The Determinants of Choice Set Structure in High-Technology Business Markets.* Industrial Marketing Management. Vol. 28, no. 4, July, pp. 395-411.
- **Pavlov**, I. P. (1927): *Conditioned Reflexes: An Investigation of the Physiological Activity of the Cerebral Cortex.* Dover: New York.
- **Payne**, Adrian (1993): *The Essence of Services Marketing.* Prentice Hall: London.
- **Payne**, Adrian (1994): *Relationship Marketing – Making the Customer Count.* Managing Service Quality. Vol. 4, no. 6, pp. 29-31.
- **Payne**, Adrian (1995): Relationship Marketing: A Broad View of Marketing. In Payne, Adrian (1995): Advances in Relationship Marketing. Kogan: London, pp. 29-40.
- **Payne**, Adrian and **Frow**, Penni (1997): *Relationship Marketing: Key Issues for the Utilities Sector.* Journal of Marketing Management. Vol. 13, pp. 463-477.

- **Payne**, Adrian; **Christopher**, Martin; **Clark**, Moira and **Peck**, Helen (1994): *Relationship Marketing and the Relationship Management Chain.* Asia-Australia Marketing Journal. Vol. 2, no. 1, August, pp. 81-91.
- **Payne**, Adrian; **Christopher**, Martin; **Clark**, Moira and **Peck**, Helen (1995): *Relationship Marketing for Competitive Advantage – Winning and Keeping Customers.* Butterworth-Heinemann: Oxford.
- **Pearson**, John N. and **Ellram**, Lisa M. (1995): *Supplier Selection and Evaluation in Small Versus Large Electronics Firms.* Journal of Small Business Management. Vol. 33, no. 4, October, pp. 53-65.
- **Peck**, Helen; **Payne**, Adrian; **Christopher**, Martin and **Clark**, Moira (1999): *Relationship Marketing: Strategy and Implementation.* Butterworth-Heinemann: Oxford.
- **Perreault**, W. D. Jr. and **Russ**, F. A. (1976): *Physical Distribution Service in Industrial Purchase Decisions.* Journal of Marketing. Vol. 40, April, pp. 3-10.
- **Ponterotto**, Joseph G. and **Grieger**, Ingrid (1999): *Merging Qualitative and Quantitative Perspectives in a Research Identity.* In: **Kopala**, Mary and **Suzuki**, Lisa (1999): *Using Qualitative Methods in Psychology.* Sage: London, pp. 49-62.
- **Potter**, Jonathan and **Wetherell**, Margaret (1995): *Discourse Analysis.* In: **Smith**, Jonathan A.; **Harré**, Rom and **Langenhove**, Luk Van (1995): *Rethinking Methods in Psychology.* Sage: London, pp. 80-92.
- **Preiss**, Kenneth; **Goldman**, Steven L. and **Nagel**, Roger N. (1996): *Cooperate to Compete: Building Agile Business Relationships.* Van Nostrand Reinhold: London.

R

- **Ragatz**, Gary L.; **Handfield**, Robert B. and **Scannell**, Thomas V. (1997): *Success Factors for Integrating Suppliers into New Product Development.* Journal of Product Innovation Management. Vol. 14, no. 3, May, pp. 190-202.
- **Rajagopal**, Shan (1995): *Organisational Buying Behaviour.* In: **Baker**, Michael J. (1995): *Marketing: Theory and Practice.* MACMILLAN PRESS: London. 3rd edition, pp. 59-89.
- **Rempel**, John K.; **Holmes**, John G. and **Zanna**, Mark P. (1985): *Trust in Close Relationships.* Journal of Personality and Social Psychology. Vol. 49, no. 1, pp. 95-112.
- **Reutterer**, Thomas and **Kotzab**, Herbert W. (2000): *The Use of Conjoint-Analysis for Measuring Preferences in Supply Chain Designs.* Industrial Marketing Management. Vol. 29, January, pp. 27-35.
- **Ring**, Peter Smith (2000): *The Three T's of Alliance Creation: Task, Team and Time.* European Management Journal. Vol. 18, no. 2, April, pp. 152-163.
- **Ring**, Peter Smith and **Ven**, Andrew H. Van De (1994): *Developmental Processes of Cooperative Interorganizational Relationships.* Academy of Management Review. Vol. 19, no. 1, January, pp. 90-118.

