

# **Constructing a Conceptual Framework for Market Intelligence in the European Plant Building Industry**

Mag. (FH) Guntram Kübelböck

A thesis submitted to the University of Gloucestershire  
in accordance with the requirements of the degree of  
Doctor of Business Administration  
in the Faculty of Business, Education and Professional Studies

Supervised by  
Dr. Robin Bown  
Prof. Anthony Gear

2013

## Abstract

*“If there was only one truth, you could not paint a hundred canvases on a single theme.”*

Pablo Picasso, 1966

Companies are faced with changing markets, stiffening competition, increasing uncertainty and as a result are thus confronted with a situation that makes it ever more difficult to keep abreast of the latest developments in technology and trends in society. Market intelligence as a methodology of practice provides an organisation with the opportunity to capture competitive information and to transform it into valuable intelligence in order to identify opportunities and threats at an early stage.

Systematically reviewing the existing literature on market intelligence and related concepts has shown that, apart from a fragmented state of research worth its while to reconsider, no conceptual framework on market intelligence in the plant building industry is available.

An exploratory and qualitative case study that used semi-structured interviews with experts from the industry has led to negotiating a shared sense of understanding and to a refined conceptual framework on plant building market intelligence. The conceptual framework developed consists of three pillars: (1) central intelligence, (2) decentralization to operational divisions and (3) inter-departmental intelligence communities influenced by the characteristics and peculiarities of the very industry.

This framework allows for a conceptualization that connects market intelligence to many organizational units and layers, therefore supporting diffusion of intelligence throughout the company. It furthermore fosters exchange of information and knowledge by looking beyond computerized databases, connects with learning processes and builds on integrated analysis frameworks based on social networks as an organic strategy.

Significantly, inter-departmental intelligence communities are well suited to provide the connection between intelligence, reflection, action and learning. This is deemed particularly valuable in times where decision making has become ever harder due to turbulent environments, reducing the relevance of plain cost-benefit and probabilistic reasoning approaches.

### **Author's Declaration**

I declare that the work in this thesis was carried out in accordance with the regulations of the University of Gloucestershire and is original, except where indicated by specific reference in the text. No part of the thesis has been submitted as part of any other academic award. The thesis has not been presented to any other education institution in the United Kingdom or overseas. Any views expressed in the thesis are those of the author and in no way represent those of the University.

Signed

Date

## Curriculum Vitae

Guntram Kübelböck was born in Rohrbach, Upper Austria on November 20, 1982. He is a citizen of the Republic of Austria. Guntram Kübelböck graduated from Senior High School in Rohrbach in 2001, receiving the *Matura* (A-Levels) as the universal diploma to further pursue studies on an academic level with a special focus in two areas, the natural sciences and foreign languages.

A special interest in business marked a new course of study; between 2002 and 2006 he attended the University of Applied Sciences in Krems, Lower Austria, where he graduated with a Magister (FH) in Business Sciences. Areas of specialization are International Marketing and Foreign Trade, International Law and Political Studies, as well as, Spanish. The unique opportunity to work in the field of marketing and market research at the “University Science of Malaysia” (USM) in Malaysia for six months, was not only a scientific, but also a cultural highlight. In 2005 a six month period of work in the field of after sales services for Audi AG Ingolstadt in Germany provided experience in this sector.

Upon graduation, Guntram Kübelböck joined Siemens VAI in 2006, an industrial plant building company. During the past six years he has held positions in strategic marketing, key account management and sales. The focus of his work has been on the metallurgical industry of Russia.

The fall of 2009 marked the beginning of the doctoral programme to obtain a Doctorate in Business Administration at the University of Gloucestershire. Under the guidance of Doctor Robin Bown and Professor Anthony Gear research activities focused on the issue of market intelligence practices in the plant building industry.

Guntram Kübelböck has been entrusted with research scientific activities, the first as part of the master’s thesis, which delved into the area of regional business strategy for Audi AG in Germany, and the research for the doctoral dissertation dealing with the phenomenon of market intelligence for Siemens VAI in Austria. Substantial intercultural experience was gained from several opportunities to travel and work abroad, including Latin America, Africa, Southeast Asia, Australia and Russia.

## **Acknowledgements**

First of all I would like to express my gratitude to the line managers, Mag. Alfred Baur and Dipl. Ing. Josef Lanschützer for the support and guidance necessary to complete the doctoral programme. Engaging in the challenging endeavour to complete the program and be employed at the same time was possible with their help. Furthermore, I would like to thank Dr. Dieter Troller, Head of Personal Development at Siemens VAI, for his support.

Special thanks go to the academic supervisors, Dr. Robin Bown and Prof. Anthony Gear, whose encouragement, guidance and support from the initial to the final level enabled me to develop an understanding of the subject matter, as well as, methodological and philosophical implications connected to this research. Furthermore, I want to thank Prof. Philippa Ward and Prof. Barry Davies from the University of Gloucestershire for their encouragement and support.

The empirical research would not have been possible, without the support of various colleagues to whom I owe my deepest gratitude. Especially the support of Sabine Füreder proved to be valuable and allowed bringing this work to an end.

The final words of gratitude are dedicated to all of those, who provided support during the completion of this research work. Special thanks especially to my family and friends to whom I dedicate this thesis.

Guntram Kübelböck

## Table of Contents

|            |   |           |
|------------|---|-----------|
| <b>1.</b>  | <b>INTRODUCTION</b>   | <b>11</b> |
| <b>1.1</b> | <b>Structure and Outline</b>  | <b>11</b> |
| <b>1.2</b> | <b>Summarizing Changes in Education and Research</b>                                | <b>14</b> |
| 1.2.1      | Discussing contemporary changes in research   | 14        |
| 1.2.2      | Reflective practice as an epistemology of practice                                  | 15        |
| <b>1.3</b> | <b>A Conceptual Background on Market Intelligence</b>                               | <b>16</b> |
| 1.3.1      | Definition and general characteristics  | 16        |
| 1.3.2      | Historical developments in intelligence affairs                                     | 18        |
| 1.3.3      | Summarizing the basic insights  | 19        |
| 1.3.4      | Tying market intelligence into marketing theory                                     | 23        |
| 1.3.5      | General reflections on the state of research  | 26        |
| 1.3.5.1    | <i>Fragmented state of research</i>   | 26        |
| 1.3.5.2    | <i>Terminological disagreement</i>  | 27        |
| 1.3.5.3    | <i>Conceptual disagreement</i>  | 29        |
| 1.3.5.4    | <i>Definitions for information, intelligence and knowledge</i>                      | 30        |
| 1.3.6      | Separating market intelligence from industrial espionage                            | 31        |
| <b>1.4</b> | <b>The Plant Building Industry</b>  | <b>31</b> |
| 1.4.1      | Definition and general characteristics  | 31        |
| 1.4.2      | Historic development of the plant building industry                                 | 32        |
| 1.4.3      | Terminology review  | 34        |
| 1.4.4      | Scoping study assessing industrial plant building literature                        | 35        |
| <b>1.5</b> | <b>Research Objectives</b>  | <b>36</b> |
| <b>1.6</b> | <b>Value and Relevance of the Research</b>  | <b>38</b> |
| 1.6.1      | Importance of the plant building industry   | 38        |
| 1.6.2      | Push and pull factors   | 39        |
| <b>1.7</b> | <b>Outlook on the following Chapter</b>   | <b>41</b> |
| <b>2.</b>  | <b>SYSTEMATIC LITERATURE REVIEW</b>   | <b>42</b> |
| <b>2.1</b> | <b>Introduction</b>   | <b>42</b> |
| <b>2.2</b> | <b>Systematic Literature Review Methodology</b>                                     | <b>43</b> |
| 2.2.1      | From “evidence-based practice” towards a “systematic approach” in literature review | 43        |
| 2.2.2      | General principles of the systematic review methodology                             | 44        |
| 2.2.3      | Deploying systematic review methodology in managerial sciences                      | 48        |
| 2.2.4      | Implementing the systematic literature methodology                                  | 50        |
| <b>2.3</b> | <b>A Systematic Review of Literature on Industrial Market Intelligence</b>          | <b>52</b> |
| 2.3.1      | Aim of this review  | 52        |
| 2.3.2      | Search strategy   | 52        |
| 2.3.2.1    | <i>Literature scoping</i>   | 52        |

|            |   |            |
|------------|---|------------|
| 2.3.2.2    | <i>Search outline</i>   | 54         |
| 2.3.3      | Search results  | 56         |
| 2.3.4      | Inclusion and exclusion criteria  | 60         |
| 2.3.5      | Quality assessment  | 63         |
| 2.3.6      | Deductive thematic analysis   | 63         |
| 2.3.7      | A narrative synthesis of industrial market intelligence literature            | 66         |
| 2.3.7.1    | <i>Definition of intelligence needs</i>                                       | 66         |
| 2.3.7.2    | <i>Sources of environmental information</i>                                   | 67         |
| 2.3.7.3    | <i>Collection strategy</i>  | 69         |
| 2.3.7.4    | <i>Processing, analysing and interpreting environmental information</i>       | 75         |
| 2.3.7.5    | <i>Products and services from market intelligence operations</i>              | 79         |
| 2.3.7.6    | <i>Intelligence dissemination</i>   | 80         |
| 2.3.7.7    | <i>Intelligence storing</i>   | 81         |
| 2.3.7.8    | <i>Utilization and feedback</i>   | 82         |
| <b>2.4</b> | <b>Summarizing the Initial Conceptual Framework</b>                           | <b>83</b>  |
| <b>2.5</b> | <b>Interpreting and Discussing the Findings</b>                               | <b>88</b>  |
| 2.5.1      | Discussion of existing models   | 88         |
| 2.5.2      | Main criticisms towards existing market intelligence conceptualizations       | 91         |
| 2.5.3      | Formulating the need for additional research                                  | 93         |
| <b>2.6</b> | <b>Outlook on the following Chapter</b>                                       | <b>94</b>  |
| <br>       |   |            |
| <b>3.</b>  | <b>METHODOLOGY AND METHODS</b>  | <b>95</b>  |
| <b>3.1</b> | <b>Introduction</b>   | <b>95</b>  |
| <b>3.2</b> | <b>Research Strategy</b>  | <b>96</b>  |
| 3.2.1      | Purpose of the research   | 96         |
| 3.2.2      | The definition of problem   | 97         |
| 3.2.2.1    | <i>General impression</i>   | 97         |
| 3.2.2.2    | <i>Indirect information gathering</i>   | 99         |
| 3.2.2.3    | <i>Information analysis and interpretation</i>                                | 101        |
| 3.2.2.4    | <i>Informal dissemination of intelligence</i>                                 | 103        |
| 3.2.2.5    | <i>Concept development for plant building market intelligence</i>             | 103        |
| 3.2.3      | Limitations of the research   | 104        |
| <b>3.3</b> | <b>Research Methodology</b>   | <b>106</b> |
| 3.3.1      | Social constructivism in research   | 106        |
| 3.3.2      | Adopting a deductive approach   | 108        |
| 3.3.3      | Qualitative methodologies   | 109        |
| 3.3.4      | Discussing applicable research methods  | 111        |
| <b>3.4</b> | <b>Case Study Research</b>  | <b>113</b> |
| 3.4.1      | Definition and characteristics  | 113        |
| 3.4.2      | Strengths of case study research  | 114        |
| 3.4.3      | Building theory from case studies   | 117        |
| 3.4.4      | Analysing misunderstandings that lower the credibility of case study research | 118        |

|            |  |            |
|------------|--|------------|
| 3.4.5      | Tying in a strategy to mitigate case study-inherent weaknesses       | 120        |
| 3.4.6      | Arguing the use of the case study method in this research            | 122        |
| <b>3.5</b> | <b>Ethics in Social Science Research</b>                             | <b>123</b> |
| <b>3.6</b> | <b>Detailing a Constructivist Quality Concept</b>                    | <b>125</b> |
| 3.6.1      | Validity, reliability and objectivity                                | 125        |
| 3.6.2      | Criteria determining trustworthiness                                 | 127        |
| 3.6.3      | Operationalization of criteria in concrete measures                  | 128        |
| 3.6.4      | Quality and rigour   | 130        |
| <b>3.7</b> | <b>Outlook on the following Chapter</b>                              | <b>131</b> |
| <br>       |  |            |
| <b>4.</b>  | <b>DEVELOPMENT AND JUSTIFICATION OF THE RESEARCH DESIGN</b>          | <b>132</b> |
| <b>4.1</b> | <b>Introduction</b>  | <b>132</b> |
| <b>4.2</b> | <b>Developing a Social Constructivist Case Study Research Design</b> | <b>132</b> |
| 4.2.1      | Methodological frameworks governing case study research designs      | 132        |
| 4.2.2      | General aspects of the research design applied                       | 134        |
| 4.2.3      | Considering a procedural perspective on the research design          | 136        |
| <b>4.3</b> | <b>Title, Strategy and Scope of this Case Study</b>                  | <b>138</b> |
| 4.3.1      | Title of the case study  | 138        |
| 4.3.2      | Strategy, scope and purpose of this case study                       | 138        |
| 4.3.3      | Preparatory steps and instruments used in the case study             | 139        |
| <b>4.4</b> | <b>Selection of the Evidence and Participants</b>                    | <b>140</b> |
| 4.4.1      | A strategy for selecting participants from different backgrounds     | 140        |
| 4.4.2      | Discussing criteria of informative participants                      | 142        |
| 4.4.3      | Selecting additional evidence  | 143        |
| <b>4.5</b> | <b>Agenda Development</b>  | <b>143</b> |
| 4.5.1      | The preliminary agenda   | 143        |
| 4.5.2      | Undertaking the pilot interview                                      | 147        |
| 4.5.3      | The final interview agenda   | 149        |
| <b>4.6</b> | <b>Making the data</b>   | <b>149</b> |
| 4.6.1      | Case study evidence  | 149        |
| 4.6.2      | Transcribing the interviews into reports                             | 151        |
| 4.6.3      | Visibility of the original data in this thesis                       | 152        |
| <b>4.7</b> | <b>Data Analysis and Interpretation</b>                              | <b>153</b> |
| 4.7.1      | Analytical strategy and methods                                      | 153        |
| 4.7.2      | Emerging insights and contradictory results                          | 156        |
| 4.7.3      | Interpreting the data  | 157        |
| <b>4.8</b> | <b>The Social Dimension of Reflective Practice</b>                   | <b>158</b> |
| 4.8.1      | General remarks on reflective practice                               | 158        |
| 4.8.2      | Peer debriefing  | 159        |
| <b>4.9</b> | <b>Research Design Quality Check</b>                                 | <b>159</b> |
| 4.9.1      | Protocol template for case study planning                            | 159        |
| 4.9.2      | Identifying similar research projects                                | 161        |



|             |  |            |
|-------------|--|------------|
| <b>4.10</b> | <b>Outlook on the following Chapter</b>  | <b>163</b> |
| <b>5.</b>   | <b>DATA COLLECTION AND ANALYSIS</b>  | <b>164</b> |
| <b>5.1</b>  | <b>Introduction</b>  | <b>164</b> |
| <b>5.2</b>  | <b>Reporting on the Data Collection</b>  | <b>164</b> |
| 5.2.1       | Negotiating access to selected organizations and participants                  | 164        |
| 5.2.2       | Making the data using semi-structured interviews                               | 166        |
| 5.2.3       | Additional evidence from archival records and documents                        | 169        |
| <b>5.3</b>  | <b>Reflective Comments Log</b>   | <b>170</b> |
| 5.3.1       | General aspects with regard to the reflective comments log                     | 170        |
| 5.3.2       | Lessons learnt from the interviews   | 171        |
| <b>5.4</b>  | <b>Analysing the data using thematic headings and colour codes</b>             | <b>173</b> |
| 5.4.1       | Definition of the thematic headings established for the analysis               | 173        |
| 5.4.2       | Data reduction, colour coding and cross-interview analyses                     | 175        |
| <b>5.5</b>  | <b>A Narrative Synthesis of the cross-interview Analysis</b>                   | <b>176</b> |
| 5.5.1       | First Theme: Plant building specifics  | 176        |
| 5.5.1.1     | <i>General statements with regard to plant building specifics</i>              | 176        |
| 5.5.1.2     | <i>Internal and external complexity</i>  | 177        |
| 5.5.1.3     | <i>Direct selling approach</i>   | 177        |
| 5.5.1.4     | <i>Long-term relationships and lifecycles</i>                                  | 178        |
| 5.5.1.5     | <i>Institutionalized decision making processes</i>                             | 179        |
| 5.5.1.6     | <i>Transferability among plant building sectors</i>                            | 179        |
| 5.5.2       | Second Theme: Gathering competitive information                                | 180        |
| 5.5.2.1     | <i>Relationships as a basis to secure competitive information</i>              | 180        |
| 5.5.2.2     | <i>Sources of competitive information</i>                                      | 181        |
| 5.5.2.3     | <i>Competitive information entry modes</i>                                     | 182        |
| 5.5.2.4     | <i>Differences in internal and external information gathering</i>              | 183        |
| 5.5.2.5     | <i>Responsibilities with regard to gathering information</i>                   | 184        |
| 5.5.2.6     | <i>Informal information gathering approaches</i>                               | 186        |
| 5.5.2.7     | <i>Network-based communities emerge from prolonged relationships</i>           | 187        |
| 5.5.2.8     | <i>Information technology in information gathering</i>                         | 190        |
| 5.5.2.9     | <i>Essential aspects in information gathering</i>                              | 190        |
| 5.5.3       | Third Theme: Synthesis and triangulation of competitive information            | 193        |
| 5.5.3.1     | <i>General aspects in information synthesis</i>                                | 193        |
| 5.5.3.2     | <i>Formal aspects in information synthesis</i>                                 | 193        |
| 5.5.3.3     | <i>Informal routines in information synthesis</i>                              | 195        |
| 5.5.3.4     | <i>Organic strategies to improve information synthesis</i>                     | 196        |
| 5.5.3.5     | <i>Information technology in information synthesis</i>                         | 197        |
| 5.5.4       | Fourth Theme: Analysing and interpreting competitive information               | 198        |
| 5.5.4.1     | <i>General aspects in analysis and interpretation</i>                          | 198        |
| 5.5.4.2     | <i>Different approaches for macro and micro environment information</i>        | 198        |
| 5.5.4.3     | <i>Evaluation replacing analysis and interpretation in informal structures</i> | 200        |

|             |  |            |
|-------------|--|------------|
| 5.5.4.4     | <i>Analytical methods used</i>   | 201        |
| 5.5.4.5     | <i>Importance of inter-departmental coordination</i>                                   | 202        |
| 5.5.5       | Fifth Theme: Integrating intelligence products   | 202        |
| 5.5.5.1     | <i>General aspects</i>   | 202        |
| 5.5.5.2     | <i>Integration of intelligence on a strategic level</i>                                | 203        |
| 5.5.6       | Sixth Theme: Disseminating market intelligence   | 204        |
| 5.5.6.1     | <i>General aspects</i>   | 204        |
| 5.5.6.2     | <i>The management as amplifier in disseminating intelligence</i>                       | 205        |
| 5.5.6.3     | <i>Formal intelligence dissemination</i>   | 205        |
| 5.5.6.4     | <i>Informal intelligence dissemination</i>   | 206        |
| 5.5.6.5     | <i>Integrating formal and informal dissemination modes</i>                             | 207        |
| 5.5.7       | Seventh Theme: Results of intelligence activities                                      | 207        |
| 5.5.7.1     | <i>General aspects</i>   | 207        |
| 5.5.7.2     | <i>Specific results of market intelligence processes</i>                               | 209        |
| 5.5.7.3     | <i>Additional intelligence results from integrated analysis frameworks</i>             | 210        |
| <b>5.6</b>  | <b>Discussion of Differences among Participants</b>                                    | <b>211</b> |
| <b>5.7</b>  | <b>Discussion of Emerging Insights</b>   | <b>213</b> |
| <b>5.8</b>  | <b>Interpreting the Findings</b>   | <b>217</b> |
| 5.8.1       | Developing the interpretative technique  | 217        |
| 5.8.2       | General aspects of plant building market intelligence                                  | 220        |
| 5.8.3       | The first pillar: Central market intelligence  | 222        |
| 5.8.4       | The second pillar: Decentralization to operational division                            | 224        |
| 5.8.5       | The third pillar: Informal intelligence  | 227        |
| 5.8.6       | Integration and dissemination of market intelligence                                   | 229        |
| 5.8.7       | Results of comprehensive market intelligence   | 229        |
| <b>5.9</b>  | <b>Undertaking the peer debriefing</b>   | <b>230</b> |
| <b>5.10</b> | <b>Summary</b>   | <b>232</b> |
| <b>5.11</b> | <b>Outlook on the following Chapter</b>  | <b>233</b> |
| <br>        |  |            |
| <b>6.</b>   | <b>CONCLUSION</b>  | <b>235</b> |
| <b>6.1</b>  | <b>Introduction</b>  | <b>235</b> |
| <b>6.2</b>  | <b>A Refined Conceptual Framework for Plant Building Market Intelligence</b>           | <b>235</b> |
| 6.2.1       | Narrative summary and diagrammatic framework   | 235        |
| 6.2.2       | Differentiating plant building market intelligence from models of literature           | 241        |
| <b>6.3</b>  | <b>Justifying Communities of Practice</b>  | <b>243</b> |
| <b>6.4</b>  | <b>Re-integrating the Findings with the Literature</b>                                 | <b>244</b> |
| <b>6.5</b>  | <b>Mapping the Contributions to Knowledge</b>  | <b>247</b> |
| 6.5.1       | Assessing the effectiveness of this research   | 247        |
| 6.5.2       | Reviewing the initial conceptual framework and addressing the weaknesses of literature | 248        |
| 6.5.3       | Answering the research questions   | 249        |
| 6.5.4       | Integrating major criticism from the literature  | 251        |

|            |   |            |
|------------|---|------------|
| 6.5.5      | Detailing the contributions to knowledge  | 252        |
| 6.5.5.1    | <i>Summary of contributions</i>   | 252        |
| 6.5.5.2    | <i>Proposing a new definition for market intelligence</i>                         | 252        |
| 6.5.5.3    | <i>Integrating the fragmented state of research</i>                               | 253        |
| 6.5.5.4    | <i>A refined conceptual framework for plant building market intelligence</i>      | 253        |
| 6.5.5.5    | <i>Communities of practice and storytelling</i>                                   | 253        |
| 6.5.5.6    | <i>Relating effective market intelligence with additional results and outputs</i> | 254        |
| 6.5.5.7    | <i>Adding project intelligence as a fifth building block</i>                      | 254        |
| 6.5.6      | Contribution to managerial practice   | 255        |
| <b>6.6</b> | <b>Providing a Justification for the Data</b>                                     | <b>255</b> |
| 6.6.1      | Establishing trustworthiness  | 255        |
| 6.6.2      | Reviewing implemented measures to establish trustworthiness                       | 256        |
| <b>6.7</b> | <b>Limitations of the Research Findings</b>                                       | <b>257</b> |
| <b>6.8</b> | <b>Suggestions for further Research</b>   | <b>258</b> |
| <b>6.9</b> | <b>Concluding Remarks</b>   | <b>259</b> |
|            | Bibliography  | 262        |
|            | Appendix  | 279        |

## List of Figures

|  |     |
|--|-----|
| Figure 1: Main steps in the research process (author's own scheme)   | 12  |
| Figure 2: The intelligence cycle (based on Prescott, 1999)   | 20  |
| Figure 3: Scope of market intelligence (based on Hedin, 2004)  | 21  |
| Figure 4: Four territories of effective action and market intelligence (author's own scheme, based on Fisher and Rooke, 2004, in Rigg and Trehan, 2008)  | 23  |
| Figure 5: Different areas of intelligence studies (based on Jenster and Soilen, 2009)  | 29  |
| Figure 6: Industrial goods, capital goods and industrial plants (based on Geraldi, 2007)   | 34  |
| Figure 7: Process steps in systematic literature review (National Health System, 2008)   | 45  |
| Figure 8: Thematic analysis using a deductive approach (author's own scheme, based on Thomas and Harden, 2008)   | 48  |
| Figure 9: Three-step search strategy (author's own scheme)   | 54  |
| Figure 10: Strategy adopted in examining and extracting research evidence from search results (author's own scheme)                                      | 58  |
| Figure 11: Example for inadequate search results eliminated at first sight (screenshot of results from KVK Search – BVB)                                 | 58  |
| Figure 12: Screenshot of the literature list prepared as a result from reviewing the literature  | 60  |
| Figure 13: The industrial market intelligence framework (author's own design)  | 84  |
| Figure 14: Results from reflecting on the literature review (author's own design)  | 99  |
| Figure 15: Direct and indirect gathering strategies and their assumed value with regard to micro and macro environment information (author's own scheme) | 100 |
| Figure 16: The quality concept applied and operationalized (author's own scheme)   | 127 |
| Figure 17: A procedural perspective on the research design (author's own scheme, based on Yin, 2009)   | 137 |
| Figure 18: Techniques applied in developing the interview agenda (author's own design)   | 144 |
| Figure 19: Routine in data making (author's own scheme)  | 152 |
| Figure 20: Process for analysing and interpreting the data (author's own design)   | 155 |
| Figure 21: Diagram of the structure implemented in case interpretation (author's own design)   | 233 |
| Figure 22: Conceptual framework on plant building market intelligence (author's own design)  | 236 |