- **Ritter**, Thomas (2000): *A Framework for Analyzing Interconnectedness of Relationships.* Industrial Marketing Management. Vol. 29, no. 4, July, pp. 317-326.
- **Robicheaux**, R.A. and **Coleman**, J.E. (1994): *The Structure of Marketing Channel Relationships.* Journal of the Academy of Marketing Science, Vol. 22 No. 1, pp. 38-51.
- **Robinson**, Patrick J.; **Faris**, Charles W. and **Wind**, Yoram (1967): *Industrial Buying and Creative Marketing.* Allyn & Bacon: Boston.
- **Robson**, Colin (1996): *Real World Research.* Blackwell: Oxford.
- **Rollinson**, Derek; **Broadfield**, Aysen and **Edwards**, David J. (1998): *Organisational Behaviour and Analysis: An Integrated Approach.* Addison-Wesley: Harlow.
- **Rosenberg**, Milton J. and **Hovland**, Carl I. (1960): *Cognitive, Affective, and Behavioral Components of Attitudes.* In: **Rosenberg**, Milton J.; **Hovland**, Carl I.; **McGuire**, William J.; **Abelson**, Robert P. and **Brehm**, Jack W. (1960): *Attitude Organization and Change: An Analysis of Consistency Among Attitude Components.* Yale University Press: London, pp. 1-14.
- **Ross**, David Frederick (1998): *Competing Through Supply Chain Management: Creating Market-Winning Strategies Through Supply Chain Partnerships.* Chapman & Hall: London.
- **Rousseau**, Denise M. (1995): *Psychological Contracts in Organizations: Understanding Written and Unwritten Agreements.* Sage: London.
- **Ruekert**, Robert W. and **Churchill**, Gilbert A. Jr. (1984): *Reliability and Validity of Alternative Measures of Channel Member Satisfaction.* Journal of Marketing Research. Vol. 11, no. 2, May, pp. 226-233.
- **Rushton**, Angela M. and **Carson**, David J. (1989): *The Marketing of Services: Managing the Intangibles.* European Journal of Marketing. Vol. 23, no. 8, pp. 23-44.

S

- **Saussure**, Ferdinand de ([1972] 1983): *Course in General Linguistics.* Open Court: Chicago.
- **Saxton**, T. (1997): *The Effects of Partner and Relationship Characteristics on Alliance Outcomes.* Academy of Management Journal, Vol. 40 No. 2, pp. 443-461.
- **Schütze**, R. (1992): *Kundenzufriedenheit - After-Sales-Marketing auf industriellen Märkten.* Wiesbaden.
- **Scott**, C. and **Westbrook**, R., (1991): *New Strategic Tools for Supply Chain Management.* International Journal of Physical Distribution & Logistics Management, Vol. 21 No. 1, pp. 23-33.
- **Selnes**, Fred (1993): *An Examination of the Effect of Product Performance on Brand Reputation, Satisfaction and Loyalty.* European Journal of Marketing. Vol. 27, no. 9, pp. 19-35.