## List of Tables

|  |     |
|--|-----|
| Table 1: Overview on individual objectives and the methodology and methods involved                            | 37  |
| Table 2: Search results and number of studies extracted  | 57  |
| Table 3: Tentative list of literature reviewed   | 59  |
| Table 4: Inclusion and exclusion parameters applied (author's own scheme, based on McDermott et al., 2004)     | 61  |
| Table 5: Provisions used in arguing the use of case study research (author's own scheme)                       | 122 |
| Table 6: Implementing and operationalizing the ethical concept applied   | 125 |
| Table 7: Detailed research questions   | 144 |
| Table 8: Detailed research questions after applying the "five Ws" technique                                    | 145 |
| Table 9: Detailed research questions after including additional context-specific questions                     | 146 |
| Table 10: Lessons learnt from the pilot interview  | 148 |
| Table 11: Mapping the protocol template against the research design developed (based on Brereton et al., 2008) | 160 |
| Table 12: Overview on the interviews   | 167 |
| Table 13: Overview on the amount of data produced  | 168 |
| Table 14: Relating thematic headings and colour codes  | 174 |
| Table 15: Operational details of the peer debriefing   | 231 |
| Table 16: Format for peer debriefing (author's own scheme, based on Yin, 2009)                                 | 231 |
| Table 17: Overview on the achievement of individual objectives and sub-objectives                              | 248 |
| Table 18: Detailed research questions initially posed  | 249 |
| Table 19: Determining the trustworthiness of the research  | 257 |

## List of Abbreviations

|       |  |
|-------|--|
| APQC  | Best practice and performance benchmarking network (formerly American Productivity and Quality Center) |
| AR    | Action research  |
| AWARE | UK-based CI research and management consultancy company  |
| B2B   | Business-to-business   |
| BI    | Business Intelligence  |
| BVB   | Bibliotheksverbund Bayern (Bavarian library service)   |
| CEO   | Chief Executive Officer  |
| CI    | Competitive Intelligence   |
| CIO   | Chief Intelligence Officer   |
| COPAC | British library catalogue  |
| CoP   | Communities of Practice  |
| CoPS  | Complex Products and Systems   |
| CRD   | Centre for Reviews and Dissemination   |
| D&B   | Dun & Bradstreet   |
| DBA   | Doctor of Business Administration  |
| DNB   | Deutsche Nationalbibliothek (German National Library)  |
| EBA   | Evidence-based Approach  |
| EBP   | Evidence-based Practice  |
| EBSCO | Elton B. Stevens Company (journal / article database and subscription agency)                          |
| e.g.  | exempli gratia (engl. for the sake of example)   |
| EPPI  | Evidence for Policy and Practice Information and Co-ordinating Centre                                  |
| GBV   | Gemeinsamer Bibliotheksverbund (Association of several German regional and scientific libraries)       |
| GIA   | Global Intelligence Alliance   |
| HBZ   | Hochschulbibliothekszenrum (Association of university and regional libraries)                          |
| HEBIS | Hessisches BibliotheksInformationsSystem (library information system of Hesse)                         |
| i.e.  | id est (engl. that is)   |

|               |   |
|---------------|---|
| ICR           | Corporate Information and Research Center   |
| ICT           | Information and Communication Technologies  |
| KOBV          | Kooperativer Bibliotheksverbund Berlin-Brandenburg (library service of Berlin-Brandenburg)                                |
| KPI           | Key Performance Indicator   |
| KVK           | Karlsruher Virtueller Katalog (search engine linked with a large number of catalogues of research and national libraries) |
| MARKOR        | Market orientation factor   |
| MI            | Market Intelligence   |
| MKTOR         | Market orientation scale  |
| MORTN         | Market orientation instrument   |
| NHS           | National Health Service   |
| PESTLE        | Political, Economical, Social, Technological, Legal and Environmental Analysis  |
| PhD           | Philosophiae doctor (engl. Doctor of Philosophy)  |
| R&D           | Research and Development  |
| SBB           | Steel Business Briefing   |
| SCIP          | Society of Competitive Intelligence Professionals   |
| SI            | Strategic Intelligence  |
| SWB           | Südwestdeutscher Bibliotheksverbund (Southwest German library service)  |
| SWOT          | Strengths-Weaknesses-Opportunities-Threats Analysis   |
| TI            | Tactical Intelligence   |
| UK            | United Kingdom  |
| USA or U.S.A. | United States of America  |
| VAI           | VOEST-Alpine Industrieanlagenbau (now: Siemens VAI)   |
| VDMA          | Verband Deutscher Maschinen- und Anlagenbau (Association of German Machinery and Plant building Companies)                |
| WorldCat      | Union catalogue itemizing the collections of 71,000 libraries   |
| ZETOC         | A database providing access to the British Library's Electronic Table of Contents and published conference proceedings    |

# **1. Introduction**

## **1.1 Structure and Outline**

The overall objective of this research is to construct a conceptual (theoretical) framework on plant building market intelligence (see Appendix No. 8). The systematic literature review carried out, did not indicate that a conceptual framework has been prepared specifically for the plant building industry. The review, however, did identify the need to further develop the existing frameworks.

The changing nature of the plant building industry's environment (SBB, 2011), market structures (Eberle, 2008), customer expectations (Kuerbisch, 2007), legislative parameters (Kuerbisch, 2007), global reach and competitive intensity (SBB, 2011) shows that a systematic process that constantly reviews such a complex and demanding external environment, fostering awareness of emerging opportunities and threats as soon as possible, and basing strategic planning as well as decision making on firm evidence, is indispensable (Lackman, Saban and Lanasa, 2000). This thesis reports on how such processes unfold in a setting that may be regarded as uniquely challenging. Suggestions for new directions in the field of market intelligence are also addressed.

Starting from the overall research topic as stated above, a systematic literature review was conducted. This review informs and integrates the state-of-affairs of research in the field of industrial market intelligence. The main findings from the review are synthesized into an initial conceptual framework which serves as the basis and starting point for the empirical study.

The decision to review research from industrial market intelligence rather than from plant building market intelligence was taken due to lacking material dealing exclusively with market intelligence in the plant building industry. The scarcity of literature portraying management topics and concepts in plant building is subject to a separate appraisal and discussion in section 1.4.

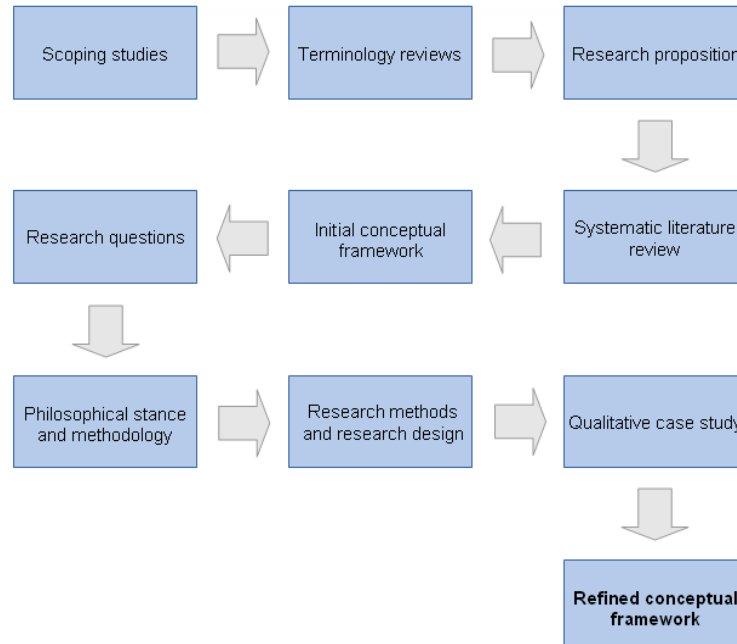
In general, the literature review revealed that market intelligence is a well-studied topic. A substantial number of researchers and practitioners have contributed to this field of study



and the continuing popularity of the concept, made evident by the large number of consultancies offering services in the area, has contributed valuable results. Contributions to this topic are located in form of empirical, as well as, theoretical research.

The literature review has revealed a number of weaknesses and contradictions in existing literature. According to Flick (2009) and Thomas and Linstead (2002), such contradictory results can be taken as the starting point in empirical research. Based on the findings from the review, the research questions were formulated. The review revealed, that it is particularly important to conduct research on the methods of indirect information gathering and information analysis and interpretation in more depth, as well as, to do research on how the intelligence process unfolds in practice in particular industries. Advancing the understanding of market intelligence in plant building required to modify the initial framework constructed from literature evidence, by negotiating a shared sense of understanding together with knowledgeable experts, in order to establish a refined theoretical framework.

Figure 1: Main steps in the research process (author's own scheme)



The exploratory study will follow a purely qualitative inquiry strategy. This approach is preferred in cases needing answers to how and why questions. According to Saunders, Lewis and Thornhill (2007) this research method can be applied when the focus lies on a complex, contemporary phenomenon within a real-life context, which is the case in this

contribution. In addition, the research draws from a considerable basis of existing industrial market intelligence literature, which relies on quantitative, qualitative and mixed methods studies, as well as, theoretical research. The focus is placed on exploring how the process unfolds in an industry, that has to date received little attention. This promotes the sole use of qualitative methods.

The work done for this thesis focuses on a case study, strongly influenced by a constructivist perspective. In addition, being employed as a manager in a plant building company has sparked the interest to engage in intense research in the area. The perspective in the empirical research is predominantly an emic one. That means, that the research conducted had an impact on the reality, that was co-constructing with the experts, drawing knowledge from experiences. The emic view is thus shaped by cultural and historical norms.

A balanced use of emic and etic perspectives is essential in the correct use of case research approaches (Jönsson and Lukka, 2005). Yin (2009) supports this issue by stating that the etic perspective may be seen as the role of theory shaping the empirical research part. This etic view – as the literature that has been reviewed was prepared by outsiders to the industry – is shaped from a personal perspective. It is elaborated by using an accepted scientific technique, the systematic literature review. This balanced use (Jönsson and Lukka, 2005), or combination of theory and empirical research (Yin, 2009), is not only beneficial to case research (Jönsson and Lukka, 2005) but a characteristic of advanced research practice (Yin, 2009).

For this thesis, and given its exploratory approach, it is considered essential to obtain *lived experience* from experts in the plant building industry. Semi-structured interviews in a face-to-face situation with individual participants' lie at the core of this study. The data is then qualitatively analysed. In a final step the interpretation was undertaken in the form of a narrative and a diagrammatical concept leading to a refined conceptual framework on plant building market intelligence. An exploratory and qualitative case study has already successfully been used in social constructivist research work, for example by Thomas and Linstead (2002) and may be used for theory generation (Eisenhardt, 1991; Yin, 2009). Additional reasons that support the adoption of this research strategy are:

- Intelligence is constructed from (mostly) information via analysis and interpretation. Taking into account that meetings or discussions are a common structure to discuss

environmental information (Vuori, 2006), intelligence is a product of social construction. A qualitative, social constructivist approach in data making is therefore a specifically sensitive way of researching intelligence. The paradigm employed in this study is commensurate with the actual process of generating market intelligence: sense-making by negotiating a shared sense of understanding.

- Intelligence is not about broad generalizations (Calof and Skinner, 1998), rather it is about specific and located understanding(s). It is about the qualitative, and designed for opening deep wells of understanding and is mostly future-oriented. Case studies are also used for deep understanding and rich descriptions, and for exploration.

## **1.2 Summarizing Changes in Education and Research**

### 1.2.1 Discussing contemporary changes in research

Business research has often been criticized for lack of industrial relevance (Yee, 2009). Many researchers have been inclined to use methods such as surveys or econometrics. Results from such research have often been declined by industry members for their lack in value with regard to improving performance in a specific area of industry management (Yee, 2009). Thus, the research community in charge of business and management issues is threatened to continue to live in isolation, in an ivory tower (Yee, 2009). Mode two knowledge has been specifically mentioned for bridging the gap between research and practice, between academics and the profession – through the improvement of industrial relevance of business research (Yee, 2009). The problem is one of industry and is addressed in the context, as the researchers deal with the realities of the workplace and related constraints (Maxwell, 2003). Hodgson, Lloyd and Browning (1998, in Maxwell, 2003, p. 106) express the complexity of the problem as follows:

*“Real life problems are now extremely complex and the types of people entering the program are commonly involved in decisions that range from business plans through actual technological work, often leading to implementation and marketing. These people are also involved in consultancy. The issues here may involve the integration of technological strategy planning, with quality over an entire company, with needs to plan training and development of staff and hopefully an analysis of strategies which have not worked in the past. In these cases the candidates tend to try and develop generic tools that can be used in quite a broad range of applications. The development*

*of these tools is then supported by a wide range of case studies drawn from the candidate's own experience."*

The rising acceptance of qualitative methodologies in research and increasing interest in such methods as action research and case studies (Flick, 2009) has also served to improve the methodological rigour and bringing discipline and transparency to a higher level of awareness (Gray, 2009). The doctor of business administration programme (DBA) has specifically been developed to master the current industry's environment, to provide for leadership, and to mitigate the risks and problems associated with the knowledge base and styles of managers (Maxwell, 2003).

Thus, the course of study is a form of applied research, with the contribution to knowledge required seen in the context of professional practice – reflected also the term professional doctorate. It requires professional practice and experience as a building block, together with an intensive course work programme to build to knowledge base required (Maxwell, 2003). Thus, the aim is to contribute both to theory and professional development (see sections 6.5 and 6.5.6). The latter is also a characteristic of constructivist research methodologies that place emphasis on improving existing working and living conditions (see section 3.3.1).

#### 1.2.2 Reflective practice as an epistemology of practice

Reflection has been emphasized as a key element in several learning theories (Kolb, 1984, in Papadima-Sophocleous, 2006). One of the most influential ones has been experiential learning which was advocated by Dewey (in Papadima-Sophocleous, 2006). Dewey described the need to differentiate reflection on doing from didactic learning.

*"There is a need of forming a theory of experience in order that education may intelligently be conducted upon the basis of experience."*

Gill and Hoppe (2009, in Sparrow, 2010) have stated the need for adapting strategies for researching the practice needs of a particular academic or professional community. In the history of research, universities have been the locations of knowledge creation (Angelides and Vrasides, 2003, in Papadima-Sophocleous, 2006). As a result of many discussions as to the nature of knowledge, the specific approach used to create it, as well as, the relation between theory and practice (Robinson, 1998, in Papadima-Sophocleous, 2006), universities

have gradually transformed so as to be able to respond to the changed needs of today's society (Papadima-Sophocleous, 2006).

Gibbons (1997, in Sparrow, 2010) has described the generation of contextualized knowledge as a process of continuous negotiation. This brings this kind of research into the realm of interpretivist research approaches with their preference for exploration of subjective meanings of social actions (Sparrow, 2010).

Reflective practice has been termed as a thoughtful, active and continual reconstruction of one's operating resources (Maxwell, 2003). The definition from Smyth (1992, in Freshwater, Horton-Deutsch, Sherwood, Taylor, 2005, p. 8) for reflective practice is:

*"[...] allowing the generation of a knowledge base that is more comprehensive because it is tuned into what practitioners know about practice."*

Reflective methods and processes may guide practice, practical development but also research evidence. Reflective processes have been used as the sole research approach, or, jointly combined with other research methods (Freshwater et al., 2005). Researchers may also use them in a manner to show rigour and trustworthiness, as they constitute valuable documentations of the development of a project. In this particular research, reflective processes have accompanied the other methods involved, and are separately indicated (see sections 4.8, 5.3 and 5.9).

### **1.3 A Conceptual Background on Market Intelligence**

#### **1.3.1 Definition and general characteristics**

Before starting on the topic of research, definitions and characteristics are addressed in order to provide a basic understanding of the processes involved. The two main terminologies used for the concept at hand are *market intelligence*, respectively *competitive intelligence*. The term market intelligence is the most appropriate in the context of this work, as market refers to all relevant external participants, and is not specifically oriented at only the strategic and/or tactical level, as literature indicates. The fact that market intelligence is firmly rooted in the theoretical concept of market orientation (see section 1.3.4), which has

been widely discussed and acknowledged, makes the choice to use this term plausible in the context of this work. Thus, the term market intelligence is used in the course of this thesis. Market intelligence as – usually – a future-oriented, integrated and continuous process is described as iterative, including all units of an organization (Wolter, 2011, in Keuper, Oecking and Degenhardt., 2011). Different definitions can be obtained from literature (Wright, Eid and Fleisher, 2009); one that appears to have attracted attention is the one proposed by the Global Intelligence Alliance (2008):

*“Market Intelligence (MI, frequently also used interchangeably with “Competitive Intelligence, CI” or “Business Intelligence, BI”) is a distinct discipline by which organizations systematically gather and process usable information about their external operating environment (such as customers, competition, trends, regulation, or geographic areas). The purpose of Market Intelligence is to facilitate accurate and confident decision making that is based on carefully analysed information about the above mentioned topics.”*

Personal experience has indicated, that the definition above is not satisfactory, as it reflects ambiguity to a certain degree. Firstly, MI should not be used interchangeably with the term BI, as both refer to different concepts, derived from different, if not competing, positions (Rothberg and Erickson, 2005). Furthermore, market intelligence is not only concerned with gathering and evaluating information, but also with disseminating intelligence throughout the organization (Maltz and Kohli, 1995) in order to achieve responsiveness of the organization with regard to intelligence produced (Kohli and Jaworski, 1990). However, the latter is not part of the market intelligence process, but relates to the degree of implementation of the marketing concept within an organization. Therefore, the definition proposed by the author goes beyond that of the Global Intelligence Alliance (2008):

*“Market intelligence is a distinct managerial discipline by which organizations systematically gather and process information to produce and disseminate intelligence about their external operating environment. This may include elements and items from the macro and micro environment in which the company operates as well as general themes and trends. The purpose is to facilitate accurate and confident decision making, by challenging existing experiences and intuition, as well as to support planning and benchmarking activities.”*

### 1.3.2 Historical developments in intelligence affairs

The concept of intelligence, in the meaning of usable information, that can also be implemented, emerged from military strategy (Morris, Pitt and Honeycutt, 2001). Origins trace back to the ideas of Sun Tsu (“The Art of War”, in Prescott, 1999), a Chinese military theorist in the fourth century B.C. (Pease, 1991). Military intelligence is mostly related to gaining information on the enemy’s strengths and weaknesses, as well as, plans, intentions and other essential information. The means, by which this information was acquired, have put even commercial intelligence operations next to espionage and/or other illegal activities. This issue will be elaborated on in a separate section below.

In the second half of the twentieth century, managerial researchers began stressing the importance of intelligence in a business context (Pease, 1991). Among them were military theorists, proponents of strategic management such as Montgomery and Weinberg (1979), Makadok and Barney (2001) and researchers from the field of marketing such as Maltz and Kohli (1995) among others.

The adoption of intelligence by managerial research has thus taken place in different waves (Morris et al., 2001) and first attempts of intelligence in business management were clearly oriented at gaining insight into actions and intentions of competitors. This is in line with military intelligence, which places its focus on the enemy. John Rockefeller (in Pease, 1991, p. 7) once said:

*“Next to knowing all about your own business, the best thing is to know all about the other fellow’s business.”*

Competitor intelligence is still a major ingredient in modern market intelligence conceptualizations. Another characteristic of early market intelligence concepts was, that it was conducted more on a case-by-case basis rather than as a systematic and continuous procedure (Global Intelligence Alliance, 2008). In the 1960s and 1970s the market intelligence activities were informal and oriented towards a tactical level (Attaway, 1998). Little or no analysis was performed and the link to decision making was weak. The following stage in the 1980s saw a formalization of market intelligence. This led to the first MI units being organized at trendsetting organizations, and increasing use of analytical

methods. However, intelligence activities were still oriented towards tactical levels and mainly quantitative in use (Attaway, 1998). The following developments saw from the 1990s onwards increasing attention to quantitative and qualitative methods, addressing strategic and tactical issues with improving ties to decision makers profiting from the intelligence produced (Attaway, 1998).

The systematic orientation towards intelligence in business is, thus, a rather recent phenomenon (Prescott, 1999). Although this statement was first applied in 1999, this still appears still to be the case in some industries, as the analysis on the fragmented state of research indicates – with no systematic review available on this topic (see chapter 2). In a modern sense the concept includes systematically scanning the entire external operating environment of a business, including macro and micro layers, in order to obtain useful information that can be implemented in the area of internal communication. The theoretical base, however, remains partly weak.

The challenge lies in conducting more empirical and applied research, with a focus on integrated frameworks. The latest articles and reports in the field of market intelligence stress the interconnection between market intelligence and knowledge management or organizational learning, a subject that will be reviewed in chapters 2 and 3.

### 1.3.3 Summarizing the basic insights

Market intelligence is both, a process and a product (Bose, 2008; Ding, 2009). The process is the action of gathering, analysing, disseminating and using information about competitors, suppliers, regulators, partner and customers. The product resulting from such a process is also called intelligence (Bose, 2008). An effective MI process is run as a continuous cycle – the intelligence cycle (Bose, 2008).

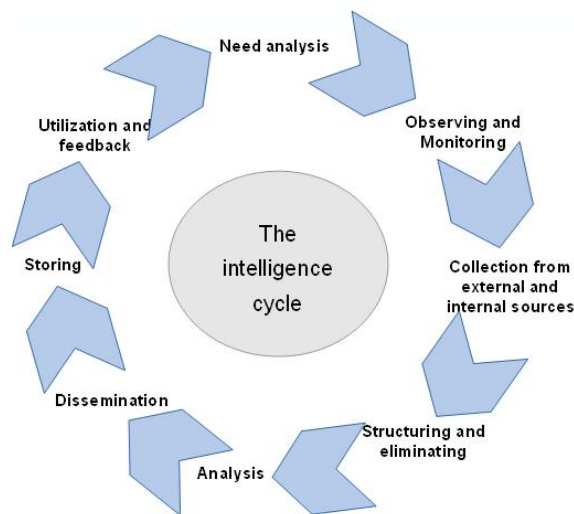
This *intelligence cycle* is the most commonly found basis structure describing market intelligence activities and is referred to as the “doing of market intelligence” (Prescott, 1995, in Global Intelligence Alliance, 2004, p. 11). It is called a cycle due to its integrated feedback loop, designed to improve the process step-by-step. This reminds one of an integrated continuous improvement process step. Essentially, intelligence routines and products may need to change over time, just as the external environment of a company changes. Most prominent researchers in the field of market intelligence use the intelligence



cycle among them Wright et al. (2009), Hendrix (1996) or Prescott (1999). Also Maltz and Kohli (1995) – who operate from a market orientation point of view – make implicit reference to specific elements of the intelligence cycle in their works.

The Global Intelligence Alliance also introduces other cycles purported by researchers such Bernhardt's (1994, in Global Intelligence Alliance, 2004) or Kahaner's (1996, in Global Intelligence Alliance, 2004) cycles'. The Global Intelligence Alliance (Global Intelligence Alliance, 2008) uses the intelligence cycle by Prescott (1999), which is rather consistent with other research and appears to have attracted widespread attention (Wright et al., 2009). In 1979 a similar intelligence cycle had already been prepared by Montgomery and Weinberg. Vuori (2006) agrees with the impression gained in the course of studying these cycles and states that although different models (cycles, wheels, etc.) exist, these appear to be similar.

Figure 2: The intelligence cycle (based on Prescott, 1999)



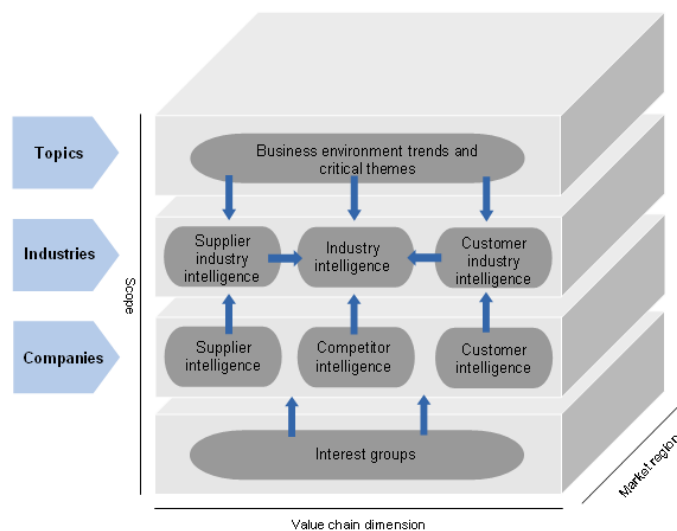
Intelligence is created from data (single pieces of raw material like numbers, character strings and any other form in which a specific fact may be presented) or information, that is data in context, that people are ready to accept as being relevant for their needs (Wolter, 2011, in Keuper et al., 2011). Other researchers, such as Drott (2001), point out the relevance of personal knowledge as being an input factor to intelligence systems as well. Intelligence is thus being created from a variety of input, but the essence is, that it has been analysed and suggests taking specific actions, strategies or decisions (Wolter, 2011, in Keuper et al., 2011). The intelligence cycle is the system that converts (mostly) information

into intelligence by using a certain sequence of steps (Ghoshal, 1985; Hendrix, 1996; Prescott, 1999). The most frequently used steps are gathering, analysing and interpreting information (for it to become intelligence) and dissemination of intelligence throughout the organization.

Market intelligence activities must be performed collectively by three different components of the organization: top management, staff in the intelligence unit and the body of line managers in the different departments (Ghoshal, 1985). Top-management is, first of all, a user of (strategic) market intelligence. Line managers are both, suppliers of environmental information and users of (mostly tactical) market intelligence (Ghoshal, 1985). The intelligence unit has been termed a facilitator and service unit (intelligence training among others), as well as being in charge of processing, analysing, interpreting and disseminating of a more “strategic” type of intelligence, that is intelligence from the broader business environment designed for top-management application (Ghoshal, 1985).

Typically, market intelligence operations deal with items from the macro and the micro environment of an organization. On the macro level the overall economic performance of the product markets, regulations, political, legal and technological issues may be questions of first choice. This may include overall trends and critical topics.

Figure 3: Scope of market intelligence (based on Hedin, 2004)



The micro environment includes the industry itself (i.e. competitors) that is examined together with suppliers and customers industries. In addition, the most important emerging

players may be investigated. Typically, the micro environment may also include product and technology intelligence.

Concerning intelligence categories, two major forms of classification are common in literature. The first category refers to the application type of the intelligence produced. Montgomery and Weinberg (1979) argue that in this category three different kinds of intelligence exist:

- Defensive intelligence, which monitors whether the assumptions on which the organization is run, continue to hold true (Montgomery and Weinberg, 1979; Kuada, 2002).
- Offensive intelligence provides for early identification of opportunities (Montgomery and Weinberg, 1979; Kuada, 2002).
- Passive intelligence is designed to provide benchmarking data for objective evaluation (Montgomery and Weinberg, 1979; Kuada, 2002).

The second type of classification makes an implicit reference to the hierarchical nature of the decision making unit (Jenster and Soilen, 2009). The three approaches within this classification are (1) strategic intelligence, (2) tactical intelligence and (3) operational intelligence (Ding, 2009).

Strategic intelligence (SI) is aimed at the upper and top-management, and is concerned with issues that have a significant impact on the value of the firm (Jenster and Soilen, 2009). Murphy (2005) and Ding (2009) add that on a long term basis SI is more concerned with general competitiveness as the major issue.






Tactical intelligence aims at middle to upper management levels, and addresses items that may have an effect in the shorter term (Murphy, 2005). Tactical issues do not have such a substantial impact on a company; however, in conjunction with other challenges these may affect the firm and thus need to be taken into account (Jenster and Soilen, 2009). Operational intelligence is mostly of use to junior managers and is usually related to a specific customer or regional area and does not have such a significant impact on the overall firm (Jenster and Soilen, 2009).

Market intelligence, effectively employed, may help companies to achieve or defend their competitive advantage (Porter, 1980, in Le Bon and Merunka, 1999; Lackman et al., 2000).

Apart from this ultimate purpose, there are a number of sub-purposes related to the above, which cannot be ignored in the context of this thesis.

Fisher and Rooke (2004, in Rigg and Trehan, 2008) and Torbert (2004, in Rigg and Trehan, 2008) use the “four territories of experience”, which present the territories critical for effective action in the world. These are (1) visioning, (2) strategizing, (3) performing and (4) assessing. Based on the literature screened, effective market intelligence may be related to improving the effectiveness of at least three out of four of the items.

Figure 4: Four territories of effective action and market intelligence (author’s own scheme, based on Fisher and Rooke, 2004, in Rigg and Trehan, 2008)

| Four territories for effective action |              | References found  | Purpose   |
|---------------------------------------|--------------|---|---|
| 1                                     | Visioning    |  No reference found                      |  |
| 2                                     | Strategizing |  Porter (1980)<br>Lackman et. al (2000) | General planning activities<br>Strategic and tactical planning                      |
| 3                                     | Performing   |  Kruijer (2008)<br>Kuada (2002)        | Quicker and better decision making leading to improved action                       |
| 4                                     | Assessing    |  Montgomery and Weinberg (1979)        | Benchmarking  |

This scheme points out the potential impact of effectively employed market intelligence in a firm. Therefore, the idea that market intelligence may support the notion of defending a competitive advantage, as indicated above, appears plausible.

#### 1.3.4 Tying market intelligence into marketing theory

Since the exploration and discussion of market orientation by Jaworski and Kohli (1992, 1996) and its reception and refinement (Slater and Narver, 1994; Slater and Narver, 1995; Hurley and Hult, 1998; Lafferty and Hult, 2001 among others), the idea of constantly screening and monitoring the market by means of market intelligence (Maltz and Kohli, 1995) has drawn considerable attention to this topic.

Thus market orientation has developed resulting in five perspectives that have emerged (Mokhtar, Yusoff and Arshad, 2009). Among them are the decision-making perspective

(Shapiro, 1988), market intelligence perspective (Kohli and Jaworski, 1990), culturally based behavioural perspective (Narver and Slater, 1990), strategic perspective (Ruekert, 1992) and customer orientation perspective (Deshpande, Farley and Webster, 1993).

The two most prominent conceptualizations of market orientation (Lafferty and Hult, 2001; Mokhtar et al., 2009) are those given by Kohli and Jaworski (1990) and Narver and Slater (1990). While Kohli and Jaworski (1990) consider market orientation as the implementation of the market intelligence concept, Narver and Slater (1990) consider market orientation as an issue of organisational culture. Experience shows that both are inseparably connected with neither being more superior.

Kohli and Jaworski (1990, p. 6) defined market orientation as “the organization-wide generation of market intelligence, dissemination of the intelligence across departments and organization-wide responsiveness to it”. According to Kohli and Jaworski (1990) a marketing concept is a business philosophy, whereas the term market orientation refers to the actual implementation of the marketing concept. The direction adopted by Kohli and Jaworski as stated in their seminal paper, puts emphasis on senior management to produce a marketing orientation. It should be argued that this emphasis on senior management implementation has determined the outlook of market orientation in a strategic direction to this day.

At an early stage in developing a greater understanding of the process, American researchers contributed many quantitative studies on market orientation, among them studies on operationalization scales for the calculation of the degree of market orientation implementation in firms, among them the MKTOR scale (Narver and Slater, 1990), the MARKOR scale (Kohli et al., 1993, in Alhakimi and Baharun, 2009) or the MORTN scale (Deshpande and Farley, 1998, in Alhakimi and Baharun, 2009). Since then, researchers from North America, Europe (especially Scandinavia), and more recently, Asia have engaged in market orientation studies.

Lafferty and Hult (2001) agree, and state that market orientation has actually become a synonym for the degree of implementation and integration of the marketing concept in an organization. In their synthesis of market orientation approaches, four areas were laid out – which all five market orientation perspectives have in common. The approaches include (1) emphasis on the customer, (2) importance of shared knowledge (information), (3) inter-

functional coordination, (4) being responsive by taking appropriate actions (Mokhtar et al., 2009). Unsurprisingly, this conceptualization brings market orientation into close contact with market intelligence.

Marketing, as an inter-functional, entrepreneurial task, may be described as market-oriented business management. As a matter of fact, only parts of market intelligence literature can be traced to this theoretical foundation. Other researchers lack a theoretical basis or follow different approaches, as can be seen in section 1.3.5 of this chapter.

Although much research on market orientation emerged during the 1990s, research appears to be continuing, as for example in Castro's et al. (2005, in Alhakimi and Baharun, 2009) study on the external and internal consequences of market orientation, Beverland and Lindgreen's (2007) multiple case study on the implementation of market orientation in industrial firms, or Alhakimi and Baharun's synthesis model of market orientation models (2009). In this model the integration of a cultural perspective appears as a result of a perceived lack of empirical research in developing and less-developed countries. The authors, originating from Malaysia, have in particular integrated in their model the cultural and the behavioural perspective of market orientation. Their request for additional research to validate their synthesis model has caught the attention of Mokhtar et al. (2009), performing a study on market orientation success factors of Malaysian manufacturers and its impact on financial performance. It came of no surprise that the authors concluded that effective market action primarily requires active detecting and responding to market changes, including customer preferences, as well as shifts with regard to competition, technology, price or regulation (Mokhtar et al., 2009). Furthermore, also market planning is based on detecting and processing signals from the market(place). These conclusions are greatly supported and enhanced through the effective use of market intelligence operations.

Although market orientation is not a central issue in this thesis, it is important to include this topic. The development and role of market orientation provides a more detailed foundation and gives additional purpose and relation to implementing market intelligence in a corporate setting. If it was not for becoming a market-oriented firm, market intelligence would clearly be of no value. Alhakimi and Baharun (2009) call market intelligence the starting point of developing a market orientation. Ongoing research with contributions in form of

quantitative, qualitative, mixed methods and theoretical research – for more than 20 years – signals the appeal and the trustworthiness of the concept, with more research to be expected.

### 1.3.5 General reflections on the state of research

The following section includes general remarks on the state of research, and discusses problems associated with the literature. These centre on issues such as the fragmented state of research, terminological and conceptual disagreements and definitions.

#### 1.3.5.1 Fragmented state of research

Intense discussion of market intelligence has sparked additional research in the field. Centres of research activity in this context have been for instance in the USA, Scandinavia, the UK, Germany and more recently Asia. Some of it is of quantitative, other qualitative in nature; some bear the signature of practitioners, which, to some extent, has fostered shortcomings. These misconceptions made this work delicate and difficult, and the approach used had to be carefully selected and refined which is described later on.

Many researchers and practitioners have contributed to the topic of market intelligence in a wider sense of the concept. Their backgrounds and positions are quite diverse, which has resulted in a fragmented state of the research (supported by Jenster and Soilen, 2009). Basically, there are researchers that have a theoretical background in market orientation such as Maltz and Kohli, others favour the term competitive intelligence, but with strong conceptual congruency (such as Ghoshal, 1985; Hendrix, 1996; Prescott, 1999). Attaway (1998) found that market intelligence is an evolving field, that has found little attention by academia and has been dealt with far more by experts. Although these findings were published at an earlier stage in research, experts seem to focus on this issue and continue to publish concepts based on experience with much of the literature originating from the practical domain.

Then there are professional associations and consultancies such as the “Global Intelligence Alliance (GIA)”, the “Society of Competitive Intelligence Professionals (SCIP)” or “AWARE”, which have contributed many papers and pieces of theoretical and empirical research. The other groups are practitioners (such as Jenster and Soilen, 2009) contributing books or papers, partly in conceptual agreement with market intelligence as being under study in this work. Other approaches to the topic come from areas such as competitor,

marketing or strategic intelligence (such as Pease, 1991; Trim and Lee, 2006; Liebowitz, 2006). Such approaches have been integrated into this thesis upon appraisal of conceptual agreement.

#### 1.3.5.2 Terminological disagreement

Different terms referring to the management of intelligence operations in a commercial or business environment are in use, and no universally accepted term can be found (Muller, 2007). This issue is partly related to the fragmented state of research. The difficulty relates to the fact that some of the authors realize that there are conceptual differences and terminological differences, whereas others do not.

Among the terms in use are for example *market* intelligence, *business* intelligence, *competitive* intelligence, *marketing* intelligence, *competitor* intelligence, *corporate* intelligence or *strategic* intelligence and others. These are partly used interchangeably, although the justification is not always clear. Bose (2008) confirms that BI, CI and MI are the ones that are used interchangeably most often.

Two concepts that are rather similar are market intelligence and competitive intelligence (Jenster and Soilen, 2009). Although there is a disagreement with regard to the terminology used, conceptual agreements can be found throughout the literature (Fletcher and Wheeler, 1989; Hendrix, 1996; Prescott, 1999; Muller, 2007). Terminological disagreement is, according to the Global Intelligence Alliance (2008), also related to Geography, with different regions preferring different terms (supported by Vuori, 2006; Muller, 2007). Competitive intelligence appears to be more common in the Netherlands or the Anglo-Saxon countries (although counter-examples do exist), whereas market intelligence may be related more with continental Europe and to some extent Asia (Global Intelligence Alliance, 2008). Similar to these two terms, but with less appeal in terms of being used by authors and researchers, is the term corporate intelligence. Those three concepts have the largest conceptual agreement.

Competitive intelligence (CI) is not concerned with just competitors – this is referred to as competitor intelligence (April and Bessa, 2006) – but, just as MI considers customers and other market participants as well (Prescott, 1999). Based on a scoping study, the main difference between MI and CI is, that CI is a concept framed by practitioners and academic



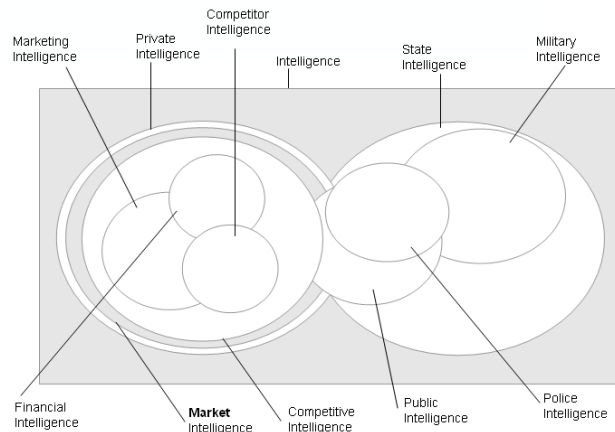
researchers disregarding the theoretical foundation of market orientation, whereas MI has – at least partly – been formed through the theoretical lens of market orientation. The integration of these terms in further work was applied where possible. The Society of Competitive Intelligence Professionals (SCIP, 2009) offers the following definition for CI:

*“Competitive intelligence (CI) is the process of monitoring the competitive environment and analysing the findings in the context of internal issues, for the purpose of decision support. CI enables senior managers in companies of all sizes to make more-informed decisions about everything from marketing, R&D, and investing tactics to long-term business strategies. Effective CI is a continuous process involving the legal and ethical collection of information, analysis that does not avoid unwelcome conclusions, and controlled dissemination of actionable intelligence to decision makers.”*

The difference between competitive and market intelligence with regard to theoretical background, is apparent from a slightly different focus. As outlined in the above definition of CI, competitive intelligence has the focus undifferentiated on *the competitive environment*, whereas MI focuses firstly on the assessment of customer preferences and needs (Kohli et al., 1993, in Alhakimi and Baharun, 2009), with the question of exogenous factors as government activities, competitors actions, technology development becoming questions of second priority (Alhakimi and Baharun, 2009). This marginal difference allows integration of topics, after assessment.

Jenster and Soilen (2009) have engaged in discussing the different terminologies used in current literature. The result is a Venn diagram showing the relation between different kinds of intelligence studies. Jenster and Soilen furthermore separate firstly private and state intelligence with only slight overlapping. Within private intelligence, market intelligence is the most comprehensive concept, that comprises competitive intelligence. Still both concepts appear to be almost congruent, which supports the idea of integrating both concepts. Therein included are competitor, marketing and financial intelligence (Jenster and Soilen, 2009).

Figure 5: Different areas of intelligence studies (based on Jenster and Soilen, 2009)



### 1.3.5.3 Conceptual disagreement

Parts of the literature that pretend to report on market intelligence operations are not useful in the context of this thesis. Terminological and conceptual disorientation may include cases where market intelligence is wrongly equalled with market and marketing research (Crowley, 2004; Callingham, 2004) or data mining (Chiu and Tavella, 2008). Such wrongful associations were disregarded, and are thus not integrated in this thesis.

The main differences between market intelligence and market research have been summarized by Wee (2001, p. 248) as follows:

*“The key difference between market research and market intelligence lies with market research’s predominant emphasis on the collection of primary data and the conduct of ad hoc projects and studies, rather than the continuous and systematic sourcing and analysis of information typical of market intelligence.”*

Data mining as a business tool, is also related to market intelligence, however, the two concepts differ significantly. Jenster and Soilen (2009) suggest, that data mining is a process of automating information discovery, whereby the latter is pursued with the goal to discover useful trends and patterns.

Also Business Intelligence (BI) has wrongfully been brought into relation with market intelligence (Global Intelligence Alliance, 2008). The Society of Competitive Intelligence Professionals, see both tasks separated as BI has – in contrast to CI or MI – a focus on

internal issues, with the main sources including key operational data that are arranged to benchmark and improve on internal processes. Typically, dashboards are used in this context.

Another related concept that will not be focussed on in the course of this thesis is the marketing information system. A common definition by Montgomery and Weinberg (1979, in Le Bon and Merunka, 2006, p. 395) is:

*“Market information systems enable marketing and sales managers to identify, interpret and react to competitive signals.”*

Le Bon and Merunka (2006) think that as a global concept, marketing information can best be understood by its decomposition into marketing research and market intelligence.

#### 1.3.5.4 Definitions for information, intelligence and knowledge

Another problem found in parts of the literature is misconceptions with regard to basic definitions. Especially contributions published by practitioners are prone to using wrong definitions. One example is that intelligence has sometimes been defined as information and/or knowledge, which is not correct. Both definitions are available and relate to specific concepts. Thus, they should not be used interchangeably or as a substitute for intelligence.

Generally, intelligence has been termed a form of “foreknowledge” (Global Intelligence Alliance, 2004). Powell and Bradford (2000) distinguish three levels of intelligence, namely: (1) point data, (2) process-based information and (3) system-based knowledge with an increasing contextualization within a declared system of understanding. Intelligence is an umbrella definition, in contrast to knowledge or information, and may take different forms. Therefore, intelligence is better described through its quality features which are: (1) timely, (2) actionable and (3) relevant (Prescott, 1999).

The output of the intelligence cycle is thus intelligence; input on the other hand may be data, information or knowledge. For the sake of this work input to a market intelligence system is to be referred to as information (supported by Sammon, 1984, in Attaway, 1998).

### 1.3.6 Separating market intelligence from industrial espionage

Market intelligence has sometimes been related to illegal and unethical practices (Pease, 1991). Although market intelligence may in some cases be related to sensitive and informal information this does not mean any proximity to industrial espionage or related illegal issues (Attaway, 1998; Global Intelligence Alliance, 2004). Market intelligence is a completely legal (Gross, 2000), or legal *and* ethical (Attaway, 1998) ongoing process of developing a holistic picture of the operating environment of a company (Global Intelligence Alliance, 2004).

The importance of legal and ethical behaviour in business has been rising as large companies have been hit severely by unlawful and corrupt practices (for example Siemens, Volkswagen, Enron, Worldcom and many others). Researchers from the market intelligence field have integrated a legal and ethical perspective already before the above mentioned scandals erupted. Pease (1991) has disseminated concise list of recommendations in terms of legal and ethical market intelligence practices, based on empirical research. This thesis expressly states the importance of legal and ethical behaviour and distances the market intelligence process from any unethical or illegal behaviour.

## **1.4 The Plant Building Industry**

### 1.4.1 Definition and general characteristics

Definitions for the term plant building were amply discussed especially in Germany in the 1980s and 1990s. A classical definition stems from the “Arbeitskreis Marketing” (1957, p. 759, in Geraldi, 2007) and provides an understanding of the industrial plant as “a system composed by a cohesive combination of interdependent soft- and hardware made by one or more suppliers for the attendance of a complex and unique demand”. Later additions to this definition focused on industrial plants as production units that have long life-cycles (Geraldi, 2007). In the Anglo-American world Hobday (1998, in Geraldi, 2007, p. 5) defined the term similarly as “any high-cost, engineering-intensive product or system supplied by a unit of production, in the sense of a single firm, a production unit or group of firms”.

A plant building company is an organization, that is at least partly responsible for the realization of such an industrial plant, whereby the management of such projects involves characteristics such as uncertainty with regard to possible changes in scope of supply, high integration need among project phases, use of a variety of knowledge bases, engineering skills and high involvement of user, supplier(s), institutions and regulatory environment. Plant building companies are thus organizations capable of coordinating the realization of industrial plants, which typically includes tasks such as coordination/project management, machinery, electrical engineering and automation, civil engineering as well as auxiliary and supply units (Geraldi, 2007).

The definition for a plant building company as suggested by Geraldi (2007, p. 9) is based on the *VDMA Groβanlagenbau* (VDMA – Plant building group) and provides both a comprehensive and practical view:

*“Plant building companies are companies which, based on their comprehensive know-how on technical, technological and managerial processes, are capable of providing financing, planning, designing, producing or global procuring, supplying, assembling, ramping up a production or power plant with budget of minimum 15 million Euros at least once a year.”*

Plant building companies supply process plants to almost every industrial sector, including transportation, pulp and paper, power, metallurgical, mining, construction material, chemical and electronic plants (Geraldi, 2007).

#### 1.4.2 Historic development of the plant building industry

The plant building industry has gone through many changes in recent decades. Having its origin in the industrialized regions of Europe, the USA and Japan, the industry has seen diminishing significance of home markets since the 1970s together with a growing importance of emerging markets. This has forced the industry to internationalize rather early in its development (Eberle, 2008).

A number of crises – such as the oil crisis of the 1970s, as well as, the steel crisis of the 1980s – has forced the plant building industry to consolidate early (Eberle, 2008). The substantial number of market participants was reduced significantly as a result, leaving a

smaller number of larger participants in the market place. This oligopoly (Geraldi, 2007; Kuerbisch, 2007) competed and still competes fiercely for orders in the international markets. The process of consolidation is still ongoing, and mergers and acquisitions – though to a lesser extent – continue to this day (Eberle, 2008).

Gradually, accelerating globalization has evolved not only into new opportunities on a worldwide scale, but in recent times also into intensified competition through new competitors entering the plant construction market. These new competitors, notably Chinese and South Korean enterprises, together with the revival of Russian competition, has increased the pressure on established companies (SBB, 2011). Some of these competitors are *hidden competitors* (Pease, 1991), as little information is available from the public domain. The latter fact is again an argument in favour of market intelligence processes, as will be addressed in the next chapter.

The process of technological progress in production equipment and automation, as well as, changing needs and expectations of customers, contribute to existing complexity in the field of business (Kuerbisch, 2007). Recent advances have notably been in linking formerly separated production steps into integrated ones, new automation models for improved efficiency in operations, process technologies capable of dealing with lower grade raw materials, as well as drive technologies with reduced electricity consumption. Monitoring technological progress in the industry is thus necessary in order to focus a plant building company's R&D activities on trendsetting projects and keeping ahead of competition, especially from low-cost countries.

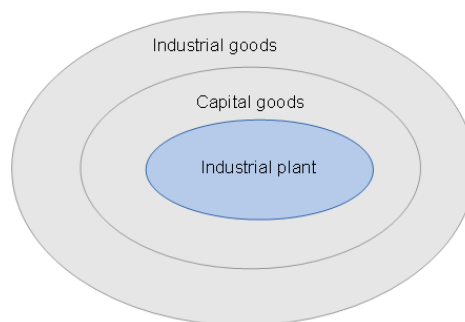
In the future, growing environmental concerns and the resulting legislative changes in terms of emissions and wastes regulations will have implications on plant builders (Eberle, 2008). These concerns will bring threats but also opportunities to plant building companies. Firms that develop solutions addressing environmental questions and bring them timely to the market may be able to make use of such emerging opportunities. The aforementioned items demonstrate, that a systematic process that constantly reviews the complex, demanding and changing external environment of a plant building company, is indispensable (Lackman et al., 2000).

### 1.4.3 Terminology review

In order to avoid omission of important plant building literature due to differing terminology, the short terminology review that follows, provides the necessary background for better understanding. This is important, as to ensure that no review or research work concerning plant building market intelligence has been neglected.

The term industrial goods and services refers to any good or service focused on business clients. Investment goods and capital goods are understood as goods or services regarded as investments, which are typically associated with “higher prices” and longer life cycles (Geraldi, 2007). They include all sorts of tools and equipment together with services associated with them such as maintenance, training or installation – and form part of the industrial goods market.

Figure 6: Industrial goods, capital goods and industrial plants (based on Geraldi, 2007)



Industrial plants are part of the investment or capital goods market. They strongly relate to the plant engineering and construction company (Geraldi, 2007). The latter may be referred to as *plant building*, *plant construction* or *plant engineering* company or a mixture of these terms such as *plant engineering and construction company*.

From the perspective focused on in this thesis, such terms should not be used interchangeably, as they refer to different abilities and scopes of supply and service. Engineering for example refers to the technical design and layout of a plant, whereas construction may relate to civil works, for which a plant building company is often not responsible. For this reason the term plant building company is used in the course of this work, as it is the most suitable one. It includes design and engineering, delivery of equipment together with commissioning of the equipment. The English sources show a preference towards the term “Complex Products and Systems” or CoPS (Geraldi, 2007),

therefore this term has been included in the comprehensive search mechanism (see next section).

#### 1.4.4 Scoping study assessing industrial plant building literature

After performing the terminology review and in order to assess the quantity and quality of the literature available on plant building, a scoping study was conducted. Search terms included plant building, plant engineering, plant construction, plant engineering and construction as well as complex products and systems and “CoPS”. This new scoping study did not emit a different picture than observed before performing the terminology review, which confirms the initial critique: there appears to be a lack of evidence with regard to managerial concepts to be applied to the plant building sector, specifically this is applicable for plant building market intelligence.

The literature available on industrial plant building displays a number of characteristics. Firstly, it appears that industrial plant building has not attracted widespread interest from academia and the few pieces of evidence, may be traced to an even smaller number of sources. There appears to be a lack of codified and published management concepts dealing exclusively with the industrial plant building industry.

Two universities, the University of Leoben, Austria, and the University of Siegen, Germany, have contributed to this topic. Papers and unpublished lecture hand-outs describe the situation in the industry, the most important characteristics, as well as, the plant building company and the plant building projects in general. Furthermore, the VDMA (German Association of Machinery Construction and Plant Building) contributes with a limited number of statistics and news articles on the state and outlook of the industry.

When searching on amazon.com a number of books written on plant building particularities do appear. Most of them are in German and deal with concepts that are of special interest to the industry, notably project and risk management, process engineering, plant design and ecological aspects associated with constructing large-scale industrial plants. Management concepts are, as stated above, rare and if available, lend themselves to industrial marketing and management. Industrial (or Business-to-business) management appears to be of great use also in plant building, as the latter is part of the larger industrial market. Authors such as



Backhaus, Webster and Fritz that focus on industrial management, seem to have influenced books and papers on industrial plant building.