- **Selnes**, Fred (1998): *Antecedents and Consequences of Trust and Satisfaction in Buyer-Seller Relationships*. European Journal of Marketing. Vol. 32, no. 3/4, pp. 305-322.
- **Sewell**, Kenneth W.; **Adams-Webber**, Jack; **Mitterer**, John and **Cromwell**, Rue L. (1992): *Computerized Repertory Grids: Review of the Literature*. International Journal of Personal Construct Psychology. Vol. 5, pp. 1-23.
- **Sharland**, Alex (1997): *Sourcing Strategy: The Impact of Costs on Relationship Outcomes*. International Journal of Physical Distribution & Logistics Management. Vol. 27, no. 7, pp. 395-409.
- **Sheth**, Jagdish N. and **Parvatiyar**, Atul (1995): *Relationship Marketing in Consumer Markets: Antecedents and Consequences*. Journal of the Academy of Marketing Science. Vol. 23, no. 4, Fall, pp. 255-271.
- **Sheth**, Jagdish N. and **Sharma**, Arun (1997): *Supplier Relationships: Emerging Issues and Challenges*. Industrial Marketing Management. Vol. 26, no. 2, pp. 91-100.
- **Sheth**, Jagdish N.; **Mittal**, Banwari and **Newman**, Bruce I. (1999): *Customer Behavior: Consumer Behavior and Beyond*. The Dryden Press: London.
- **Simon**, H. (1992): *Lessons from German's Midsize Giants*. Harvard Business Review, March-April, pp. 115-122.
- **Simon**, Herbert A. (1952): *Comments on the Theory of Organizations*. In: **Lemke**, B. C. and **Edwards**, James Don (1961): *Administrative Control and Executive Action*. Charles E. Merrill Books: Columbus, Ohio, pp. 124-133.
- **Simon**, Hermann and **Pohl**, Alexander (1996): *Vertrauen wächst mit dem Pricing*. Absatzwirtschaft; Sonderausgabe, October, pp. 168-172.
- **Simpson**, J.T. and **Mayo**, D.T. (1997): *Relationship Management: A Call for Fewer Influence Attempts?* Journal of Business Research, Vol. 39 No. 3, pp. 209-218.
- **Singh**, Jagdip (1990): *Voice, Exit, and Negative Word-of-Mouth Behaviors – An Investigation Across Three Service Categories*. Journal of the Academy of Marketing Science. Vol. 18, no. 1, Winter, pp. 1-15.
- **Slack**, Nigel; **Chambers**, Stuart; **Harland**, Christine; **Harrison**, Alan and **Johnston**, Robert (1998): *Operations Management*. Pitman Publishing: London. 2nd edition.
- **Smith**, Brock (1998): *Buyer-Seller Relationships: Bonds, Relationship Management, and Sex-Type*. Canadian Journal of Administrative Sciences. Vol. 15, no. 1, March, pp. 76-92.
- **Smith**, D. V.; **Lowe**, B. G.; **Lyons**, D. H. and **Old**, W. H. (1963): *The Development Project Committee on Standards for Vendor Evaluation*. National Association of Purchasing Agents: New York.
- **Smith**, Gerald F. (1989): *Defining Managerial Problems: A Framework for Prescriptive Theorizing*. Management Science. Vol. 35, no. 8, August, pp. 963-981.

- **Smith**, Jonathan A. (1995a): *Semi-Structured Interviewing and Qualitative Analysis*. In: **Smith**, Jonathan A.; **Harré**, Rom and **Langenhove**, Luk Van (1995): *Rethinking Methods in Psychology*. Sage: London, pp. 9-26.
- **Smith**, Jonathan A. (1995b): *Repertory Grids: An Interactive, Case-Study Perspective*. In: **Smith**, Jonathan A.; **Harré**, Rom and **Langenhove**, Luk Van (1995): *Rethinking Methods in Psychology*. Sage: London, pp. 162-177.
- **Smith**, Mike (1986): *An Introduction to Repertory Grids - Part One*. Graduate Management Research. Vol. 3, no. 1, Spring/Summer, pp. 4-17.
- **Solomon**, Michael R. (1996): *Consumer Behavior - Buying, Having, and Being*. Prentice-Hall International: London. 3rd edition.
- **Soteriou**, Andreas C. and **Chase**, Richard B. (1998): *Linking the Customer Contact Model to Service Quality*. Journal of Operations Management. Vol. 16, no. 4, pp. 495-508.
- **Spekman**, Robert E. and **Johnston**, Wesley J. (1986): *Relationship Management: Managing the Selling and the Buying Interface*. Journal of Business Research. Vol. 14, pp. 519-531.
- **Spekman**, Robert E. and **Stern**, Louis W. (1979): *Environmental Uncertainty and Buying Group Structure: An Empirical Investigation*. Journal of Marketing. Vol. 43, no. 2, Spring, pp. 54-64.
- **Spiegler**, Michael D. and **Guevremont**, David C. (1998): *Contemporary Behavior Therapy*. Books/Cole: London. 3rd edition.
- **Spur**, Günter and **Schröder**, Carsten (1997): *Szenarien für den Produktionsstandort Deutschland*. In: **Spur**, Günter (1997): *Optionen zukünftiger industrieller Produktionssysteme*. Akademie Verlag: Berlin, pp. 551-630.
- **Statt**, David A. (1998): *The Concise Dictionary of Psychology*. Routledge: London. 3rd edition.
- **Steyaert**, Chris and **Bouwen**, René (1994): *Group Methods of Organizational Analysis*. In: **Cassell**, Catherine and **Symon**, Gillian (1994): *Qualitative Methods in Organizational Research: A Practical Guide*. Sage: London, pp. 123-146.
- **Stock**, James R. (1997): *Applying Theories From Other Disciplines to Logistics*. International Journal of Physical Distribution & Logistics Management. Vol. 27, no. 9/10, pp. 515-539.
- **Stoddard**, James E. and **Fern**, Edward F. (2002): *Buying Group Choice: The Effect of Individual Group Member's Prior Decision Frame*. Psychology & Marketing. Vol. 19, no. 1, January, pp. 59-90.
- **Storbacka**, K.; **Strandvik**, T. and **Grönroos**, C. (1994): *Managing Customer Relationships for Profit: The Dynamics of Relationship Quality*. International Journal of Service Industry management. Vol. 5, no. 5, pp. 21-38.
- **Strauss**, Anselm and **Corbin**, Juliet (1990): *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. Sage: London.
- **Stuart**, F. Ian (1997): *Supplier Alliance Success and Failure: A Longitudinal Dyadic Perspective*. International Journal of Operations & Production Management. Vol. 17, no. 6, pp. 539-557.

- **Stuart**, F.I. (1993): *Supplier Partnerships: Influencing Factors and Strategic Benefits*. International Journal of Purchasing and Materials Management, Fall, pp. 22-28.
- **Sutrich**, Othmar (1994): *Prozeßmarketing anstelle des Mix*. Harvard Business Manager. Vol. 1, pp. 118-125.
- **Swift**, Cathy Owens (1995): *Preferences for Single Sourcing and Supplier Selection Criteria*. Journal of Business Research. Vol. 32, no. 2, February, pp. 105-111.
- **Sydow**, Jörg (1997): *Inter-Organizational Relations*. In: **Sorge**, Arndt and **Warner**, Malcolm (1997): *The IEBM Handbook of Organizational Behaviour*. International Thomson Business Press: London, pp. 211-225.
- **Szwejczewski**, Marek; **Goffin**, Keith, **Lemke**, Fred; **Pfeiffer**, Rolf and **Lohmüller**, Bertram (2001): *Supplier Management in German Manufacturing Companies: An Empirical Investigation*. International Journal of Physical Distribution & Logistics Management. Vol. 31, no. 5, pp. 354-373.
- **Szwejczewski**, Marek; **Goffin**, Keith; **Lemke**, Fred; **New**, Colin; **Pfeiffer**, Rolf and **Lohmüller**, Bertram (1999): *Supplier Management in German Manufacturing Companies: An Empirical Investigation*. Paper Presented at the EUROMA Conference "Managing Operations Networks." Venice, Italy (07.-08. June 1999), pp. 361-367.

T

- **Tannenbaum**, Robert (1950): *Managerial Decision-Making*. The Journal of Business. Vol. 23, no. 1, pp. 22-39.
- **Tanner**, John F. Jr. (1999): *Organizational Buying Theories: A Bridge to Relationships Theory*. Industrial Marketing Management. Vol. 28, no. 3, May, pp. 245-255.
- **Thompson**, Keith; **Mitchell**, Helen and **Knox**, Simon (1998): *Organisational Buying Behaviour in Changing Times*. European Management Journal. Vol. 16, no. 6, December, pp. 698-705.
- **Tindall**, Carol (1994): *Personal Construct Approaches*. In: **Banister**, Peter; **Burman**, Erica; **Parker**, Ian; **Taylor**, Maye and **Tindall**, Carol (1994): *Qualitative Methods in Psychology: A Research Guide*. Open University Press: Buckingham, pp. 72-91.
- **Tropper**, Richard (1998): *The Interpretation of Data: An Introduction to Statistics for the Bahavioral Sciences*. Brooks/Cole Publishing: London.
- **Tschudi**, Finn (1977): *Loaded and Honest Questions: A Construct Theory View of Symptoms and Therapy*. In: **Bannister**, D. (1977): *New Perspectives in Personal Construct Theory*. Academic Press: London, pp. 321-350.
- **Tumbusch**, James J. (1991): *Validation of Adaptive Conjoint Analysis (ACA) Versus Standard Concept Testing*. Paper Presented on the Sawtooth Software Conference.