### **1.5 Research Objectives**

The overall objective of this thesis is to construct a conceptual framework on market intelligence, that is specifically beneficial to the plant building industry (see Appendix No. 8). Beneficial means that it advances the understanding by expanding the knowledge base on the concept, and/or improves existing working conditions of people engaged in managing the market intelligence process. In other words this means, that it is the objective to construct a concept that takes into account the unique characteristics of the plant building industry.

For this reason the existing literature has been reviewed. The first research objective is thus to prepare an initial framework on industrial market intelligence. This is used to modify the definition of market intelligence, which was found to cover the concept inappropriately. Proposing a suitable definition for MI is thus considered a second research objective. Industrial marketing management has already been used as the foundation for plant building papers, for example in Kuerbisch's unpublished paper on plant building marketing and sales (2007). Initial conceptual framework development has been termed part of advanced research practices (Yin, 2009). Furthermore, there is an acknowledged need for a theoretical framework in competitive intelligence (which in the definition of Prescott is synonymous with market intelligence), or as Prescott (1999, p. 50) poses

*“...I suspect that one reason why CI has not gained more attention by academics is the lack of a theoretical framework.”*

This statement appeared in 1999 and is no longer applicable. However, Wright et al. (2009) conclude that in their point of view the field and practice of market intelligence is still evolving. This appears justified as the theoretical models established today are not able to effectively tie market intelligence into an organization, let alone a plant building company. No systematic review on market intelligence could be located in the course of the systematic literature review. Therefore the initial framework is also an integration of existing research work – and represents a first result.

This first objective is connected to two sub-objectives. Firstly, it is necessary to integrate the state of research in industrial market intelligence as to present a comprehensive view on the subject. This is then used to indicate and highlight the weaknesses of the knowledge base, used to generate the research strategy.

The third and main objective of this research is to construct a revised conceptual framework for market intelligence in the plant building industry. Again, this objective is connected to two sub-objectives. Firstly, it includes addressing the weaknesses located in literature and secondly, it disseminates an industry-specific concept not yet available. This has also resulted in additional knowledge, whereby this contribution to knowledge is referred to as the fourth objective of this research.

Table 1: Overview on individual objectives and the methodology and methods involved

| No. | Objectives/Sub-objectives   | Approach                  | Methodology                                  | Methods   |
|-----|---|---------------------------|--|---|
| 1   | Elaborating an initial conceptual framework on industrial market intelligence | Deductive approach        | Systematic literature review                 | Meta-synthesis, Thematic analysis   |
| 1.1 | Integration of fragmented state of research                                   | Deductive approach        | Systematic literature review                 | Meta-synthesis, Thematic analysis   |
| 1.2 | Highlight weaknesses in existing knowledge                                    | Deductive approach        | n.a.   | Reflective approach   |
| 2   | Proposing a valuable definition for market intelligence                       | Commonsensical, heuristic | n.a.   | n.a.  |
| 3   | Refined conceptual framework on plant building market intelligence            | Deductive approach        | Constructivist, qualitative, empirical study | Exploratory case study using semi-structured interviews, qualitative analysis and interpretation techniques |
| 3.1 | Addressing weaknesses in existing knowledge                                   | Deductive approach        | n.a.   | Semi-structured interviews thematic coding analysis   |
| 3.2 | Conceptual framework for plant building                                       | Deductive approach        | n.a.   | Semi-structured interviews, thematic coding analysis  |

|   |                           |      |      |                     |
|---|---------------------------|------|------|---------------------|
| 4 | Contribution to knowledge | n.a. | n.a. | Reflective approach |
|---|---------------------------|------|------|---------------------|

## 1.6 Value and Relevance of the Research

### 1.6.1 Importance of the plant building industry

Plant building is a huge, global market. The VMDA has calculated an annual turnover figure of EURO 175 billion in 2007 (VDMA, 2008). German plant builders have received orders of EURO 24.9 billion in 2010 (Gottwald, 2012). Although the market is highly cyclical this shows the enormous dimension and importance of the industry in monetary values (VDMA, 2008). Apart from that, the plant building industry remains a large-scale employer, as employment figures show that only in Germany more than 60,000 persons are employed by plant building companies (Gottwald, 2012), not taking into account the tens of thousands employees and workers employed at sub-suppliers of large plant builders.

The plant building industry will be confronted by a number of trends which will result in future business opportunities and according to Gottwald (2011) the industry may well return on a growth path. Substitution investments to reduce energy consumption, as well as, wastes and emissions, may generate business in the industrialized countries together with investments into cost-saving equipment and automation.

Emerging markets such as China, India and the Middle East have specifically been mentioned as continuing their expansion and thus opening new opportunities for large investments in production facilities (Gottwald, 2011). These investments will also be targeted by new competitors, which are to fight for market entry and additional shares (Gottwald, 2011).

In addition, these arguments support the construction of a conceptualization for an industry that apart from huge turnover or employment figures is a centre of competence in various technological fields that has created and commercialised substantial knowledge (VDMA, 2008). In 1985 Ghoshal argued that intelligence is rapidly becoming a major source of competitive advantage, especially in an era of globalized competition among firms, that are increasingly similar in technological and managerial competences, as well as, in the size and

scope of their activities. In addition, Pease (1991) addresses the increasing importance of hidden competitors. The plant building industry is and remains crucial in many economies. The importance of market intelligence to the plant building industry may be shown in terms of push and pull factors.

#### 1.6.2 Push and pull factors

Murphy (2005) purports that all firms must undertake some market intelligence. Push and pull factors are currently favouring the implementation of a market intelligence system within plant building companies. Pull factors are benefits related to the implementation of a market intelligence system, push factors are emerging competitors, respectively new entrants to the market (mainly Asian companies) that are heavily emphasizing market intelligence in their strategies and actions (Prescott, 1999).

A number of studies have empirically proven the positive influence of MI with regard to product development (Moss, 1979; Hendrix, 1996; Wren, Souder and Berkowitz, 2000; Malinen, 2003), market development (Prescott, 1999; Slater and Narver, 2000) and general and strategic planning activities (Makadok and Barney, 2001). Market intelligence may provide assistance in achieving better sales (Slater and Narver, 2000), especially better export results (MacPherson, 2000), it may foster good relations with key customers (Slater and Narver, 2000) and support incremental innovations in product related decisions (Slater and Narver, 1995; Vazquez, Santos and Alvarez, 2001). Ultimately, a market intelligence system may support gaining or defending the competitive advantage (Porter, 1980, in Le Bon and Merunka, 1999; Lackman et al., 2000). The need for intelligence in business management is according to Bose (2008) thus rising, because companies are faced with increasing competition taking place on a global scale. This may lead to a situation in which a competitive advantage is harder and harder to obtain or defend (Bose, 2008).

On the other hand, market intelligence has an increasing importance as more and more companies engage in intelligence related activities, many of them even in systematic and comprehensive process operations (Global Intelligence Alliance, 2008). Financial spending on intelligence operations has risen dramatically in recent years and the forecast for the next decades indicates a continuous increase in investment activities (Global Intelligence Alliance, 2008).

Countries with non-western cultures, especially in Eastern Asia, have a significantly different attitude towards intelligence gathering and application, as the report from Richard Best (1990, in Hendrix, 1996, p. 572) to the U.S. congress determines:

*“There has been concern that the advances of the East Asian countries derive in large measure not from their own scientific investigations, but rather from application of information carefully collected from around the world [...] The fact that Japan has a wide-ranging effort to collect information about trade opportunities and scientific and technical information has led Administrations and Congress to create programs to provide foreign commercial information and scientific and technical information (STI), including Japanese STI, to the public and especially to the business community.”*

The challenge posed to Western companies by the increasing Chinese competition, with regard to design and technology also with regard to intellectual property (IP) rights has increasingly been picked out as a central topic by news and media (VDMA, 2008).

It has been said that the success of a company is directly related to the quality of decisions made by its management (Ding, 2009). Essential in such a context is the availability of the right information, at the right time. In a competitive industry, this may be transformed into having access to actionable and reliable information about the competitive environment – both for long-term decisions and issues, as well as, for issues in the near future and those that are medium-term issues (Ding, 2009). Thus, the need for effective market intelligence operations in organizations is growing, with decision makers increasingly recognizing the role and importance of intelligence (Ding, 2009).

In general, market intelligence is an accepted and valuable concept for plant building, but more research is needed through the lens of plant building in order to construct an effective framework. The research would need to take into account plant building peculiarities, which may differ somewhat from the more general industrial market intelligence framework. Trim and Lee (2008) purport that market intelligence concepts need to be industry specific. From a social constructivist point of view, the idea of replacing universalistic conceptions by more particularistic ones is worthy of support. Majid and Khoo (2009) agree to such a stance

inasmuch as the importance of gathering intelligence may vary from industry to industry and idea that is shared by Jenster and Soilen (2009).

### **1.7 Outlook on the following Chapter**

Chapter two focuses on providing an overview of the state-of-affairs in industrial market intelligence and integrates the fragmented state of research as applicable. For this activity, the systematic literature review method is applied. Differences with regard to philosophical and methodological approaches in reviewing the literature are examined and discussed. This is important as to ensure an approach that is commensurate with the overall research philosophy and approach. Furthermore, the differences between traditional and systematic literature reviews are discussed and an explanation is given why in the context of this thesis a systematic review was preferred to a traditional one. The synthesis of the review is culminated into an initial conceptual framework.

## **2. Systematic Literature Review**

### **2.1 Introduction**

A literature review aims to address the critical points of current knowledge. A review includes analyses of particular contributions and thus looks for findings to substantiate the topic. The objective of the review is to provide the reader with the state-of-the-art research and findings, thus laying the foundation for a better understanding of future research options.

A systematic review is focused on a research question that may or may not enable identifying, appraising, selecting, analysing and synthesizing high quality research evidence relevant to the original question. It thus starts from different ontological/epistemological assumptions and may be related to different methodological practices than traditional literature reviews. Systematic reviews, although originating from medicine have been quite commonly used in other scientific areas (as well), including nursing, psychology, sociology, and more recently, business management.

The original aim of this review was to elucidate on the state-of-the-art of research in the area of market intelligence in the plant building industry. The introductory chapter of this thesis (see section 1.4.4) reported on a scoping study performed using different terms related to plant building. This scoping study revealed that little literature is available on the plant building industry in general, and that no study exists on plant building market intelligence. Concepts and texts dealing with the plant building industry using industrial management or industrial (business-to-business) marketing management as their basis were addressed (e.g. Geraldi, 2007; Kuerbisch, 2007). This strategy appears to be helpful and redesigning the review strategy proved necessary. The new approach involved a detailed and systematic review on industrial (B2B) market intelligence. It addressed some of the implementation difficulties in adopting the systematic review methodology.

This chapter includes a discussion of the systematic literature review methodology and its development. Furthermore, it is assessed with the regard to the philosophical assumptions and their fit with those assumptions that guide this particular research. This leads to modifications from the original systematic review made necessary in order to harmonize this technique – designed to improve the rigour of scientific working – with the theoretical

position of the author. Finally, the chapter will present a systematic review of eligible evidence on market intelligence in the industrial sector providing a basis for analysis and synthesis. It is accomplished through a comprehensive search for literature, its check for relevance and eligibility. Systematic reviews often use statistical techniques to combine results of studies, such as conducting a meta-analysis. This type of analysis is not appropriate in the context of this thesis, as many managerial studies are of qualitative nature, and meta-analysis and similar methods cannot sufficiently deal with the results of such research approaches (Dixon-Woods, Agarwal, Jones, Young and Sutton, 2005). The justification for each decision involved conducting this systematic review is given in the following sections. However, there are also many qualitative reviews which adhere to standards for gathering, analysing and reporting evidence. Especially, the EPPI-Centre has been an influential institution in developing routines and techniques for combining results of qualitative and quantitative research in systematic reviews.

The evidence included as per the parameters applied, is then analysed using thematic analysis. The analysis leads to a synthesis which enabled to structure and establish an initial conceptual framework on industrial market intelligence. Based on this initial framework, further research needs are defined and the course of action is determined.

## **2.2 Systematic Literature Review Methodology**

### **2.2.1 From “evidence-based practice” towards a “systematic approach” in literature review**

The evidence-based approach (EBA) builds on the premise of best evidence available out of an existing knowledge base and can provide guidance for interventions into operational needs of managers (Bryman and Bell, 2007). Roots of the concept can be traced back to the early 1970s (Cochrane, 1972 in Denyer and Tranfield, 2008).

The approach has been implemented successfully, especially in health care disciplines, with one of its main characteristics being the inclusion of hard scientific evidence, clinical expertise and individual patient needs and choices (McKibbin, 1998). The EBA, however, relies more on evidence found in the literature base than on clinical experience, for this reason McKibbin (1998) suggests, that librarians should become stronger partners in the improvement of health science.



Transferring this idea into managerial practice in general and into market intelligence specifically, the EBA appears to be a useful tool for enhancing fact-based reflections on an organization's environment. The market intelligence specialist within the company could be seen as or compared to the *librarian*, playing a key role in supporting evidence-informed decision making. However, placing stronger emphasis on literature than on practical experience (from the field) stands in opposition to the inquiry paradigm that is guiding this work. Therefore, experience will *support* evidence-based practice in this thesis.

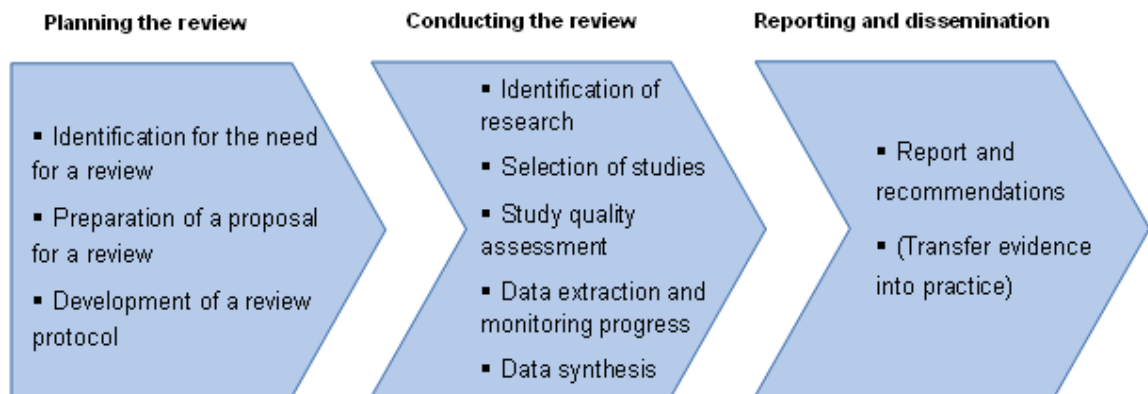
Although the EBA appears to have had a significant effect on the quality of interventions, medical science has been requested to further improve the quality of the review process, by applying a more systematic and scientific approach (McDermott, Graham & Hamilton, 2004). The systematic review of literature is a detailed technique providing an audit trail of the researcher's decisions, procedures and conclusions (Cook, Mulrow and Haynes, 1997 in Tranfield, Denyer and Smart, 2003) aiming at providing a transparent and reproducible process (Cook, Greengold, Ellrodt and Weingarten, 1997, in Tranfield et. al., 2003). The main advantage seems to be that systematic reviews can support the development of a more reliable knowledge base (Tranfield et al., 2003).

### 2.2.2 General principles of the systematic review methodology

A systematic review is, due to its strict routines and systematic approach, far more than a literature review in the traditional sense. It may be regarded as a research project in itself exploring a specific question. A systematic review can lead to identifying knowledge gaps or incongruent findings, which is the basis for identifying research needs (Denyer and Tranfield, 2008). For this reason, the systemic review was chosen and applied in this thesis, and serves as one of the methods in the elaboration of the initial conceptual framework.

The stages in conducting systematic reviews have received reasonable consensus with regard to its methodological characteristics (Davies and Crombie, 1998, in Tranfield et. al., 2003). The core steps are planning and conducting the review according to pre-defined sub-processes, as well as, reporting and disseminating the results of the review. These sub-processes have been defined, in order to raise the quality and reliability of reviews and are partly incorporated in this research work.

Figure 7: Process steps in systematic literature review (National Health System, 2008)



Planning activities included studying the concept of the systematic review tool, reflecting on the evidence-based concept and discussion of findings with exponents from academia. Furthermore, examples of systematic reviews, such as by Tranfield et al. (2003) or McDermott et al. (2004), were critically read, lessons learnt with regard to crucial items in reviewing were internalized and incorporated in this review work. In addition, scoping studies, as reported in the introduction, were conducted in order to initially assess the literature on market intelligence, as well as, on plant building.

The NHS Centre for Reviews and Dissemination (CRD), has produced concise guidelines (National Health System, 2008), systematically laying out the core principles and methods for conducting systematic reviews in health interventions. The NHS Centre for Reviews and Dissemination (2008, p. 3) explains the process as follows:

*“[...] a good review should focus on a well-defined question and use appropriate methods. A comprehensive search should have been carried out, clear and appropriate criteria used to select or reject studies, and the process of assessing study quality, extracting and synthesizing data should have been unbiased, reproducible and transparent.”*

Decisions concerning the search strategy can potentially bias review findings. In order to mitigate this threat, the NHS recommends a combination of several approaches, such as searching electronic databases, visually scanning reference lists, contacting experts and searching relevant internet resources. Such a search strategy is, according to the CRD

guidelines (National Health System, 2008), designed to be highly sensitive, so as to retrieve as many potentially relevant studies as possible. Using effective search terms involves breaking down the research question into concepts, without the need to structure the search, so that every element is used. This is stated in the CRD rules (National Health System, 2008), as the outcome may fail to show relevant studies simply because the element might not be prominent enough in the record. This notion was followed, with positive and negative implications, as it led to a substantial amount of literature retrieved.

Study selection is a critical issue in the review process. Inclusion criteria are made explicit; studies are assessed for these criteria derived directly from the research question. The sub-process itself includes sifting through the citations located by the search, retrieving full copies of potentially relevant citations, and identifying those that fulfil the inclusion criteria (National Health System, 2008). Justifications are to be given throughout the process, for all decisions taken by the researcher, as it is the aim of the systematic review to avoid pre-formed opinions (Cooper and Hedges, 1994, in Denyer and Tranfield, 2008).

Synthesizing data is the step following the systematic search and evaluation of available literature. It poses another challenge when implementing the systematic approach, as even indicated within medical research (Petticrew, 2001, in Tranfield et. al., 2003). Meta-analysis, favoured as the main analytical technique, is hardly able to deal with qualitative results. The reason is located in its philosophical and methodological roots, that privilege quantitative research results. Also Dixon-Woods et al. (2005) noted that current methods for synthesis favour quantitative forms of evidence, therefore additional research in this area is needed. The NHS Centre for Reviews and Dissemination has reacted on the trend to include qualitative along with quantitative research findings in systematic reviews. This reaction signals the improved standing of qualitative research results even in medical sciences, and opens new possibilities when synthesizing such findings (see chapter 6, Incorporating qualitative evidence, National Health System, 2008).

This is of importance, as market intelligence literature includes evidence prepared by qualitative methods. For this reason the selection of the appropriate data analysis and synthesis method is of importance. Dixon-Woods et al. (2005) suggest different options in their integrative approaches to qualitative and quantitative evidence. They recommend such methods as narrative summary, thematic analysis, grounded theory or meta-ethnography.

After careful study of the characteristics, thematic analysis was chosen as the most suitable method for this review. It allows for transparent and clear clustering of findings, due to the process-oriented nature of market intelligence. Thematic analysis labels the identification of major or recurrent themes in literature and summarizes findings of studies under these thematic headings (Dixon-Woods et al., 2005). Summary tables can then be produced, providing description of key points (Mays et al., 2001 in Dixon-Woods et al., 2005). The main advantages of this approach are clear identification of prominent themes as well as the structured approach that may be used when dealing with literature under the headers. The flexibility of this method allows the researcher considerable latitude, while at the same time generating significant results. This is important because of the sensitivity required to construct a solution to a practical problem.

The limitations with respect to the implementation of the thematic analysis are lack of clarity of the concept and the underlying processes and the limited ability to deal with contradictions in different pieces of evidence (Dixon-Woods et al., 2005). The first aspect relates to the question, how prominent themes should be recognized as being prominent. Possibilities in dealing with this problem include frequency of a topic in literature, or weighting according to the explanatory value. The latter option was chosen in this work. The second item, the limited ability to deal with contradictions, is not considered an issue in this work. The reason is, that contradictions are seen as providing direction for additional research.

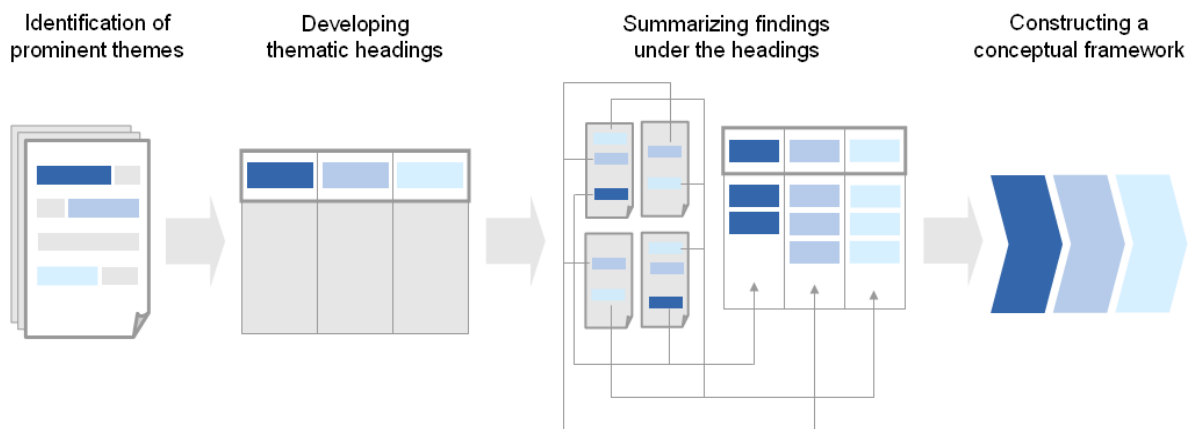
Another aspect in thematic analysis that relates to transparency is the questions of the approach applied (Dixon-Woods et al., 2005). Data-driven – also called inductive – refers to the fact, that the analysis is driven by the themes identified in the literature. Theory-driven – also called deductive – implies that categories have been defined in advance, without pre-consideration of the data. Both have their advantages and disadvantages which have been extensively discussed (Guest and McQueen, 2008, in Denyer and Tranfield, 2008).

After due reflection of both types of analyses the implementation of the deductive form was chosen. Conceptual clarity is an issue in market intelligence, the process-oriented line of actions in market intelligence allow the application of a deductive approach. The items from the intelligence cycle (see p. 21), such as gathering, analysing and disseminating were chosen as thematic headers. Individual steps in the process of conducting the thematic

analysis are made explicit and can be traced in the following sections. Such an approach is recommended when dealing with issues as clarity and transparency.

In order to obtain new interpretive constructs, the thematic analysis is based on the recommendations suggested by Thomas and Harden (2008) of the EPPI-Centre of the University of London. They summarize an approach that is in line with the deductive approach here and bases on three process stages: (a) identification of prominent themes, (b) summarizing the findings under thematic headings and (c) development of a theoretical (conceptual) framework.

Figure 8: Thematic analysis using a deductive approach (author's own scheme, based on Thomas and Harden, 2008)



A structured approach – supporting readability – may be helpful taking into account that the review will serve as the basis for the empirical part of this thesis. Choosing appropriate thematic headings facilitates the analytic process. This in turn supports the synthesis, where the knowledge base is summarized into an initial conceptual framework including discussion and appraisal.

### 2.2.3 Deploying systematic review methodology in managerial sciences

In practice, reviews are often conducted in a narrative way (Fink and Hart, 1998 in Tranfield et al., 2003). Critique towards this approach arising from the academic environment includes a lack of thoroughness, as well as, promoting bias (Dixon-Woods et al., 2005). This implies that narrative (traditional) reviews may not produce meaningful and/or reasonable results (Tranfield et al., 2003). Tranfield et al. (2003) have proposed the implementation of the systematic review tool in management research in order to improve the quality of the process by explicitly expressing the underlying assumptions and values of the researcher.

Academic fields, with their idiosyncratic characteristics, may require their specific approaches tailored to serve particular purposes (Denyer and Tranfield, 2008). The sociology of knowledge in the field of management has been characterized by terms such as “soft”, “applied”, “rural” and “divergent” – in contrast to medical sciences termed as “hard”, “pure”, “urban” and “convergent” (Tranfield and Starkey, 1998, in Tranfield et. al., 2003, p. 212). This relates to the scientific status of management research. Whitley (1984) calls it “practically oriented social science”, as it is based on a fragmented state of knowledge and research expressed in a low degree of reputational control over significant standards.

The incorporation of the systematic review tool into management studies is therefore problematic with regard to the sociology of knowledge. Reviewing qualitative studies alongside with quantitative or mixed methods research draws on work underway and is generally recognized as a field with improvement potential in the systematic review process (McDermott et al., 2004). This notion was supported by Berry (1995), who argued in favour of the importance of qualitative work in management studies, which is in contrast to the fields and disciplines privileging a positivist and quantitative tradition, from which the systematic review originates (Tranfield et. al., 2003). Denyer and Tranfield (2008) see additional potential for conflict when incorporating this methodology in management research. This relates to competing ontological and epistemological positions, possibly leading to methodological disputes. Assumptions on which the positivist view(s) build on, have shaped the systematic review, which in turn leads to conflicts when incorporating the technique into a qualitative and/or naturalistic study. The same is true for aspects such as validity and reliability of synthesized evidence.

The main advantages of the systematic approach lie in its strict and explicit routines, thus increasing the trustworthiness of a review through the applied rigour. These advantages justify transferring the concept into managerial sciences, although this procedure certainly bears risks. In order to mitigate these risks, the author acknowledges the need for modifications in order to meet the specific requirements of management research, as well as, to ensure compatibility with the guiding paradigm. The idiosyncrasy of management science forces adjustments on the concept, which are outlined in the next section. These adjustments, as with regard to the inquiry paradigm, are included in the actual review, for example quality assessment.

#### 2.2.4 Implementing the systematic literature methodology

A systematic review in its original meaning is a transparent and objective approach with the aim of eliminating or at least minimizing bias. On grounds of own epistemological and ontological assumptions (see section 3.3.1), such a stance can only in part be accepted. Promoting rigour and quality is a sublime objective in research, however, objectivity cannot be incorporated (see section 3.3.1).

According to the NHS Centre for Reviews and Dissemination, systematic reviews usually apply four core principles: replicable, exclusive, aggregative and algorithmic. These are based on quantitative and positivist thinking and will therefore not be supported in this review. Denyer and Tranfield (2008) provide a modified set of principles for reviews in organization and management sciences: transparency, inclusivity, explanatory and heuristic to meet the needs of the issues addressed above. These principles reflect a more interpretivist approach in research and can thus be supported. The four principles serve as a helpful tool as the following explanations indicate.

*Transparency* relates to explicitness in processes and methods employed, to the link from research evidence and reviewer's conclusions, and to making clear assumptions underpinning the review (Denyer and Tranfield, 2008). Due to its high relevance, it is followed throughout the thesis, and relates to disclosing major decisions and events.

In terms of *inclusivity*, Boaz and Ashby (2003, in Denyer and Tranfield, 2008) argue that the selection should be based on the criterion *fit for use* rather than on the hierarchy of evidence. Pawson (2006, in Denyer and Tranfield, 2008) outlines that the question whether to include a piece of research or not should be based on the fact if it adds to the understanding or is able to influence policy in the area of research. This is worthwhile to consider, as authors of articles, even those published in journals with highest impact, sometimes fail to disclose detailed information on methodologies applied. In this regard, methodological rigour of a piece of evidence is subordinate to explanatory value, as long as there is a justifiable level of trustworthiness.

*Explanatory* relates to the synthesis, that involves the process of bringing the pieces from individual texts together. Denyer and Tranfield (2008) see aggregative synthesis as designed

to mitigate bias. Interpretive and explanatory syntheses are, according to Pawson (2006, in Denyer and Tranfield, 2008, p. 680) “active” and “creative” methods going beyond merely descriptive reporting. For the purpose of this review, the synthesis is defined as being *rather aggregative*. *Rather* refers to the idea that this research does not – on ontological grounds – fear bias in a meaning-making act, such as a researcher operating under objectivist ontology would. *Aggregative* means that contradictory results will be shown, reflected upon, transformed into research questions and serve as objects of the empirical study.

*Heuristic*, in the meaning of an experience-based technique, allows for problem solving and learning in a useful way leading towards progress, rather than producing a specific solution to a problem (Denyer and Tranfield, 2008). It has been argued that aiding managers in their specific problems by heuristic findings may be better accepted in the form of valid evidence of what works. Kurt Lewin once pointed out “... that nothing is as practical as good theory”. A heuristic approach appears to be preferable in management research, or as Jenster and Soilen (2009, p. 7) put forward in their book on market intelligence:

*“Most managers take little interest in theories, but are concerned with what works in practice.”*

These core principles relate to the sociology of knowledge, and have therefore been re-defined in order to do justice to management science as practically-oriented science. The centrality that connects all the above mentioned items is to produce a review that has the feature of something that works in practice.

The author considers himself to be a qualitative researcher (see section 3.3.3). This is derived from the author’s inquiry paradigm, itself derived from ontological, epistemological and methodological positions (Lincoln and Guba, 1985). Considering Whitley’s (1984) description of managerial sciences and extending it to Cronbach’s (1975, in Hoepfl, 1997) definition of the task of the social scientist, it is the aim of the author *to pin down the contemporary facts*. Qualitative research, finding increasing recognition even within medical sciences (McDermott et al., 2004), has especially in managerial studies a legitimate and prominent position and has led to an accumulation of a substantial body of knowledge (Tranfield et al., 2003). This means that the review conducted by a qualitative researcher, which precedes a qualitative empirical study, should not ignore those characteristics



normally associated with research under qualitative auspices. So, although the systematic review methodology is certainly not a particularity of qualitative research work it may be considered a valuable tool, especially in terms of quality, rigour and trustworthiness.

Yin (2009) in his work on case study research proposes the development of initial theory (i.e. initial framework) preceding empirics as a feature of advanced research work. The systematic review, as a high-profile method, was selected in order to undertake initial theoretical work. It is an accepted method, but it is also time-consuming. It avoids re-doing research that has already been done by others, due to its comprehensive, sensitive and careful search strategies.

### **2.3 A Systematic Review of Literature on Industrial Market Intelligence**

#### 2.3.1 Aim of this review

The original aim was to undertake a systematic review of qualitative, quantitative and mixed methods research evidence on *market intelligence practices in the plant building industry* in order to develop an initial theoretical framework for the empirical study.

Denyer and Tranfield (2008) suggest, that any systematic review should start with a clearly formulated research question that can be answered. This principle guides the review. The initial central research question was therefore posed as follows:

*“How can market intelligence be conceptualized for valuable application in the plant building industry?”*

#### 2.3.2 Search strategy

##### 2.3.2.1 Literature scoping

Tranfield et al. (2003) propose scoping studies in the field in management research as a means to assess the amount of literature. The NHS “Literature Search Process: Protocols for Researchers” (2007) calls it initial or pilot searches, and attaches further purposes to their recommendation. Scoping studies should also include the review of search terms with the aim of identifying a range of search terms by considering synonyms and differences in terminology across national boundaries among others. The latter issue has already been addressed in the introductory chapter (see section 1.3.5.2).

Several scoping studies were conducted between August and September 2011 and included searching electronic databases, such as those included in EBSCO for existing literature reviews and suitable studies. Furthermore the internet was searched using Google Scholar. The search term employed was market intelligence *and* plant construction. As mentioned in the introduction such a search yields no acceptable result (see section 1.4.4), therefore additional searches were performed.

Synonymously used terms (see introduction, discussion on terminological and conceptual issues) included in the new scoping study approach were *market*, *competitive*, *competitor*, *strategic*, *marketing* and *corporate* intelligence. Similar terms for plant building are *plant engineering* and *plant construction* or *complex products and systems* (CoPS). These findings were incorporated into another scoping study conducted on September 9, 2011. Still, this approach led to an inappropriate number of studies on plant building market intelligence, as plant building and synonyms yielded almost nothing, complex products and systems retrieved very little and in many cases CoPS yielded results such as communities of practice (however not in connection with market intelligence) or cops in the sense of police officers.

Therefore, another trial was undertaken, one that includes those concepts most likely associated with market intelligence: a search for the exact words *market intelligence* or *marketing intelligence* or *competitive intelligence* or *competitor intelligence* or *corporate intelligence* or *strategic intelligence* but with no other constraint in the search terms. This search also performed on September, 9, 2011 – unsurprisingly – yielded 16,600 hits (on Google Scholar), far too many to be meaningfully analysed.

Therefore the approach had to be changed to a more sophisticated one in order to achieve a maximum of valuable results, as many of the results of the previous approach were not concerned with market intelligence. Therefore, and based on the terminology review as described in the introductory chapter, *market intelligence*, *competitive intelligence* and *corporate intelligence* were searched for – as these concepts have the greatest conceptual agreement. The use of the term intelligence remained central. This led to developing the search outline in a systematic way, as the aim to create effective search functions that lead to manageable and valuable result lists became essential. Therefore, the revised initial central research question was defined as:

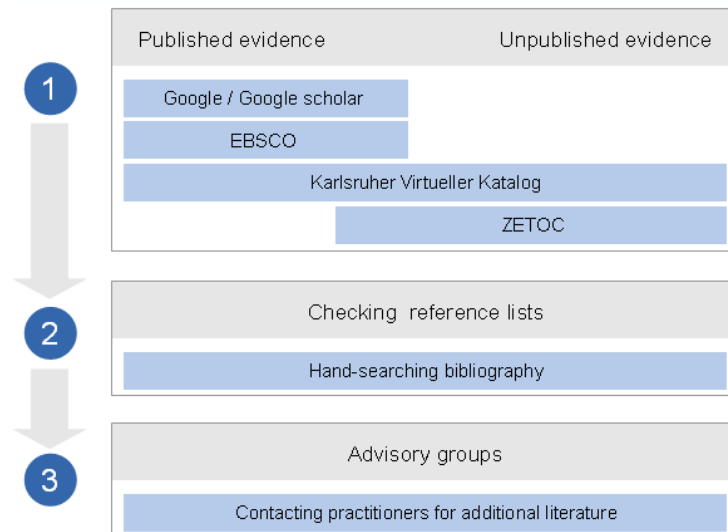
*“How can industrial market intelligence be conceptualized valuably?”*

2.3.2.2 Search outline

The search outline included a three-step approach, searching for published and unpublished results. Furthermore, the three-step approach included checking reference lists and approaching experts. A complete overview of the review process is included in the form of a flowchart in Appendix 1.

A range of full text and bibliographic databases was searched, including EBSCO Research Databases, which included the British Library Document Supply Centre, Inside Serials and Conference Proceedings, Business Source Complete, E-Journals, Library, Information Service and Technology Abstracts as well as the Education Research Complete. In addition, Google Scholar was searched, due to its powerful search algorithms as well as its extensive database sources, such as Emerald, Jstor, Elsevier and Questia etc.

Figure 9: Three-step search strategy (author’s own scheme)



Furthermore, the Karlsruher Virtueller Katalog (KVK), which involved searching German (SWB, BVB, HBZ, HEBIS, KOBV, GBV), British (COPAC, British Library), US (Library of Congress, WorldCat) and Austrian (Gesamtkatalog) databases, was screened. The CRD (National Health System, 2008) guideline proposes to search for unpublished sources in connection with a systematic review. ZETOC was implemented to search for conference proceedings; furthermore, the KVK, with its extensive database, also supported searching for unpublished studies and proceedings.

The NHS Literature Search Process (2007) additionally recommends checking reference lists and bibliographies of retrieved evidence, as well as, hand searching authors identified as researchers in the specific area, both of which proved to be applicable techniques. McDermott et al. (2004) proposed to integrate practitioner knowledge in a specific area of research. Denyer and Tranfield (2008) refers to practitioner knowledge as “advisory groups”, which can be helpful in defining the broad topic area to be investigated and identifying the specific areas within the topic – especially in areas where there is little research evidence available. The opportunity was taken at several instances to approach practitioners in order to ask for their knowledge on additional literature, which further expanded the evidence list.

Framing the search outline was a time consuming process. Search techniques of the NHS Literature Search Process (2007) have been considered, and the following ones have been adopted here:

- (1) Carrying out separate searches for individual concepts in order to increase results of potentially relevant studies;
- (2) Using Boolean operators AND, OR;
- (3) The wildcard “\*” and
- (4) the advanced search functions where possible.

For Google scholar, three separate search strings were constructed using the advanced search function, each one focusing on one of the three most applicable terms *market intelligence*, *competitive intelligence* and *corporate intelligence*. All three search terms were used in connection with the most basic features of the intelligence cycle, i.e. *information gathering intelligence dissemination* which resulted in exclusion of many previously found results that were actually not concerned with market intelligence. One example of such inappropriate results was literature on intelligence as a property of mind.

In EBSCO, only one search function was used to cover the same concepts as in the Google search. This was possible, as the advanced search function allowed (in contrast to Google Scholar) to include more search lines to cover additional search terms. Again, the concepts with the highest compatibility were used i.e. *market intelligence*, *competitive intelligence* and *corporate intelligence* – together with the defined terms *information gathering intelligence dissemination*.

ZETOC did not allow for such a comprehensive search function, so three search terms were used separately, including *market intelligence*, *competitive intelligence* and *corporate intelligence*. Also the Karlsruher Virtueller Katalog does not allow for construction of search functions (advanced searches). After contacting the technical department of the catalogue, which confirmed this insight in an email, the terms *market competitive corporate intelligence* were searched for and the result was used as a cross-check, by comparing it to the results obtained from EBSCO and Google Scholar.

In addition, the Siemens “Corporate Information Research Center (IRC)” was contacted. This centre is an internal information service provider of the Siemens Corporation for technology and business information. The services include reports on current technical and economic issues, individual research, newsletters, literature databases, library services and information on standards. The IRC provides demand-driven information for different cases based on input from professional providers such as analysts, brokers, literature, press databases and other external information providers on favourable conditions.

### 2.3.3 Search results

This search strategy resulted in a total of 5,360 citations, and individual searches were created in the course of September 2011. Results and search functions were saved and placed on the favourites list in the Explorer browser, so as to re-check potential additions to the results list at a later point in time. Re-checking the search terms employed in a systematic review, may be considered as important due to the speed at which databases and the internet are expanding.

Even by employing such an approach to the search outline, no systematic literature review on industrial market intelligence was located, although different narrative reviews were located with many of rather poor quality. This is important as the CRD (National Health System, 2008) guideline recommends including a justification for undertaking a systematic review. The fact, that no systematic review could be located, forms the basis for the following undertaking. In fact, conducting this systematic review enlarges the ranges of major goals in this thesis (see section 1.5). The fragmented state of market intelligence research was criticized in the introductory chapter. Therefore, the initial conceptual framework is not only a theoretical part of this thesis, but represents a contribution to knowledge in itself.

The result of the systematic searches was a large, but manageable list of evidence (see table 2). Many pieces of research that could be extracted improved the theoretic understanding and demonstrated the popularity of the concept. The outcome from the very sensitive approach (three search terms in Google; three other databases searched) led to a high workload. After screening the literature (see figure 10) the result confirmed a fragmented knowledge base in market intelligence with low reputational standards over significant details of the process.

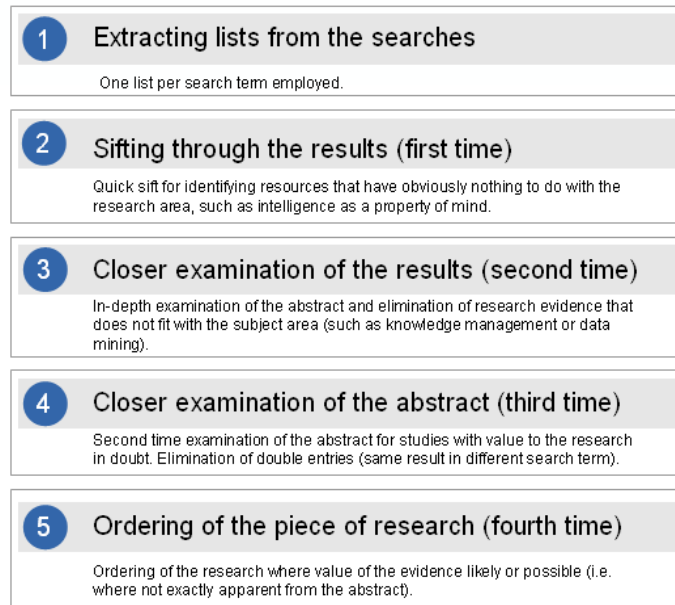
From the searches retrieved, result lists were extracted and printed for improved examination. This process was time-consuming especially for evidence found at EBSCO, KVK and Google scholar. ZETOC allows the production of results that are extractable as .txt files and include straight away all relevant information on the piece of evidence, such as title, year of publication and the abstract.

Table 2: Search results and number of studies extracted

| Source                                  | Date searched      | Hits         | Title or abstract | No. of studies extracted |
|---|--------------------|--------------|-------------------|--------------------------|
| EBSCO                                   | September 27, 2011 | 1,183        | both              | 23                       |
| KVK                                     | September 29, 2010 | 673          | both              | 5                        |
| ZETOC (three search functions)          | September 09, 2011 | 860          | both              | 5                        |
| Google Scholar (three search functions) | September 09, 2011 | 2,643        | both              | 27                       |
| Information Research Centre             | June 16, 2009      | 1            | both              | 1                        |
| <b>Total</b>                            |                    | <b>5,360</b> |                   | <b>61</b>                |

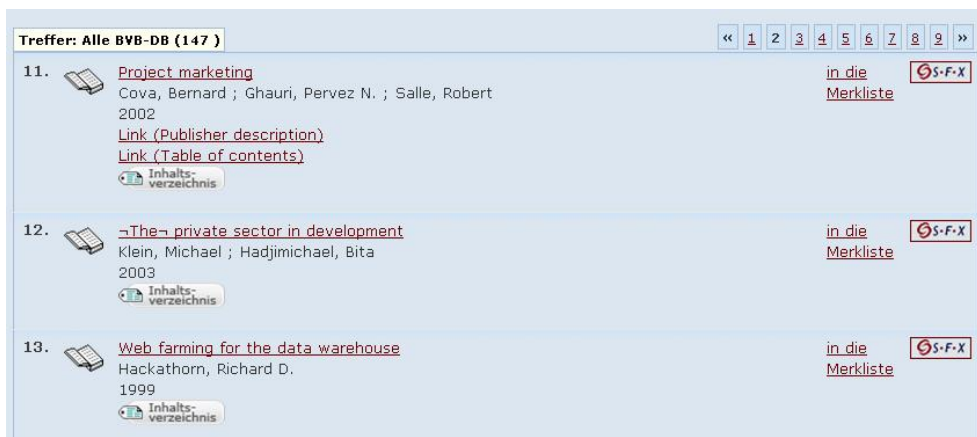
The process of examination of the search results included a five-step strategy. This involved sifting through titles and abstracts of the located research evidence in order to identify potentially relevant studies. Due to the high number – based on the sensitive search terms – this process was again time-consuming.

Figure 10: Strategy adopted in examining and extracting research evidence from search results (author's own scheme)



Of these citations 5,299 were rejected at the different steps, as outlined above. In earlier steps these exclusion criteria were mostly related to obvious incompatibility with the overall research questions, or research in languages such Chinese or Hungarian, that could not be used due to lacking language ability. Examples for obvious incompatibilities are papers on artificial intelligence, market reports on the development of specific industries in certain countries (often termed intelligence reports).

Figure 11: Example for inadequate search results eliminated at first sight (screenshot of results from KVK Search – BVB)



In the following steps of the literature examination process, exclusion criteria were more elaborate and included for example pieces of research declared as dealing with market intelligence, but in reality – when carefully examining the abstract – had their focus on concepts such as data mining, market research or web mining (see section 1.3.5.3). In addition, double-citations, i.e. pieces of research that were found on more than one search list, were excluded.

The final number of potentially relevant citations, which had to be retrieved for a more detailed evaluation of the full text was 61 pieces of literature. After hand selection of researchers (also from various discussions with experts) and by sifting through reference lists, another 68 pieces of research were added to this tentative list. This approach led to a total of 129 pieces of literature.

Table 3: Tentative list of literature reviewed

| Method  | Date searched             | Title or abstract | No. of studies extracted |
|---|---------------------------|-------------------|--------------------------|
| Systematic searches on Google Scholar, KVK, EBSCO, ZETOC, IRC       | September 2011            | both              | 61                       |
| Cross-checking references of potentially relevant studies           | May 2010 – September 2011 | both              | 27                       |
| Hand searching of relevant authors (also from contact with experts) | May 2010 – September 2011 | both              | 41                       |
| <b>Total</b>  |                           |                   | <b>129</b>               |

Obtaining the studies was undertaken using a two-step approach. Either the study was available as download with the respective database or if that was not possible, the study, article or book was acquired via interlending from the Upper Austrian regional library in Linz. This included retrieving research from abroad, as much of the evidence was not available in Austrian libraries or universities. Tentatively relevant identified research items could be retrieved using this approach.

After reading through all the research evidence acquired, a total of 37 pieces of literature was additionally rejected, essentially due to incompatibility with the main research question.



These rejections were associated with the fragmented state of the literature and the related conceptual and terminological disagreements. Some works on market intelligence were only superficially concerned with the concept itself and had, following more detailed analyses, different foci. However, the main reason for obtaining the text was that some abstracts simply did not contain enough information to make a judgement beforehand and were therefore acquired for detailed examination. This left 92 pieces of evidence to be evaluated using inclusion and exclusion criteria.

In order to manage the literature, a separate list was created. This list contained the necessary information on the literature, as well as, if and why or why not it was to be used in the systematic review.

Figure 12: Screenshot of the literature list prepared as a result from reviewing the literature

| No. | Title  | Author       | Year | Type of document    | Status | Ordered/download | Systematic search              | Non-systematic search (add.) | Used for systematic review | Exclusion criteria applied |
|-----|--|--------------|------|---------------------|--------|------------------|--------------------------------|------------------------------|----------------------------|----------------------------|
| 1   | Competitive Intelligence   | Wolter       | 2011 | Book                | Read   | Interlending     | Google: corporate intelligence | n.a.                         | Yes                        | n.a.                       |
| 2   | Key activities of competitive intelligence   | Muller       | 2010 | Article             | Read   | Interlending     | Google: corporate intelligence | n.a.                         | Yes                        | n.a.                       |
| 3   | Wikipedia: Competitive Intelligence  | Wikipedia    | 2010 | Open source article | Read   | Downloaded       | n.a.                           | Hand searches                | No                         | Open source document       |
| 4   | Competitive Intelligence Incorporate new perspectives  | Sharp        | 2010 | Article             | Read   | Downloaded       | n.a.                           | Hand searches                | Yes                        | n.a.                       |
| 5   | A market intelligence primer   | Crowley      | 2010 | Online article      | Read   | Downloaded       | n.a.                           | Reference list               | No                         | No citations               |
| 6   | Assessing the impact of salespeople's field-based competitive intelligence on product competitiveness and brand preference | Le Bon, Rapp | 2010 | Report              | Read   | Interlending     | EBSCO                          | n.a.                         | Yes                        | n.a.                       |

### 2.3.4 Inclusion and exclusion criteria

Defining inclusion and exclusion criteria was completed after all pieces of evidence were read. In a next step, the inclusion criteria were applied (Bryman and Bell, 2007) to the 92 extracted and potentially fitting studies. The parameters used were retrieved from McDermott et al. (2004) and are defined as: group diversity, population, outcome, study type and study language. Time frame was not included as an exclusion criteria, as some pieces of literature were considered to be advancing the understanding although they were published decades ago.

Table 4: Inclusion and exclusion parameters applied (author's own scheme, based on McDermott et al., 2004)

| No. | Parameters      | Inclusion criteria   | Exclusion criteria   |
|-----|-----------------|--|--|
| 1   | Group diversity | Generalized studies focusing on a varied sample of organizations or studies on companies from the industrial goods sector.                                       | Studies focusing solely on companies from the consumer goods sector.<br>Studies on market intelligence in one particular country only. |
| 2   | Population      | Studies which focus on real existing market intelligence operations, performing market intelligence according to the basic principles of the intelligence cycle. | Studies focusing solely on intelligence software, data warehousing or other virtual solutions.<br>Studies on industrial espionage.     |
| 3   | Outcome         | Studies which highlight both managing the processes and results of market intelligence.  | Studies which do not report on processes and results of market intelligence.   |
| 4   | Study type      | Empirical (quantitative, qualitative and mixed methods) and theoretical research.  | Book reviews, opinion pieces, literature reviews etc.  |
| 5   | Study language  | Studies published in English or German language.   | Studies published in languages other than English or German.   |

The details of the inclusion criteria are deemed important and are thus reported in short below:

- (1) Group diversity: Research evidence from generalized studies reporting on a diverse sample of companies from consumer and industrial companies or studies focusing on companies from the industrial goods sector were included. On the other hand, research focusing only on consumer goods was excluded. This is supported by the views from Zinkhan and Gelb (1985), who argue that intelligence efforts of industrial marketers differ from those of consumer marketers.
- (2) Population: It appears straightforward, that market intelligence operations conducted by real teams, involved in gathering, analysing and disseminating intelligence are essentially more complex in contrast to solely relying on software solutions. This is

supported by the views of Xu and Kaye (1995) who argue in favour of a human-computer mixed model, other researchers argue for an exclusively human evaluation and interpretation system (Fletcher and Wheeler, 1989; Rothberg and Erickson, 2005; Kelly, 2006). The reason for this argument lies in the fact, that data is best analysed and interpreted with a knowledge background, although, undeniably, some parts of the process are best computerized for improved efficiency. Also, the intelligence cycle in its most basic form (information gathering, interpreting, disseminating intelligence) had to be visible, not explicitly, but at least implicitly from the text, to be accepted with regard to the synthesis. This is due to the fact, that the intelligence cycle has been termed as the “doing of intelligence” (Global Intelligence Alliance, 2004, p. 11) and as such is, of relevance to this study. Examples of rejected studies were those on corporate or industrial espionage (see section 1.3.6).

- (3) Outcome: Concerning the outcome of the studies, research reporting on both processes and outcomes relating to intelligence operations were included. Addressing just the one or the other was deemed to be a reason for exclusion, as market intelligence is a complex process, composed of several steps which is difficult to implement in an advanced and effective manner (Global Intelligence Alliance, 2008).
- (4) Study type: The author acknowledges the usefulness of empirical and theoretical research in the interpretive approach to building a higher category framework. Both, quantitative and qualitative research, as well as, mixed methods research were included, even in the case, that methodology was not explicitly stated. Opinion pieces, research from questionable sources, research with no citation or references, reviews of books, studies and other research from not clearly identifiable sources were rejected.
- (5) Study language: Only studies disseminated in the English or German language were included in the synthesis.