- **Turnbull**, Peter W. and **Wilson**, David T. (1989): *Developing and Protecting Profitable Customer Relationships*. Industrial Marketing Management. Vol. 18, pp. 233-238.

U

- **Usunier**, Jean-Claude (1996): *Marketing Across Cultures*. Prentice Hall: London. 2nd edition.

V

- **Valsamakis**, Vassilios P. and **Spague**, Linda G. (2001): *The Role of Customer Relationships in the Growth of Small- to Medium-Sized Manufacturers*. International Journal of Operations & Production Management. Vol. 21, no. 4, pp. 427-445.
- **Verma**, Rohit and **Pullman**, Madeleine E. (1998): *An Analysis of the Supplier Selection Process*. Omega: The International Journal of Management Science. Vol. 26, no. 6, pp. 739-750.
- **Verma**, Rohit and **Thompson**, Gary M. (1999): *Managing Service Operations Based on Customer Preferences*. International Journal of Operations & Production Management. Vol. 19, no. 9, pp. 891-908.
- **Vokurka**, Robert J.; **Choobineh**, Joobin and **Vadi**, Lakshmi (1996): *A Prototype Expert System for the Evaluation and Selection of Potential Suppliers*. International Journal of Operations & Production Management. Vol. 16, no. 12, December, pp. 106-127.
- **Voss**, Chris and **Blackmon**, Kate (1996): *The Impact of National and Parent Company Origin on World-Class Manufacturing: Findings from Britain and Germany*. International Journal of Operations & Production Management. Vol. 16, no. 11, pp. 98-115.
- **Vriens**, Marco; **Huber**, Joel and **Wittink**, Dick R. (1997): *The Commercial Use of Conjoint in North America and Europe: Preferences, Choices, and Self-Explicated Data*. Sawtooth Software Working Paper.
- **Vyas**, Niren and **Woodside**, Arch G. (1984): *An Inductive Model of Industrial Supplier Choice Processes*. Journal of Marketing. Vol. 48, no. 1, Winter, pp. 30-45.