In general, terminological disagreement was disregarded. Emphasis was placed on the understanding that the piece of evidence enriched the review with, taking into account the inclusion parameters. Research with strong conceptual disagreement, was generally neglected, for example on business intelligence, as the focus is frequently placed on

software, virtual and data warehouse solutions (supported by Liebowitz, 2006), which falls under exclusion criteria number two. After application of the exclusion criteria, a total of 62 studies were left for quality assessment.

#### 2.3.5 Quality assessment

The aim of including a quality assessment stage into a systematic review is to exclude pieces of research, that do not provide clear answers to the research question. This method of exclusion is undoubtedly beneficial to studies with positivist ontological positions, however, with regard to assessing research with quantitative and qualitative methodologies, there is no generally accepted quality assessment method available (Dixon-Woods et al., 2005). Furthermore, and as already mentioned, there is a philosophical conflict, as quality in the context of the systematic review actually implies validity and reliability. Many qualitative studies are not measurable in such terms.

For above mentioned reasons, all the research evidence produced by the systematic review and acknowledged to fit with help of inclusion criteria, has been included for synthesis. This left a total of 62 pieces of research for the synthesis. Not to undertake a quality assessment when reviewing quantitative and qualitative research is, according to Dixon-Woods et al. (2005), a choice of equal rights. Jensen and Allen (1996, in Dixon-Woods et al., 2005) suggest that research evidence should not be excluded for quality reasons, as this could lead to excluding evidence of particular importance to the research and thus lead to serious omissions. The rationale behind this is, that including research with methodological surface mistakes is the lesser of two evils. Thus the most important characteristic of a text was if it added to the understanding of the topic by expanding the knowledge base.

#### 2.3.6 Deductive thematic analysis

Since no explicit quality assessment was conducted on the evidence, the number of studies included for analysis equalled 62. The deductive analysis was performed, after the thematic headings were elaborated.

Thematic headings are used to group relevant chunks from the content of the literature. These headers are derived from literature which leads to a deductive analysis. The Global Intelligence Alliance whitepaper (Global Intelligence Alliance, 2004) refers to the intelligence cycle as being at the core of any intelligence operation, which is the reason why

the items of the cycle are being used as the thematic headers. Attaway (1998) brings the intelligence cycle into close relation with the “doing” of intelligence. However, other possibilities for establishing thematic headings would have existed. For completeness two other options are briefly discussed. The first one is the technology intelligence framework developed by Kerr, Mortara, Phaal and Probert (2006), that distinguishes between the framework, the systems and the process level. The second option is the model by Quinn (1985, in Kerr et al., 2006) that differentiates among four different modes of intelligence: central, decentralized, informal intelligence and diffusion throughout the company. These were not chosen, as there were few pieces of evidence available that would support thematic clustering in such ways. Instead, the intelligence cycle, which is the most basic description of an intelligence process, allows clustering of all the data gathered.

As discussed in the introduction, there are different cycles in use throughout the literature. In order to facilitate the analysis of the texts, it was best to avoid simplistic cycles as defined Jenster and Soilen (2009). In their view the intelligence cycle is composed of “collecting”, “organizing”, analysing” and “disseminating”.

Prescott’s cycle (1999) is more elaborate and was thus used as the basis for the development of the thematic headings. He characterizes the components of the intelligence cycle as follows:

- (1) Needs analysis,
- (2) Observing and monitoring,
- (3) Collection from external and internal sources,
- (4) Structuring and eliminating,
- (5) Analysis,
- (6) Dissemination,
- (7) Storing, and
- (8) Utilization and feedback.

In order to make the analysis increasingly clear, Prescott’s cycle (1999) was enlarged to more precisely render visible individual stages of the cycle. Between the “needs analysis” and “observing and monitoring”, the “sources of environmental information” (Ghoshal, 1985) were inserted as an additional header. These sources refer to a range of possible

locations where to receive or look for relevant information. This is an essential aspect in an intelligence system.

The step “observing and monitoring” was be renamed and referred to as “collection strategy”, as observing and monitoring are merely synonyms. The use of “collection strategy” improves the understanding in a way that gathering information is, firstly, an active process with choices and implications. Secondly, collecting may be undertaken in several different ways. Collecting information is on the one side related to an observing, monitoring style, but also to a deliberately, actively searching style. It is the aim to tap many different sources in order to draw a more comprehensive picture of the future external environment.

“Structuring and eliminating” was renamed and hence referred to as the “processing” of information, and was joined with “analysis” and “interpretation” as these steps appear to be the most interrelated and overlapping ones. The reason is, that these are also the *contributing* and *value-adding* steps of the intelligence cycle.

An additional item to be inserted as the next step are the *products and services from intelligence operation*. In Prescott’s (1999) original article, they are not specifically mentioned, however, they add to the understanding in a way that intelligence operations produce both, tangible and intangible outcomes. Both of the outcomes have different characteristics and different methods. The latter three items from the intelligence cycle are taken as provided by Prescott (1999). These refined steps of the intelligence cycle were used as the thematic headings in the analysis of the literature review.

The thematic headings for analysis are therefore defined as follows:

- (1) Definition of intelligence needs,
- (2) Sources of environmental information,
- (3) Collection strategy,
- (4) Processing, analysing and interpreting environmental information,
- (5) Products and services from intelligence operations,
- (6) Intelligence dissemination,
- (7) Storing intelligence, and

#### (8) Utilization and feedback.

The analysis of the texts was undertaken on the hardcopies as retrieved or downloaded. This is the reason why the actual analysis is not included in this thesis. The texts were read carefully, in many cases several times, and the relevant material that was deemed to fit with at least one of the above mentioned headings was marked using coloured text markers. Hand-written comments on the margin of the text were used to associate text chunk and heading.

#### 2.3.7 A narrative synthesis of industrial market intelligence literature

The synthesis used the chunks of the literature as the basis; additional steps were exclusion of identical entries by different authors, which was observed frequently. The text chunks below a single heading were used to create a text flow. This flowing text is designed to improve readability with respect to characteristics, meaning, priorities and implications. Although it is not possible to avoid interpretations in general, emphasis was placed on using as many of the original words as possible in order to reduce possible interpretive acts on the synthesis itself.

##### 2.3.7.1 Definition of intelligence needs

Defining the needs means establishing the parameters for the kind of intelligence to be produced. This definition demarks the beginning for an intelligence operation (Muller, 2003).

Defining what intelligence is needed for, includes giving due consideration to whom in the organization will use the intelligence, the properties or characteristics of such intelligence and the specific purpose for which it produced (McGonagle and Vella, 2002). Needs definition has thus been called an iterative process, involving the users and providers of intelligence (Bose, 2008). It requires discovering the needs, as well as, translating the needs into specific intelligence requirements (Bose, 2008).

This stage depends very much on the idiosyncrasies of a company, as well as, the market environment it operates in (Montgomery and Weinberg, 1979; Majid and Khoo, 2009). Herring (1999) thinks that intelligence needs vary from company to company due to different position, strategies and priorities (Herring, 1999).

Information overload is a phenomenon, that is increasingly witnessed in larger organizations (Global Intelligence Alliance, 2006). Individuals with their limited capacity to handle information may neglect market intelligence, if they feel that they are being flooded with “irrelevant noise” (Global Intelligence Alliance, 2006). Oppenheim (1997, in Global Intelligence Alliance, 2006) calls it the “information fatigue syndrome”. An intelligence audit can be supportive in the process of identifying intelligence needs. It is a best practice step as it informs on the state of current intelligence efforts already in place in an organization (Prescott, 1999) and may so support the process of defining the intelligence needs. Herring (1999) describes the “Key Intelligence Topics” (KITs) as a method to formulate the requirements of organizational intelligence users. Havenga and Botha (2003) refer to these as “KIN”, which means key intelligence needs.

Top management, as a main user of intelligence, has to be approached as their needs and views determine priorities and intelligence needs (Havenga and Botha, 2003). Direct communication with stakeholders of the process ensures well-formulated needs and may thus increase the overall efficiency of the cycle (Global Intelligence Alliance, 2004). Pirttilä (1997, in Global Intelligence Alliance, 2006) differentiates between conscious and unconscious needs. Unconscious needs sometimes make it difficult to operationalize intelligence needs and make therefore, feedback loops very important (see above “iterative process”).

Additional information needs arise as a result of finding that current knowledge is not sufficient for a task at hand (Global Intelligence Alliance, 2006). The feedback loop (see stage 8) at the end of the intelligence cycle supports constant re-assessment of the needs and indicates if the needs are being met. In general, the feedback loop is a tool in order to continuously improve and modify the overall intelligence process in line with changes in the external environment (Lackman et al., 2000).

#### 2.3.7.2 Sources of environmental information

There is a range of suitable sources of environmental information (Jenster and Soilen, 2009). In general, two distinct classes can be identified: internal and external sources (Kuada, 2002). Other conceptualizations prefer the terms “primary” and “secondary” sources, in order to classify possible sources of information (Oder, 2001, p. 42). Sources of information may furthermore be classified as “white”, “grey” or “black” (Kerr et al., 2006, p. 78). White



sources are publicly available, black ones are sources of information obtained through unethical or illegal means. Grey intelligence is usually obtained through informal means (Kerr et al., 2006). A well-thought market intelligence system will consider which of the possible sources it wants to utilize, why it should do so and what kind of resources can be implemented.

Internal sources refer to sources within the organization and may be classified as personal and impersonal (Vuori, 2006). Internal personal sources are employees or managers who come across useful information in the course of their work through the interaction with the external world (Majid and Khoo, 2009).

The importance of internal personal sources is established by Ghoshal (1985), who suggests that information about the current state of the business environment can be acquired only by managers, who have direct access to the industry's grapevine, and are part of an appropriate network. Fletcher and Wheeler (1989) agree as they think that close interrelationships with business partners are important when considering internal personal sources and may include activities such as direct visits, information through local offices, local joint ventures and agents. A variety of authors have found the importance of internal sources and estimate, that between 70 to 90% of all needed information is known by someone in the organization (Attaway, 1998; Stauffer, 2003; Vuori, 2006).

An example where such pieces of information may originate is the customer site, with field forces learning about new developments (customer needs or preferences, competitor actions). Other examples include trade or industry magazines, read by marketing specialists, financial statements of competitors and customers to be reviewed by, for example accountants and controllers, or any kind of technical concepts produced by competitors which an engineering department reviews (Waters, 2000). Other internal sources may come from personnel visiting trade fairs, conferences, symposiums or other kinds of events. On such occasions information on latest developments, new products, trends and customers' needs may be gathered.

Salespeople have long been recognized as primary sources of intelligence (Le Bon and Merunka, 2006). Because of their boundary position, industrial salespeople may give their company direct access to important information about competitors and customers. In their daily work in the field, salespeople may be exposed to rumours about customers' or

competitors' projects, learn about new product launches before they take place and discover new products in test markets, gather information about competitors pricing and discount practices or note changes in customers' behaviour or needs (Le Bon and Merunka, 2006). According to Webster (1965, in Le Bon and Merunka, 2006), their additional effort to gather environmental information is marginal. Salespeople are in fact the most frequently used source in industrial companies for obtaining information on competitors and customers (Moncrief, 1986, in Le Bon and Merunka, 2006). Vuori (2006) adds to internal personal sources, internal impersonal ones, such as reports, memos, databases or the company intranet.

External sources of information are sources outside the organization and again include personal (items 1 and 2 below) and impersonal (item 3 below) sources. They may be grouped in:

- (1) Clients and other business partners,
- (2) Market research institutes and specialized consultancies, as well as,
- (3) Public sources including governments, industry associations, press and the internet (Xu and Kaye, 1995). Concerning this last item Jenster and Soilen (2009) specifically add the use of copyright and patent databases.

The range of external sources will be considered in light of their collection strategies.

### 2.3.7.3 Collection strategy

Considering the range of possible sources of environmental or competitive information, the need to define the collection strategy in order to carry out intelligence operations is of high importance. The following characteristics are considered important in developing a collection strategy:

- A variety of print, online and human sources can be used for gathering information (Majid and Khoo, 2009). Choo (1998, in Vuori, 2006) mentions, that gathering information from many different sources is important, as information may be checked against each other (supported by Waters, 2000).
- A continuous flow of information has been called the "lifeblood" of good market intelligence system (Wee, 2001). The reason is that intelligence, just as other assets, depreciates over time (Slater and Narver, 2000; Waters, 2000). Most information and

intelligence, thus, needs to be replaced with newly generated intelligence (Slater and Narver, 2000).

- Havenga and Botha (2003) argue that in times of information overload, the emphasis is not on more information, but rather on more valuable information.
- The collection system has to be designed in a “proactive”, rather than in a reactive, manner (Havenga and Botha, 2003). This relates to two items, firstly, to place emphasis on information that concerns future events, rather than on events that happened in the past. Secondly, proactive means relying on personnel in the non-intelligence units to contribute what they know, including gathering methods that actively approach personnel and seeks contribution to the system.
- Murphy (2005) thinks that every member of an organization should be on the alert for useful intelligence. Ideally, all employees should contribute to a company’s intelligence efforts. This is of course very hard to achieve, as tasks that are everybody’s responsibility usually end up being no one’s responsibility (Murphy, 2005). Human sources are a vast reservoir of unpublished, current data and viewpoints (Murphy, 2005). Unlike documentary sources people can be questioned and asked to elaborate further.

Collection is generally referred to, as a form of a two-step approach. Information collection embodies scanning the environment of a company for information. This involves (1) surveillance and (2) search, whereby the first one observes or monitors and the latter one deliberately investigates and researches (Jenster and Soilen). Etzioni (1967, in Fletcher and Wheeler, 1989) refers to it as the mixed scanning mode, which is explained as being an incremental approach. Both modes sometimes overlap.

Surveillance, a common word in this context, is sometimes referred to as “monitoring”, eventually used in the same manner (Global Intelligence Alliance, 2004). It has been related to a network of sources and regular procedures by which a company can obtain everyday information about non-recurrent developments in the operating environment (Zinkmund, 1996, in Wee, 2001).

Surveillance might sometimes indicate or trigger deliberate search (Montgomery and Weinberg, 1979; Ghoshal, 1985). Deliberate search may be done in the form of market research, quantitative or qualitative (Jenster and Soilen, 2009), or by consulting with specialized advisory firms (AWARE, 2009). Deliberate search is mostly problem-related

(Jenster and Soilen, 2009). Companies find it easier to engage in deliberate search than in surveillance activities, as the specific problem is approached by definite action, which in turn is easier to assess for its output (Jenster and Soilen, 2009). Surveillance, as a continuous, systematic and ongoing procedure may be carried out in two modes: direct and indirect gathering modes. Formal and informal information must be tapped (Wee, 2001).

Direct gathering strategies relate to using external sources. Cross and Oliver (1985, in Kasouf, Celuch and Strieter, 1995) highlight two primary categories: consumer-initiated and firm-initiated.

- (1) Consumer-initiated information includes compliments, suggestions, request for information and complaints. Such information can be used to make strategic or tactical adjustments (Kasouf et al., 1995).
- (2) Firm-initiated direct gathering strategies include commissioned research (quantitative and qualitative), such as market research reports, customer satisfaction surveys (Xu and Kaye, 1995), or obtaining other types of support from specialized consultancies.
- (3) Another form of firm-initiated, direct gathering strategies include secondary information by specialized organizations such as Dun & Bradstreet reports (D&B), patent information (e.g. Thomson Scientific's patent service), global press information from databases such as Dialog, Lexis-Nexis or Factiva or visually scanning relevant industry-specific publications. With increasing opportunities from the internet there are numerous other web services such as discussion forums or weblogs (AWARE, 2009). Prescott (1999) poses, that a role within the organizational intelligence unit involves the collection of secondary information through information technology.

Secondary sources of information continue to be a main source in practice, as there is an abundance of information available, especially on the internet but also from public and secondary sources, which are easily accessible and less costly (Muller, 2007). A downside of such a strategy is the lower value of the information – due to the fact that it is available online and so accessible to many, furthermore, the huge amount of information may present additional difficulties.

Indirect gathering strategies relate to using internal sources (Denis and Depelteau, 1985). Gathering from impersonal internal sources (internal documents, reports, dashboards etc.) has not been explicitly mentioned in literature; rather indirect strategies are related almost exclusively to gathering from internal personnel. The reason may be that also impersonal internal sources result from personal actions.

Internal information often comes from informal sources, some of the pieces of information being very valuable, but all in need of careful evaluation (Xu and Kaye, 1995). Information obtained from personal sources (within the company) can originate from a direct, secondary source, for example from a report (Vuori, 2006). Sharing this sort of information with others is valuable, because to the written information most likely a point of view, insight or expertise is added, thus becomes richer (Vuori, 2006). Indirect personal strategies are part of what the Global Intelligence Alliance calls “human intelligence” (Global Intelligence Alliance, 2004). A role, that has the potential to make human intelligence work, especially personal indirect gathering, is according to Prescott (1999) to be located within the organizational intelligence unit. This person is to coordinate the human intelligence network, responsible for important, time-sensitive information.

Important items to consider when embarking on indirect personal gathering strategy are:

- Formally assigning the task of transmitting information to salespeople (Le Bon and Merunka (2006).
- Personnel needs to be trained to be receptive to the intelligence operations and encouraged to transmit information (Montgomery and Weinberg, 1979; Majid and Khoo, 2009). Important, in such an instance is that the person knows why and for what purpose information is gathered (Vuori, 2006).
- Improving oral communication channels to spread crucial information is necessary according to Vuori (2006).

The mobilization of internal information presents one of the largest organizational problems, and is among the toughest tasks (Jenster and Soilen, 2009; Vuori, 2006). Many problems have been related to personal indirect gathering strategies:

- Default in information transmission (Albaum, 1964, in Le Bon and Merunka, 2006) has been mentioned as a foremost problem. Ghoshal (1985) states that information is

a source of power, and may therefore not be transmitted, as personnel may relate this with a perceived loss of power (supported also by Vuori, 2006). Le Bon and Merunka (2006) explain that the main challenge connected to using salespeople as a source in information gathering is developing their motivation. A behavioural system requesting salespeople to engage in and contribute to intelligence activities is therefore important together with a reward system (Le Bon and Merunka, 2006). Jenster and Soilen (2009) speak of an intelligence reward system that promotes cooperative people, together with congratulations and financial rewards (Drott, 2001).

- Delay in transmitting information is another problem (Thietart and Vivas, 1981, in Le Bon and Merunka, 2006). This may be tackled by using proactive methods for information gathering (Vuori, 2006).
- Bias (Wotruba and Mangone, 1979, in Le Bone and Merunka, 2006) is also explained as a problem in gathering market intelligence relevant information. This is negated by Mintzberg (1972, in Le Bon and Merunka, 2006) who disagrees with bias as a problem in intelligence systems. Furthermore, Mintzberg adds, that the more gossip and rumours can be collected the better the general picture of the external environment can be constructed.
- Drott (2001) adds, that individual information may not fit with the database paradigm, and may, therefore, not seem collectable, manageable or organisable. Another issue in this regard is that the *information* held by employees, is often knowledge rather than data or information (Drott, 2001; Vuori, 2006). In this regard problems of verbalizing as in knowledge sharing may occur, which complicates obtaining, transmitting and storing of it (Vuori, 2006).

Calof and Skinner (1998, p. 39) think that “the most valuable information is available internally”. Vuori (2006) thinks that employees as a source of environmental information are not only important but underutilized. To make MI work, it is therefore necessary to get the information from the employee who has it to the employee who needs it (Stauffer, 2003).

The problem is that there is no consensus as with regard to which method for obtaining such information is adequately suited (Vuori, 2006). Several methods – many reported as a case

example only – of how to embark on personal indirect gathering strategies are mentioned throughout the literature:

- Employees may be urged to provide information by e-mail, telephone or posting on the intranet (Marin and Poulter, 2003).
- April and Bessa (2006) indicate an example from a global energy multinational. A software application is used that is connected into a computer network. Employees can log into the network and share their insights. Moderators exist to ensure that intelligence is shared, stored and consolidated.
- A classical instrument is to request trip reports from employees coming home from a business trip.
- Follow-up calls by intelligence personnel to learn more about reports received from personnel may round off such efforts (Vuori, 2006).
- Non-technological ways may include setting-up regular meetings at which people having information on certain issues are able to share with others (Vuori, 2006). In the following several approaches, that differ only slightly are summarized:
  - Waters (2000) speaks about weekly market intelligence meetings with a cross-functional team becoming commonplace.
  - Lackman et al. (2000) introduce the example of a multi-division team approach observed at 3M Corporation, in which staff members having varying functions in the organization (such as manufacturing, R&D, marketing, sales, and others) participate in information collection and assist with the analysis.
  - A further method are “open invitation meetings” with a specific topic on the agenda. All interested personnel may participate (Vuori, 2006).
  - Marin and Poulter (2003) and Lichtenthaler (2004) speak of intelligence network meetings which may be held for exchange of information.
  - A proven method of information collection is interviewing identified personnel with regard to specific information needs (Murphy, 2005).
- A further method may be an indexed list with the names of employees and contact data stating the specific knowledge that the person has. Other personnel in search of specific information may contact these specialists directly (Vuori, 2006).
- Intelligence boxes are used to encourage staff to contribute information, rumour or even gossip (Xu and Kaye, 1995).

- Tour reports are used to brief managers before going on a business trip to look for certain specific information, and upon return, debriefing them (Xu and Kaye, 1995).
- Debriefing new employees who have joined from a competitor (Xu and Kaye, 1995).
- An example by Drott (2001) introduces sales call reports, where sales managers made proactive calls with their clients with the intention of finding out, whether the customer's business was growing and if competitors were approaching the customer. This information – converted into a standard report – was distributed throughout the department (Drott, 2001).
- Another example by Drott (2001) portrayed an intelligence department that provided employees with funds to finance entertainment in the form of drinks and dinner, if in the course of such an event, the employee was able to gather information that was of value to the organization (Drott, 2001). This information had to be filed in a short report to access the funds. Reward was a component of the system, apart from entertainment paid by the organization; a thank you email was provided by the department together with praise addressed to the employee's direct superior for the extra effort (Drott, 2001).

Myburgh (2004) further includes information gathering techniques that would be considered to be standard research methods, such as interviews, focus groups, questionnaires and participant observation. Interviews are a technique that is also given consideration by Oder (2001).

#### 2.3.7.4 Processing, analysing and interpreting environmental information

The intelligence system works as a filter and interpreter to turn information into intelligence, especially the processes of analysis and interpretation have been related with the production of intelligence (Muller, 2006). AWARE (2009) associates converting information into intelligence by implementing the three steps process “CIA” - collate and catalogue, integrate with other pieces, analyse and interpret. The analysis part of the intelligence process organizes the information, looks for underlying patterns, trends and interrelationships (Bose, 2008). The goal is to explain the significance of the collected information (Krizan, 1999, in Bose, 2008).

Xu and Kaye (1995) propose a mixed human–computer information processing system in order to evaluate, filter, interpret and establish meaning. In supporting decision making, the



information is always used in conjunction with a manager's experience and knowledge (Xu and Kaye, 1995). Drott (2001) refers to this as integrating human knowledge and computer processing for a mutually supportive approach. Software tools may even assist in analytical processes related to creating intelligence (Bose, 2008). These may be especially relevant, when talking about large amounts of data that need to be made sense of (Bose, 2008). Nonetheless, analysis is largely dependent on non-computerized methodologies to enable the final conversion of data (information, knowledge) into intelligence (Bose, 2008).

Bernhardt (1994, in Global Intelligence Alliance, 2004) stresses the role of processing between collecting and analysing. This includes structuring, eliminating useless or outdated information and formatting. Myburgh (2004) introduces the importance of evaluation and synthesis before analysis. Evaluation includes checking the information for quality, validity and usefulness; synthesis means bringing together and comparing similar information.

In general, information gathered can be divided into two related, but different kinds of categories (Ghoshal, 1985). A first category of information is from the broader business environment and is utilized primarily for long term planning and strategy making (Ghoshal, 1985). Majid and Khoo (2009) refer to it as the general or remote environment (also called the macro environment). For acquiring and analysing and/or interpreting this more general information from public sources a manager must be specially trained. It includes academic training, analytical skills and access to relevant sources, making special intelligence staff particularly suitable for this purpose (Ghoshal, 1985). Prescott (1999) agrees to such a stance and states that a potential role within the organizational intelligence unit is possible and is referred to as the analyst, who converts information into intelligence and develops implications and recommendations. The following factors have specifically been mentioned as belonging to the domain of the macro environment: demography, economy, politics, social and cultural as well as ICT developments (Majid and Khoo, 2009). Thus it comes of no surprise that the PESTLE (Political, Economical, Social, Technological, Legal and Environmental) analysis appears suitable for analysing the macro environment. To develop implications from such results may be added to the *opportunities* and *threats* sections of a SWOT analysis.

The second category is information from the immediate business environment and is required on a day-to-day basis for taking decisions (Ghoshal, 1985). Majid and Khoo (2009)

refer to it as domain or near environment (also called micro environment). They specifically mention customers, competitors (existing and potential), suppliers and product/technologies.

The technological environment is crucial, because, innovations may also come from outside the industry (Montgomery and Weinberg, 1979). The same is true with regard to the competitive situation, where customers or suppliers, or even companies from outside the industry can emerge as new competitors (Montgomery and Weinberg, 1979). Slater and Narver (2001) add to this the monitoring of customers, with regard to their satisfaction, or changing needs and preferences. Thus it is important to remember in the context of analysing information from the micro environment that:

- Only managers with direct access to the immediate environment, hooked to the appropriate network, are capable of handling such items (Ghoshal, 1985). This sort of membership is required for judging relevance and reliability through experience (Ghoshal, 1985). Waters (2000) mentions that only those who understand the value of a piece of information can review it.
- Staff managers typically do not receive “hot information” from the market nor can they interpret it, due to being divorced from the context (Ghoshal, 1985).

Analysis is one of the most challenging steps as it requires skills to evaluate the information. It permits drawing conclusions from information. These conclusions need then to be interpreted leading to the posing of implications and recommendations (Prescott, 1999). Analysis is based on logical reasoning and educated guessing, whereby the latter has its roots in experience (Global Intelligence Alliance, 2004). Bernhardt (1994, in Global Intelligence Alliance, 2004) highlights analysis as taking on a value-adding role in the market intelligence process.

The following methods in terms of analysis and interpretation have been included from the literature:

- Lackman et al. (2000) introduce the example of a multi-division team approach, which they observed at 3M, in which people from a variety of functions (such as manufacturing, R&D, marketing, sales, and others) take part in the gathering of information and the assist with analysis and interpretation.

- Another recommendation comes from Prescott (1999) who suggests using virtual teams, comprised of individuals throughout the company that can be brought into a project as needed.
- Other approaches include setting up an intelligence department for centralized activities, which may be contacted for such issues.
- Intelligence task forces may be used in business units, respectively regional subsidiaries, to act as the local information gathering and evaluation unit (Prescott, 1999).
- Drott (2001) records a case where an employee, on grounds of special knowledge, was used as an “expert analyzer” for interpreting external information available to the company. Converting personal knowledge (individually integrated, dispersed, temporary knowledge with the employee) into corporate information (distributable, structured, and permanent – in the form of a list containing the names of employees and their foremost knowledge fields) is a pre-requisite for such an approach (Drott, 2001).
- This example is comparable to Rothberg and Erickson (2005) who explain an approach using a network of expert analyzers. They form a more or less loose circle of people with special knowledge. Relevant experts are considered in specific meetings to support analysis and/or interpretation. Bose (2008) explains it as a yellow book with inside experts on various subjects that may help to establish a network of knowledge inside the company (Bose, 2008).
- The example Vuori (2006) provides, may be used in this context as well. She suggests collecting the names and contact data of employees, stating the specific knowledge the person has.

The techniques mentioned with regard to analysis vary from simple to highly structured and analytical and may include comparative analysis, scenarios, SWOT analysis, PESTLE, benchmarking, computer modelling etc. (Xu and Kaye, 1995).

The Global Intelligence Alliance (2009), as well as, Jenster and Soilen (2009) furthermore propose Porter’s Industry Analysis as a suitable technique; Burt (1992, in Prescott, 1999) proposes the network analysis. This particular technique visualizes the type and nature of

business relationships in a sense of how productive they are. Bose (2008), however, sees such analytical tools connected mostly to strategic analyses.

#### 2.3.7.5 Products and services from market intelligence operations

In general, intelligence operations may result in two sets of results: products (tangible) and services (intangible), whereby the latter is mostly related to intelligence professionals.

The format of the intelligence products differs, however, to make good decisions, a thorough understanding of the (1) situation, (2) implications for the organization, (3) options the company has, (4) competitor's likely counter-response and (5) recommendations to the decision makers is required (Hendrix, 1996).

The following formats, as with regard to intelligence products, have been proposed:

- Ad-hoc and regular reports have been mentioned by Xu and Kaye (1995) as the two most important products.
- Ad-hoc reports are sometimes referred to as analytical alerts (Jenster and Soilen, 2009).
- Regular reports may include key customer files, market reports, competitors benchmarking studies, and technology monitoring (Prescott, 1999; Muller, 2003). Jenster and Soilen (2009) add different types of dashboards, for quick information of decision makers on certain business aspects.
- Another form of regular products is the summarizing of intelligence topics, for example summaries distributed as newsletters.
- Other products mentioned are ongoing competitor profiling, special studies such as surveys or investigations (Jenster and Soilen, 2009).

Services vary significantly and largely depend on the qualifications and the structure of intelligence professionals. The following services have been mentioned in literature:

- Daily briefings (Majid and Khoo, 2009).
- On-demand intelligence which is related to library or database management services (Majid and Khoo, 2009).
- Training. The study by the APQC (1997, in Prescott, 1999) found that training was one of the most valued services that best practice companies offer.

- Best practice investigation and transfer and development of the human network (Prescott, 1999).
- Competitor response modelling exercises and war room scenarios (Prescott, 1999).

#### 2.3.7.6 Intelligence dissemination

When intelligence has been produced from raw data and information (possibly also from knowledge), it needs to be disseminated to users of intelligence for implementation in business processes (Global Intelligence Alliance, 2004). Other authors refer to dissemination as intelligence reporting (Muller, 2007), distributing (McGonagle and Vella, 2002) or communication (April and Bessa, 2006).

Dissemination is a critical step, as it is the aim of intelligence operations to provide the right people in an organization with the right intelligence and at the right time (Global Intelligence Alliance, 2004; Muller, 2003). In essence, intelligence has to be distributed to those who ask for it, as well as, to those who may profit from it (McGonagle and Vella, 2002). Managers in the intelligence unit, therefore, need the ability to relate the information to their possible business implications and to identify managers who might profit from receiving it (Ghoshal, 1985). MI professionals need to have available effective, flexible and thorough dissemination channels (Muller, 2003).

A fairly equal mix of formal and informal dissemination appears to be optimal to maximize the perceived quality of intelligence received (Maltz and Kohli, 1995). Market intelligence disseminated by formal means appears to be used to a greater extent, very likely because of the verifiability.

Formal dissemination has been brought into close relation with using modern software tools. It is imperative to have the right formats available (see stage intelligence products), which support formal dissemination of intelligence. The following tools have been mentioned in the literature:

- Intranets (Global Intelligence Alliance, 2004),
- Information sharing software (Global Intelligence Alliance, 2004),
- E-mail has been mentioned as a key form of technology in spreading intelligence (Muller, 2003; Muller, 2007).

Formal dissemination includes informing the organization's top management. Lackman et al. (2000) introduce an example from market intelligence at Pittsburgh Plate Glass (PPG). At PPG the CIO (Chief Intelligence Officer) cooperates with the executive management of the company, by reporting key intelligence aspects. In other cases this position is called the Executive Intelligence Officer, or EIO (Prescott, 1999).

Intelligence is a human process therefore human interaction is essential in the dissemination of intelligence (Global Intelligence Alliance, 2004). One principle learned from Ghoshal (1985) is, that intelligence becomes most effective, when it is shared in a wide organizational gestalt.

Informal communication may provide greater openness and clarification opportunities, thereby encouraging the use of intelligence (Maltz and Kohli, 1995). Perceived intelligence quality is affected by the trust that the receiver has in the sender's ability and motivation to provide good market intelligence (Maltz and Kohli, 1995). This is supported by Pirttilä (1994, in Vuori, 2006) and Sydänmaanlakka (2004, in Vuori, 2006), who state that managers value intelligence coming through informal distribution channels highest. Muller (2003) proposes presentations, meetings and conferences as methods to ensure that topics receive attention.

In future it will be required to better integrate formal and informal dissemination of intelligence (Prescott, 1999). How this translates in terms of methods and techniques is not stated.

#### 2.3.7.7 Intelligence storing

A well-thought through storing concept is a prerequisite today. Technological opportunities have increased together with expectations by professionals, leading to additional functionalities besides intelligence storing.

Lackman et al. (2000) stress the importance of a library. Hart (1998) calls the concept "initial banks" which should be capable of holding various different formats. Functionalities proposed to be indispensable include ability to index and catalogue, to implement search functions using keywords and phrases, the ability to sort files, the ability to attach

comments, to have an e-mail facility, the ability to cross-reference related information, to handle electronic requests for research material among others.

Newer publications such as by Hare (2008) suggest using a software tool for more tasks than just for electronic storage. Increasing functionalities – in line with the development of improving software solutions – may also support the intelligence unit, as well as, the intelligence task force that may include the regional office and the business unit with regard to data gathering, analysis and reporting. Hare (2008) recommends the following functions: centralized data storage, multiple user views, business unit and product line views, automated content indexing, advanced search capability, as well as, a project area in order to support the intelligence cycle with a collaborative platform for planning, data collection, analysis and reporting (Hare, 2008).

Muller (2007) purports, that the latest generations of intelligence tools can assist, especially in the fields of collecting, processing and reporting of intelligence. Future developments may increase the opportunities from and functionalities of human-computer interfaces.

#### 2.3.7.8 Utilization and feedback

Utilization in business processes is the semi-final stage of the intelligence cycle and the purpose for the entire undertaking. Utilization of intelligence implies that the users of intelligence implement the insights gained from the intelligence process in their work, for example in strategic and tactical planning, in research and development related activities, in marketing and sales among others.

An example of how to integrate intelligence and the use of it is explained by April and Bessa (2006). In their paper on MI within a global energy multinational, a case is presented where a community of practice (CoP) is used for learning from intelligence in R&D work (April and Bessa, 2006). Other examples are sparse and rely on managers being interested in improving their results. Intelligence in planning has become quite widely used (Global Intelligence Alliance, 2004).

Feedback is the basis for continuous optimization of the process, respectively, adaptation to changing intelligence needs. The absence of such a feedback stage would constitute a

deficiency, which may lead to unfocused information gathering efforts (April and Bessa, 2006).

#### **2.4 Summarizing the Initial Conceptual Framework**

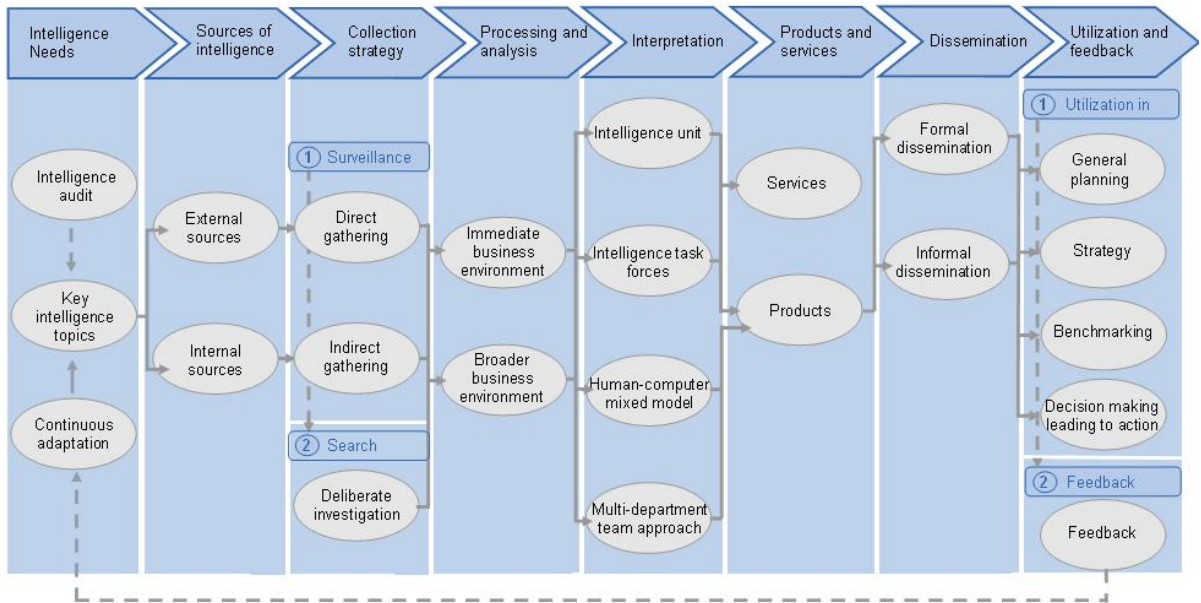
The intelligence cycle and the stages involved, have received substantial acceptance throughout literature. This acceptance is reflected in the fact that a large amount of authors use the cycle (or similar models) explicitly in their research work; an even greater number of researchers make implicit reference to the cycle. Using the elements of the intelligence cycle as thematic headers and thus the intelligence cycle as the basis for analysis and synthesis was a choice that made continuation of the research work possible. This strategy has allowed for transparent decisions with regard to thematic headings, as well as, clustering of text chunks.

From the compiled knowledge base, the initial conceptual framework is laid out as a narrative and a diagrammatical concept (see figure 13). A larger version of this figure can be found in Appendix No. 2. The model does justice to the fact that the market intelligence process is a series of interdependent and partly overlapping stages. The first change found to be appropriate was to separate processing and analysis from interpretation. This is due to the fact that analysis of information that is gathered indirectly may differ from information gathered directly.

The initial concept, thus, includes not only the process steps, but also the most important sub-items related to the individual process step. This differentiation is necessary, as the overall market intelligence process is rather complex, and includes a large number of participants performing individual tasks.



Figure 13: The industrial market intelligence framework (author's own design)



After performing an intelligence audit, implemented in order to measure the extent to which intelligence operations, possibly under different titles, have already been performed, the actual intelligence needs are defined. These needs are formulated, taking into account the needs of the key stakeholders, ideally, using direct communication as the basis for investigation. The needs may vary from industry to industry, and even from company to company due to different corporate priorities and strategies. This stage of the market intelligence process has received a high degree of consensus throughout the literature, and exhibits an advanced state of research. What would remain as a possible future research subject might be to investigate best practice examples (for example check-lists) of intelligence needs with regard to different industries.

The following stage includes the evaluation of possible sources of environmental information. The sources can be classified in either internal or external, or primary and secondary sources. The terms external – internal, rather than primary – secondary are preferable in the course of this work. Knowing where to locate information is more important than the status of this information. One key issue in this stage is to become aware of the different options that exist when accessing suitable information. Such choices relate to different methods, implications and resources to be devoted.

Internal sources can be differentiated into personal or impersonal internal sources. They are found within the own organization. Impersonal internal information are for example documents, reports or memos. Personal internal sources are employees or managers of a company that are knowledgeable about certain business aspects. In general, internal sources are abundant and low priced. They usually have much of the needed information available – but seem to be hard to tap.

External sources are located outside the organization, may again include personal and impersonal sources, such as business partners, agencies and/or consultancies or secondary information. Especially, the latter are popular, as they are easy to retrieve due to the increasing use of the internet, as well as, specialized services becoming more and more comprehensive. A downside is the sheer amount of information available. Sources of information is a topic that has received a large degree of attention. It is comprehensively covered and detailed.

Determining which sources to use, determines the collection strategy an organization may decide to embark on. A guiding principle should be that many sources are available and many sources should be used. A continuous flow of information is necessary, as intelligence depreciates over time. The collection strategy has to be proactive, as internal personal sources, if in line with the corporate market intelligence strategy may be reluctant to participate.

Two different concepts in collection have to be distinguished, surveillance and search. The first one is ongoing and systematic; the latter is a deliberate investigation, targeting a specific problem. Deliberate investigation is often conducted in the form of market research. In terms of surveillance, the literature addresses direct and indirect gathering strategies.

Direct gathering relates to gathering information from external sources, such as business partners, commissioned market research or searching secondary sources on the internet, databases of publications. Personal sources outside the organization, which are targeted using direct personal strategies, may be related to sales, project management or service organizations within the company. Front office employees are therefore an intermediary, and become an important source of information.

Indirect gathering strategies use internal sources referring to impersonal and personal sources. Indirect impersonal strategies are portrayed to a lesser extent in literature, they may include all sorts of reports, memos, dashboards, commercial offers and so on. Today, this kind of information may be available on intranets, databases or other software solutions. Indirect personal strategies are related to managing the human intelligence function. A number of important items have to be considered when embarking on such a strategy, such as assigning this function to non-members of the intelligence unit (sales representative, marketing specialists, engineers, managers among others), train them and improve oral communication channels. Larger problems have been reported in connection with indirect personal strategies, such as lacking will and motivation of personnel to transmit information, as well as, delay in transmission or the problem of the database paradigm. Nonetheless, this approach has been termed as the most rewarding one, if done well. A plethora of different indirect gathering strategies are portrayed in literature, including reports, meetings of varying social groupings such as networks, teams, groups to name some. Technological approaches are addressed, such as computer networks or software tools. Further strategies may include intelligence unit-driven measures (telephone calls, emails) and indexed lists of personnel with special knowledge available.

An intelligence motivation and reward system is essential in a human intelligence approach, together with an appropriate *tone from the top*, where the top management clearly communicates the expected behaviour. The general impression as with regard to the stage collection strategy is that parts of it are advanced, but quite diverse. In some parts of the literature there is a designated role in the intelligence unit which is responsible for managing the human intelligence network, in others meetings of different kinds replace this role. Methods of indirect personal gathering strategies need to be investigated in more detail, as too many methods are given without concrete recommendation regarding setting and purpose of use. These have the potential to bewilder managers willing to embark on such a strategy (Vuori, 2006).

In general, processing, analysis and interpretation is a human-computer mixed process step. Information collected needs to be structured by eliminating useless information and collating or synthesizing similar information. Processing information has been related to both wider classes of competitive information, that is information from the macro environment, as well as, information from the micro environment.

The separation of information into micro and macro environment also reflects the structures employed in analysis and interpretation. It has been mentioned that only managers and employees with knowledge and experience may interpret information from the micro environment. These persons are usually non-members of any intelligence unit, as the latter are usually detached from the actual business context. The analysis of information regarding the macro environment is related to a function in the intelligence unit, the analyst. It appears that for macro environment information analysis no, or at least much less, experience is required when compared to micro environment information. The analyst is a professionally trained person.

Reviewing the methods and structures used in analysis and/or interpretation of information from the micro environment, leads to a potential for bewilderment. Again a variety of methods are proposed, this situation has led Vuori (2006) to state that more research is necessary with regard to identifying suitable methods. This statement appears to be rightful, especially with regard to the form of social grouping that is suitable for specific purposes.

Main techniques used in analysis such as SWOT, PESTLE and industry analysis are portrayed, however, it is also stated that their beneficial application is restricted to strategic analyses. For tactical or operation analyses, additional research may be beneficial.

Products and services of intelligence operations are well portrayed, and in part depend on the structure, the size and composition of the intelligence unit. Services may include training, database management, war room scenarios and intelligence briefings. Products include ad-hoc and regular reports, as well as files and dashboards on markets, customers, technology or products and competitors. Literature portrays a unanimous picture.

Intelligence dissemination is another critical step in the overall operation. Formal dissemination is well researched, and established formats are available in order to foster such operations. Informal dissemination, highly necessary and critical in intelligence operations, is again largely dependent upon the general body of participating managers. Informal dissemination happens as managers pass on information received to other colleagues that may need this intelligence, supporting the flow of intelligence within the organization. Integration of both modes of dissemination has been mentioned as relevant,

but no indication is given how this integration is to be effected. Again, informal dissemination of intelligence is worthy of additional research.

After intelligence is disseminated, it needs to be implemented in business processes. Most researchers do not provide methods on how to improve integration of intelligence; one case example that is mentioned are communities of practice.

Many different views have been integrated in this synthesis. Most of the authors agree on the main stages of the concept; disagreements and weaknesses can be found in such areas as *indirect personal gathering strategies, analysis and/or interpretation of micro environment information* and *informal dissemination* of intelligence. These are the stages with either too many – potentially useless – or even conflicting recommendations. These incongruent findings are taken forward as the starting point for additional research (see chapter 3).

## **2.5 Interpreting and Discussing the Findings**

### 2.5.1 Discussion of existing models

The intelligence cycle has been a technique that has enabled the analysis of eligible market intelligence evidence. Due to the fact that some stages of the intelligence cycle are portrayed with (too) many potential methods, a conclusion may be that the cycle is too simplistic to integrate different approaches of market intelligence designed to address different purposes. This situation may be related to why and how questions, in need of clarification. Vuori (2006) purports that the plethora of individual methods proposed in literature may actually hinder managers from applying the concept. This is supported by Lichtenthaler (2004) who confirms that existing research is contradictory especially with regard to how the process(es) is to be coordinated. This literature review confirms their conclusions, especially with regard to those activities connected to indirect gathering, analysis and interpretation of micro environment information, as well as, informal dissemination. Therefore, the development of an interpretation from the analysis performed above is regarded as a very difficult task. Before entering the question of interpreting the data, it is useful to introduce existing models of intelligence, whereby these are introduced in chronological order.

For coordinating an intelligence system with respect to an organization, Quinn (1985) – in his intelligence model – outlined four fundamental types of structures:

- The dedicated central unit,

- Inclusion within a central group function,
- Decentralization to operational divisions and
- Diffusion throughout the company.

Quinn (1985) explains a dedicated central unit, as a unit primarily in charge of intelligence affairs. In contrast to that, inclusion within a central group function places exactly this responsibility with a central department that is not primarily an intelligence unit, but, due to the absence of a dedicated unit, is charged with the responsibilities of an intelligence unit. From a practical perspective, the latter may involve the strategic planning or the marketing department. Decentralization to operational divisions implies that business units or other income responsible units (within the organization) are charged with the responsibility of integrating an intelligence process within their structures. Again, these units are not primarily intelligence units, but may benefit from a systematic implementation of intelligence processes. Diffusion throughout the company relates to more informal intelligence modes and base on informal networks used to spread information and intelligence among participants and throughout the company.

Lichtenthaler (2004) is another researcher that focuses on intelligence affairs and disseminates his “technology intelligence process”. He distinguishes between three forms of coordination:

- Structural coordination: delegating tasks through hierarchical structures,
- Hybrid coordination: delegating tasks through projects to cover specific topics and
- Informal coordination: stimulate and steer autonomous intelligence behaviour.

Structural coordination includes such typical structures as technology intelligence units, whereby this structure lends itself to the dedicated central unit in Quinn’s (1985) model. Still, Lichtenthaler (2004, p.132) maintains, that structural coordination in the form of dedicated intelligence units does not exist in most organizations, which appears to be a drawback in his conceptualization. Quinn (1985) compensates for this situation by formulating the inclusion within a central group function. Hybrid coordination includes non-intelligence specialists, as participants to particular intelligence projects, organized by the intelligence unit (Lichtenthaler, 2004). Informal coordination tries to steer autonomous information gathering behaviours through participation in planning processes or the

implementation of informal discussion networks. It is not sufficiently established whether such behaviours can be *coordinated* or even *managed*. Both models - Quinn's and Lichtenthaler's - are to a certain degree similar.

Kerr et al. (2006) establish a conceptual model consisting of three tiers: (1) a framework level, (2) a system level and (3) a process level. The framework level maps information requirements and knowledge gaps of organizational members to the intelligence activities (Kerr et al., 2006) and so appears to be similar to the intelligence needs stage of the intelligence cycle. The system level provides mechanisms to both tailor and configure a system architecture and its operational modes to the actual intelligence needs (Kerr et al., 2006). The process level is highly congruent with the intelligence cycle, and is used for running an intelligence system. It is composed of individual steps such as information gathering, analysis or dissemination of intelligence (Kerr et al., 2006). In general, Kerr et al. (2006) propose a more elaborate and detailed version of the intelligence cycle.

Mortara, Kerr, Phaal and Probert (2009) have developed a framework for "Technology Intelligence". Their framework is an advancement to the model referred to above by Kerr et al.'s (2006) and is designed to fit technology-based corporations. It covers four basic layers: 1) the sources of information, 2) the intelligence streams (market, competitive, technology), 3) the actions (identifying opportunities, being aware of threats, assessing the state-of-the-art and profiling trends) as well as the 4) the decision makers. The Technology Intelligence model puts great emphasis on the different searching modes. The latter are identified as trawling, scanning, mining and targeting. Developing a critical stance to the model presented by Mortara et al. (2009) includes the view that there is an overemphasis on information and information searching modes, rather than on the construction and dissemination of intelligence. Mortara et al. (2009) assert that the literature has not presented sufficient practical examples of intelligence systems; a finding, that based on this review, can be confirmed. Their latter conclusion is brought into relation with a statement from their paper (Mortara et al., 2009, p.133):

*"Future research will investigate by looking into how best to deploy social networks resources to maximize intelligence outreach."*

The main problem with the models presented in this section is, that they are not capable of integrating the number of different recommendations proposed by literature. Firstly, most researchers focus in their work on the intelligence cycle as the basis for developing their thoughts. Developing further an interpretation from the synthesis by relying on the intelligence cycle as the interpretative methods, is not justifiable due to incongruent and contradictory results. This relates to the question of individual market intelligence activities and techniques that are to be allocated to particular structures or coordination forms. For such an approach the intelligence cycle is too simplistic. This is also true for the models by Kerr et al. and Mortara et al.

Using one of the other models (Quinn, Lichtenthaler) as the interpretative basis is also problematic. They differ drastically from the intelligence cycle, resulting in limited opportunities in terms of integrating individual recommendations of literature with either of the models. That makes them not acceptable as an interpretative technique, as it would reduce the evidence base reviewed, selected and analysed to a minimum in an interpretation.

Another option is to develop an own interpretative technique, instead of relying on an existing model for undertaking the interpretation. To establish an own interpretative technique (model) is at this instance not possible due to aforementioned contradictions and weaknesses in the evidence base. This has already been identified as a weakness of the thematic analysis (see section 2.2.2), but is here transformed into a tool that allows the identification of additional research needs. The lack of practical investigations in concrete industry environments (Mortara et al., 2009) enhances the need for additional research, through the lens of plant building.

### 2.5.2 Main criticisms towards existing market intelligence conceptualizations

Apart from those contradictory recommendations that have been criticized already, a number of additional criticisms, expressed by reputable researchers, have to be mentioned at this point. For their perceived relevance, they are summarized below and will continue to guide this research work.