W

- **Waddington**, David (1994): *Participant Observation*. In: **Cassell**, Catherine and **Symon**, Gillian (1994): *Qualitative Methods in Organizational Research: A Practical Guide*. Sage: London, pp. 107-122.
- **Walker**, James L. (1995): *Service Encounter Satisfaction - Conceptualized*. Journal of Services Marketing. Vol. 9, no. 1, pp. 5-14.
- **Walter**, A., **Ritter**, T. and **Gemünden**, H.G. (2001): *Value Creation in Buyer-Seller Relationships: Theoretical Considerations and Empirical Results from a Supplier's Perspective*. Industrial Marketing Management, Vol. 30 No. 4, pp. 365-377.
- **Wang**, Eric T. G. and **Seidmann**, Abraham (1995): *Electronic Data Interchange: Competitive Externalities and Strategic Implementation Policies*. Management Science. Vol. 41, no. 3, March, pp. 401-418.
- **Watson**, John B. (1913): *Psychology as the Behaviorist Views it*. Psychological Review. Vol. 20, pp. 158-177.
- **Watson**, John B. and **Rayner**, Rosalie (1920): *Conditioned Emotional Reactions*. Journal of Experimental Psychology. Vol. 3, no. 1, February, pp. 1-14.
- **Weber**, Charles A.; **Current**, John R. and **Benton**, W. C. (1991): *Vendor Selection Criteria and Methods*. European Journal of Operational Research. Vol. 50, pp. 2-18.
- **Weber**, Charles A.; **Current**, John R. and **Desai**, Anand (1998): *Non-Cooperative Negotiation Strategies for Vendor Selection*. European Journal of Operational Research. Vol. 108, pp. 208-223.
- **Webster**, F.E. (1992): *The Changing Role of Marketing in the Corporation*. Journal of Marketing, Vol. 56, pp. 1-17.
- **Webster**, Frederick E. Jr. and **Wind**, Yoram (1972): *A General Model for Understanding Organizational Buying Behavior*. Journal of Marketing. Vol. 36, April, pp. 12-19.
- **Wehrli**, Hans Peter and **Jüttner**, Uta (1996): *Beziehungsmarketing in Wertsystemen*. Marketing. Vol. 1, pp. 33-43.
- **Wehrli**, Hans Peter and **Wirtz**, Bernd W. (1996): *Geschäftspartnerintegration und Beziehungsmarketing im Business-to-Business-Bereich*. Marktforschung & Management. No. 3, pp. 96-101.
- **Weitz**, Barton A. and **Jap**, Sandy D. (1995): *Relationship Marketing and Distribution Channels*. Journal of the Academy of Marketing Science. Vol. 23, no. 4, Fall, pp. 305-320.
- **Wever**, K. S. and **Allen**, C. A. (1992): *Is Germany a Model for Managers?* Harvard Business Review. Vol. 70, no. 5, September-October, pp. 36-43.
- **Wheatley**, M.; **New**, C. and **Sywejczewski**, M. (1995): *Britain's Best Factories*. Haymarket Publications. Vol. 1.

- **Wheatley**, M.; **New**, C. and **Sywejczewski**, M. (1996a): *Britain's Best Factories.* Haymarket Publications. Vol. 2.
- **Wheatley**, M.; **New**, C. and **Sywejczewski**, M. (1996b): *Britain's Best Factories.* Haymarket Publications. Vol. 3.
- **Wheatley**, M.; **New**, C. and **Sywejczewski**, M. (1997): *Britain's Best Factories.* Haymarket Publications. Vol. 4.
- **Wheatley**, M.; **New**, C. and **Sywejczewski**, M. (1998): *Britain's Best Factories.* Haymarket Publications. Vol. 5.
- **Wilkinson**, Ian F. and **Young**, Louise C. (1994): *Business Dancing - The Nature and Role of Interfirm Relations in Business Strategy.* Asia - Australia Marketing Journal. Vol. 2, no. 1, August, pp. 67-79.
- **Williamson**, Oliver E. (1975): *Markets and Hierarchies: Analysis and Antitrust Implications.* Collier Macmillan Publishers: London.
- **Wilson**, David T. (1995): *An Integrated Model of Buyer-Seller Relationships.* Journal of the Academy of Marketing Science. Vol. 23, no. 4, Fall, pp. 335-345.
- **Wilson**, Elizabeth J. (1994): *The Relative Importance of Supplier Selection Criteria: A Review and Update.* International Journal of Purchasing and Materials Management. Summer, pp. 35-41.
- **Wittink**, Dick; **Vriens**, Marco and **Burhenne**, Wim (1994): *Commercial Use of Conjoint Analysis in Europe: Results and Critical Reflections.* International Journal of Research in Marketing. Vol. 11, pp. 41-52.

X

- **Xanthopulos**, Zaharias; **Melachrinoudis**, Emanuel and **Solomon**, Marius M. (2000): *Interactive Multiobjective Group Decision Making with Interval Parameters.* Management Science. Vol. 46, no. 12, December, pp. 1585-1601.

Y

- **Yalom**, Irvin D. (1995): *The Theory and Practice of Group Psychotherapy.* BasicBooks: New York. 4th edition.
- **Yin**, Robert K. (1993): *Applications of Case Study Research.* Sage: London.
- **Yin**, Robert K. (1994): *Case Study Research: Design and Methods.* Sage: London. 2nd edition.

Z

- **Zeithaml**, Valarie A. and **Bitner**, Mary Jo (1996): *Services Marketing.* McGraw-Hill: London.