Wolter (2011, in Keuper et al., 2011) emphasizes the need of organizations to form integrated analysis frameworks to identify and assess potential threats and opportunities in the marketplace. These integrated frameworks, indicated as intertwined processes of gathering, analysing and constructing intelligence, are also useful as to follow general trends



and competitors' strategies and actions. Wolter's suggestion is justified, as Ghoshal (1985) already indicated that information gathering may only be undertaken by managers with relations to industrial partners, as well as, the fact that only managers with an experience background are in a position to analyse and interpret competitive information. From a practical perspective these two groups of persons may result in two overlapping or even congruent circles of persons. Furthermore, Quinn's (1985) and Lichtenthaler's (2006) model integrate such a perspective in their three, respectively four, forms of coordination. This is in contrast with the model proposed by Mortara et al. (2009) that places great emphasis on competitive information and information searching modes, rather than on producing the actual intelligence that may be needed for such activities as planning, decision making or problem solving (see Figure 4).

Market intelligence has been called a knowledge management issue (Marin and Poulter, 2003). Also Vuori (2006) and Myburgh (2004) see strong interrelations between market intelligence and knowledge management. Stauffer (2003) thinks that effective market intelligence builds on the tenets of knowledge management and adds to this that for MI to work, it needs to be connected to the organization at many different levels. Bose (2008) agrees to that and notes that the MI programme should not be distinct and isolated. He thinks that the entire organization should be engaged in market intelligence efforts. Especially the latter statements of embedding intelligence into the organization, relate to Quinn's (1985) model which indicate diffusion of intelligence throughout the company as being a main element of market intelligence. Also Lichtenthaler's (2004, p. 124) model integrates this view, as he purports that informal intelligence behaviours are to be steered and stimulated, and even coordinated. The intelligence cycle is too simplistic in order to integrate such complex structures. Drott (2001) sees the issue of market intelligence as a knowledge management issue, as ways to foster the exchange of information and knowledge within an organization and to connect intelligence with learning processes. These items appear to be especially relevant in indirect personal strategies, micro environment analysis and/or interpretation and informal dissemination. However, there are few recommendations in literature concerning how to integrate knowledge management and market intelligence or how to form integrated analytical frameworks. And maybe it is a distraction to explicitly focus on the *management* of such processes.

Drott (2001) states that a new view on market intelligence information is necessary. This means that an approach is needed which recognizes the many kinds of personal knowledge, to be collected and organized as corporate information assets, implying that such an approach needs to look beyond computerized databases (Drott, 2001). In Drott's view, market intelligence can be greatly enhanced by establishing formal methods that allow converting appropriate personal knowledge into corporate information (Drott, 2001). No concise recommendation of how to integrate a *new view* is given.

### 2.5.3 Formulating the need for additional research

Based on the above discussion, a well-grounded and argued interpretation of the analysis and synthesis performed in the course of this systematic review is not possible. This difficulty is enhanced by additional criticisms expressed by researchers. These criticisms are justified and need to be revisited in line with the research progress. In this regard, Figure 13 represents the central outcome of this systematic review, and is referred to as the initial conceptual framework. A larger version of the diagrammatical concept is available at Appendix No. 2.

Additional research is necessary in order to develop a refined conceptual framework. This need for additional research is supported throughout the literature. Although market intelligence systems are put into operation in many organizations today, companies struggle with the process of converting data and information into intelligence (Wright and Calof, 2006, in Bose, 2008). The reasons are:

- Managers have not yet understood how to gather and analyse external information properly or effectively,
- Managers are overly confident in the capabilities and resources of their organizations to deliver more value to their customers (Kahaner, 1998, in Bose, 2008).

Perhaps managers need to be aware, that not all aspects of market intelligence can be managed explicitly. There appear to be processes of social interaction that are central to MI that cannot be captured explicitly in a detailed management plan.

## **2.6 Outlook on the following Chapter**

The next chapter will set the foundations in terms of methodology and methods relevant for the empirical study. The approach used in the study is deductive. This is in line with the deductive approach in the systematic review.

The summary of the conceptual framework revealed an overall advanced state of research in industrial market intelligence, together with a number of weaknesses and contradictions. These weaknesses were surfaced, externalized and verbalized after an intense period of reflection, which is detailed in the next chapter. Apart from investigating weaknesses and contradictions in literature, it is essential to explore market intelligence through the lens of the plant building industry. This view is supported by Trim and Lee (2006) who argue that market intelligence concepts need to be industry specific if they are to have a high degree of usability.

Due to the fact, that no systematic review, theoretic model or other concept is available on plant building market intelligence today, the central research question is modified to a research proposition. This is justified, as research propositions are relevant especially in exploratory research where little is known about a certain phenomenon. This is the case in this research work.

### **The overall research proposition is:**

*“The initial market intelligence framework has to be re-conceptualized in order to be valuable for the plant building industry.”*

Valuable in this regard means that apart from clarifying weaknesses and contradictions, an investigation from within the industry will advance the understanding of industry members with regard to application of such a concept. Through research from within the industry, it is ensured that the idiosyncrasies of the industry, that may have an influence on the concept are integrated into the new framework concept. The methodological exploration of this proposition is part of the next chapter.

### **3. Methodology and Methods**

#### **3.1 Introduction**

The main purpose of this chapter is to discuss the methodology implemented by the researcher and to describe the implications on the research approach chosen. Justifying the methods employed, as well as, discussing the details involved in constructing a refined conceptual framework for market intelligence practices in the plant building industry will be addressed.

A starting point in determining further course of action is the elaboration of a research strategy. A research strategy is, according to Maxwell (2005), a plan of how to achieve research objectives. Maxwell also purports that in the process of formulating a reasonable research strategy, a researcher does not have to adopt in total a single paradigm or tradition. Rather, the researcher is free to combine aspects of different paradigms and traditions as long as compatibility has been assessed. The presentation of the strategy developed begins with detailing purpose, research needs and limitations of the study.

Based on the position that the researcher is operating from (Gray, 2009), recommendations for qualitative case studies may vary. Different authors such as Yin, Eisenhardt or Stake (Gray, 2009) can be helpful in obtaining the tools necessary to select an appropriate approach. Thomas and Linstead (2002) based their constructivist qualitative case study on Yin's proposals, who although not a constructivist, describes a broad method that can be implemented in many paradigms and methodologies, including constructivism (Easterby-Smith, Thorpe and Jackson, 2008). This so-called broad method presents an advantage inasmuch as, it can be used for theory building, in particular if the study is exploratory (Yin, 2009). According to Maxwell (2005) a conceptual framework, however intermediary or tentative it may be, constitutes theory. Furthermore, this chapter addresses the issue of ethics in research and the concept of quality used to appraise the data. The latter is designed to ensure that (acceptable) scientific standards are met.

## **3.2 Research Strategy**

### **3.2.1 Purpose of the research**

The overall objective of this research is to construct a refined conceptual framework for market intelligence practices, as unfolded in the plant building industry. A conceptual framework, also referred to as theoretical framework, is a type of intermediate theory that is implemented in order to connect all aspects of inquiry, i.e. definition of the problem, purpose, and methodology, as well as, literature review, data collection and interpretation of the research findings (Maxwell, 2005). A framework can take different forms depending on the research question, including narratives, or may go so far as to present a model. Conceptual framework development has often been linked to exploratory types of research (Maxwell, 2005).

In terms of research purpose, three different options are mentioned in literature: exploratory, descriptive and explanatory research (Yin, 1989). Exploratory research often initially relies on secondary research, in particular when for example reviewing existing literature, as well as, in the empirical phase when implementing qualitative methods (Saunders et al., 2007). In the context of the above mentioned options, the purpose of this study is exploratory, although it may be argued, that it is only exploratory in a descriptive way. To explore the underdeveloped area of plant building market intelligence is considered the overall purpose.

An exploratory study is a valuable means of seeking insight and assessing a phenomenon (Saunders et al., 2007), especially when little is known about a specific phenomenon (Gray, 2009). The extensive literature review has revealed, that no conceptual framework to date has been found or prepared on plant building market intelligence. Thus, the value of conducting this research is connected to providing helpful means optimizing plant building market intelligence. The aim is to replace universalistic concepts found, by a more particularistic one, if only in part. Trim and Lee (2008) support such an approach by confirming, that useful market intelligence concepts need to be industry specific.

### 3.2.2 The definition of problem

#### 3.2.2.1 General impression

In general, the literature review revealed that market intelligence is a well-studied topic. The many contributions found have supported the construction of an initial conceptual framework on industrial market intelligence, although this in particular made the task of finding a way through the topic also delicate. A thorough and prolonged reflection process followed the preparation of the literature review, together with numerous conversations with experts. Much of the literature evidence portrays a normative approach. Although this is regarded as good practice, Mortara et al. (2009) state that few practical investigations have been undertaken in the field of market intelligence, indicating that more practical research from within industry is necessary or at least useful.

The initial conceptual framework has revealed weaknesses and contradictions located in current market intelligence literature. Additional criticisms have been raised in connection with the simplistic intelligence cycle (Drott, 2001; Marin and Poulter, 2003; Myburgh, 2004; Vuori, 2006). The following statements have already been brought forward in the last chapter (see section 2.5.2), but are reviewed again due to their relevance for the study:

- Effective market intelligence builds on the tenets of knowledge management.
- Market intelligence needs to be interconnected at several layers of an organization, in order to foster the exchange of information and knowledge, and to establish a connection to the learning process.
- Market intelligence is composed of formal and informal activities, and may not always be *manageable* in the sense of a management plan.
- Personal knowledge has to be collected (indirect personal approach) and organized as corporate information asset, which implies an *organic approach* that needs to look beyond computerized databases.

These criticisms consolidate the personal conclusion that the intelligence cycle is not capable of integrating the array of perspectives, necessary to effectively integrate an intelligence process with an industrial organization. The statements found continue to guide the research process as they may have the potential to change the initial framework considerably. The issue of information and knowledge sharing for example, is related to

different forms of organizational groupings portrayed among others in knowledge management literature (von Krogh, Ichijo and Nonaka, 2000; Wenger, McDermott and Snyder, 2002).

A systematic start to problem definition includes eliminating those aspects of the initial framework where substantial uniformity throughout the literature is given. These are:

- Intelligence needs,
- Sources of intelligence,
- Products and services from intelligence operations,
- Intelligence storing, and
- Utilization and feedback.

The remaining items include weaknesses such as incongruent or contradictory findings:

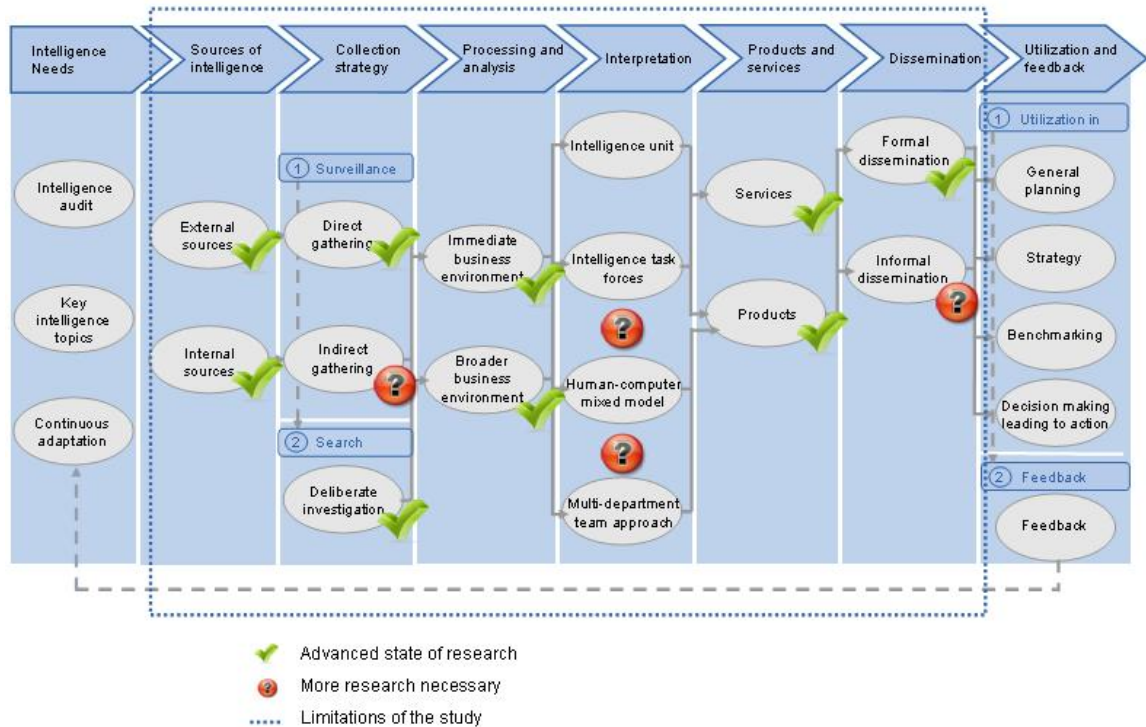
- Collection strategy,
- Analysis and interpretation of information, and
- Dissemination of intelligence.

From the three items mentioned above, those aspects related to human intelligence are the ones that portray incongruent and contradictory findings: indirect personal gathering strategies (part of the collection strategy), micro environment information analysis and/or interpretation (analysis and interpretation of information), as well as, informal dissemination of intelligence (dissemination of intelligence). The plethora of (contradictory) recommendations, respectively, the lack of concise recommendations, may hinder managers to embark on these elements of market intelligence operation (supported by Vuori, 2006; Wright and Calof, 2006, in Bose, 2008). These mentioned aspects of market intelligence are conducted using the body of general managers, thereby integrating the intelligence function with many organizational units, and so preventing an isolated market intelligence programme. The latter is explained as a main threat to any market intelligence system (Bose, 2008).

These incongruent and contradictory results of the literature review are used as the starting point for the empirical research part. This strategy is visualized by adding *question marks* to

the initial framework already presented in the last chapter (see Figure 13). The limitations of the study are detailed in the section 3.2.3.

Figure 14: Results from reflecting on the literature review (author's own design)



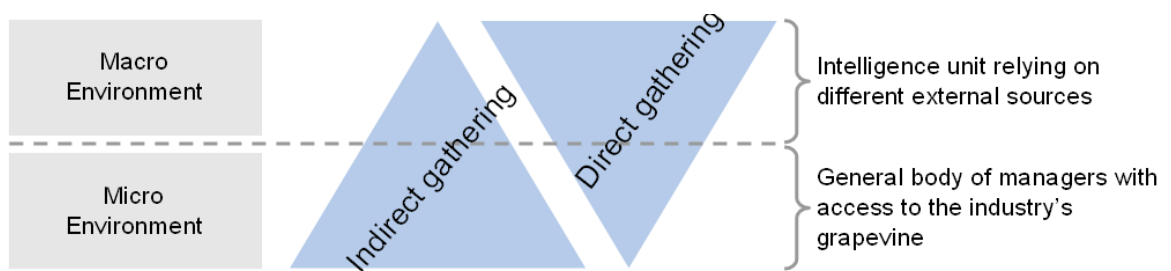
### 3.2.2.2 Indirect information gathering

Indirect gathering relates to collecting competitive information from within the company. The method includes the actual acquisition of information, through for example seeing, listening, asking questions, taking photos, collecting promotion material, among other forms, and passing on the information for analysis and interpretation purposes. In some cases it can be assumed that the processes of gathering and analysing are inter-related or even inseparable.

Indirect gathering is a distinct and important strategy (Ghoshal, 1985). It is especially relevant when retrieving information that is related to the micro environment, including information on customers, competitors or competitor products and innovations. Such information may be brought back by managers and employees after e.g. business trips, reference visits, customer meetings or participation at conferences. Information received, however, may also be part of the macro environment, or originally be from secondary sources.



Figure 15: Direct and indirect gathering strategies and their assumed value with regard to micro and macro environment information (author's own scheme)



Since only managers part of industrial relationship networks are able to collect *critical* information on customers, competitors and other elements of the micro environment (Ghoshal, 1985), it is assumed that the general body of managers is indispensable when embarking on indirect personal gathering strategies. This may relate to issues such as integrating the intelligence function with as many organizational units as possible (Bose, 2008) and fostering the exchange of information and knowledge by looking beyond computerized databases (Drott, 2001).

This indirect personal gathering strategy appears to be of essential importance, especially in plant building. The direct sales approach in plant building implies that managers and engineers from different departments, such as sales, project management, financing, technology and commissioning, are in constant and direct contact with representatives of client organizations. Furthermore, contact is held directly with financing institutions, consulting companies, suppliers, and other market participants (Kuerbisch, 2007). It is the complex and technologically demanding nature of the business that paves way for this direct sales approach (Eberle, 2008). This makes the exponents of the aforementioned departments potential partners for indirect gathering strategies.

Another argument in favour of the indirect personal gathering strategy is the timeliness of the information that serves as input into the intelligence system. This timeliness is described by Fuld (1985, in Pease, 1991, p. 22) as a sequence of events:

- (1) Rumours about an event occur,
- (2) Insiders know about the event,
- (3) The event occurs,
- (4) Trade press writes about it,

- (5) General press writes about it,
- (6) Events gets recorded in a database, and
- (7) Lastly the event is shelved in the library.

Kuada (2002) states that market intelligence needs to be a system that allows for *early* identification of opportunities and threats. The direct sales approach of plant building may allow embarking on indirect gathering strategies, taking into account the timeliness of information.

The plethora of recommendations in literature have received little consensus (Vuori, 2006; Koskinen et al., 2005, in Vuori, 2006). This fact together with aforementioned criticisms by Drott (2001) and Bose (2008) make this starting point worthy of further investigation. Recapitulating, the array of recommendations includes the following:

- Technological (e.g. virtual, software) versus non-technological approach (e.g. physical meetings).
- Formal (e.g. department or team meetings) versus informal approaches (e.g. networks, open participation meetings).
- Laissez-faire approach: indexed lists.
- Flanking measures by intelligence personnel, such as follow-up calls, or information requesting e-mails, intelligence boxes and debriefing activities.

**Detailed research question #1 is therefore:**

*“How do plant building managers gather and share competitive information?”*

### 3.2.2.3 Information analysis and interpretation

The information that is gathered may be grouped into two different categories, firstly, information from the macro environment and secondly, information from the micro environment. Ghoshal (1985) and Prescott (1999) recommend establishing a central intelligence function, alternatively, this function is performed by another central department (Quinn, 1985), or by intelligence task forces located at individual business units of an organization (Prescott, 1999). The task of analysing and interpreting macro environment information is often related to the role of an analyst within such central units (Ghoshal, 1985; Prescott, 1999). Techniques for analysing and/or interpreting information from the

macro environment are portrayed as structured and formalized methods such as PESTLE, industry analysis or the SWOT analysis (Prescott, 1999).

In contrast to the recommendations concerning analysis and/or interpretation of macro environment information, the findings for micro environment information analysis are ambiguous. Again, it is necessary to rely on non-intelligence personnel in the course of micro environment information analysis. Ghoshal (1985) clearly states that mainly managers with experience and knowledge in the actual business domain are in a position to judge and assess micro environment information. Personnel from the intelligence unit (or other central department) is said to be divorced from the context and is therefore not in a position to perform such activities (Ghoshal, 1985). The array of contradictory recommendations for micro environment information analysis is summarized as follows:

- Technological (e.g. virtual meetings, software) versus non-technological approach (e.g. physical meetings).
- Formal (e.g. department or team meetings) versus informal approaches (e.g. networks, open participation meetings).
- Laissez-faire approach: indexed lists.
- Flanking measures by intelligence personnel, such as organizing expert analysis meetings and managing indexed lists.

Further criticisms are available from literature that may be brought into connection with micro environment information analysis. Marin and Poulter (2003), Myburgh (2004) and Vuori (2006) see market intelligence and knowledge management connected. Drott (2001) purports that information and knowledge exchanges are relevant in market intelligence. Since information analysis and interpretation (especially from the micro environment) requires a knowledge and experience background (Ghoshal, 1985), structures and settings from the knowledge management domain may be helpful to advance the understanding and guide the establishment of micro environment information analyses processes.

In addition, the analytical and interpretative techniques and methods used in conjunction with micro environment information are not addressed in literature. PESTLE or SWOT are said to be used mainly in macro environment information analyses. Therefore, micro environment information analysis and interpretation are worthy of further investigation.

**Detailed research question #2 is therefore:**

*“How do plant building managers analyse and interpret competitive information?”*

3.2.2.4 Informal dissemination of intelligence

Informal dissemination of intelligence is a building block of an intelligence system. Importantly, it integrates intelligence with many organizational units (Bose, 2008) and allows the latter to profit from intelligence produced at other venues. Although (a limited number of) examples of informal dissemination of intelligence are presented in literature, this aspect is worthy of further investigation. This may be related to criticisms from literature, such as Drott’s (2001) call for a connection of market intelligence and learning.

**Detailed research question #3 is therefore:**

*“How is market intelligence disseminated informally?”*

3.2.2.5 Concept development for plant building market intelligence

Using the contradictions and weaknesses of literature as a starting point will allow to immerse into plant building specifics by deliberately including plant building experts into the investigation. This is important as to establish a plant building market intelligence framework by exploring how the phenomenon of market intelligence unfolds in this particular industry. This implies concluding the research from within the industry eventually moving from the simplistic intelligence cycle, deemed not capable of fully explaining a complex phenomenon as market intelligence, to a refined conceptual framework that is able to explain the phenomenon in a more precise way.

**Detail research question #4:**

*“How can a market intelligence framework for the plant building industry be re-conceptualized in order to add value to the knowledge base of the organization?”*

This research question is furthermore related to the criticisms expressed by a number of researchers, which have already been included in this section. It is connected to organic strategies, that allow establishing integrated analysis frameworks by connecting market

intelligence to many organizational units. The inclusion of personal knowledge as an input factor into market intelligence operations, furthermore requires moving this concept beyond software solutions, possibly connecting market intelligence with knowledge management topics and/or learning processes. Eventually, the four detailed research questions are connected to a larger number of sub-questions, although these are not included here as they are thought to emerge as additional insights from the exploratory investigation. This requires an appropriate and sensitive research approach and set of methods and techniques ensuring rich descriptions leading to a comprehensive layout of the phenomenon of market intelligence.

### 3.2.3 Limitations of the research

Producing a conceptual framework forces one to specify, not only what will be studied, but also what is going to be omitted (Gray, 2009). The market intelligence process as it unfolds in the plant building industry forms the core interest of the investigation. This relates to exploring, formulating and possibly (re-)arranging individual stages related to the overall process based on what has been learnt from the initial conceptual framework.

It has been said, that organizational awareness and culture is a main component to any intelligence operation (Muller, 2003). This culture has to exist and must be nourished, for example through unambiguous support of the intelligence programme by top management. Havenga and Botha (2003) purport that without visible support by top management, the intelligence programme may not be viewed as a corporate priority by the general body of managers. As shown already, the support of individual managers and employees is, however, required in several steps of the intelligence operation. Moreover, corporate reality usually includes a plethora of initiatives, possibly leading to the perception that intelligence is but one more kind of initiative. Items such as culture, supportive or preventive to the development of the market intelligence programme, as well as, the awareness with regard to its importance are therefore assumed to exist.

Attitudes and skills of individual managers with regard to market intelligence operations are critical. Information as a principal source of power may not be transmitted from line managers and other personnel, due to lack of rewards and incentives and perceived loss of power. Liebowitz (2006) argues that rewards and incentives may offer support in overcoming such a situation, where the human intelligence network is not willing to

participate in market intelligence operations. Kelly (2006) adds, that managers *trade* information they have, for information they need and that this should be considered when designing information gathering methods. This work therefore assumes willingness of managers to participate, as well as, of the people involved. It furthermore assumes that participants are trained appropriately in order to be able to participate in a market intelligence programme.

The definition of intelligence needs, a key aspect in the management of the market intelligence process, will also be excluded from research. Firstly, the state of research on this issue, be it with regard to the intelligence audit or the key intelligence topics, is advanced. The benefits from engaging in this aspect is therefore minor; moreover Herring (1999) purports, that intelligence topics may differ from company to company, even within the same industry, due to different priorities and strategies of the individual enterprise. Since it is the aim of the study to produce results that are transferable to the entire industry, intelligence needs cannot be included.

Utilization of intelligence in business processes, for example in strategic planning, decision making or problem solving, is furthermore excluded. The idea of utilizing intelligence in managerial work has often given rise to criticisms. According to Little and Fahey (2006), as well as Ghoshal (1985), failures with regard to integrating intelligence and action are foremost due to lacking skills of intelligence personnel or may be related to the attitude of intelligence users towards intelligence. The latter may include the opinion of users that intelligence is not beneficial to their work, especially, when intelligence commands re-thinking of established practices and routines.

The importance of an appropriate software tool to support intelligence operations is acknowledged by the author. This field has, through the development of an own market for such applications, gained in momentum. Nevertheless, the purpose of the study is not to advise in terms of suitable tools. Hare (2008) suggests that a framework or process has to be established prior to any technology development or implementation. It is thus the framework that has to exert its demands on the software application and not vice-versa (Hare, 2008), admitting the framework concept a higher priority.

### **3.3 Research Methodology**

#### **3.3.1 Social constructivism in research**

The theoretical position, other researchers call it research philosophy (Saunders et al., 2007) or research paradigm (Guba and Lincoln, 1994), refers to a set of philosophical assumptions (Guba and Lincoln, 1994) with regard to ontology and epistemology and typically includes specific methodological strategies (Maxwell, 2005). Guba (1990, in Punch, 1994) sees paradigms as a basic set of beliefs that guide actions. The researcher thus approaches the world with a set of ideas, a framework including theory and ontology, that specifies questions (epistemology) that the researcher then examines using a specific methodology and method of analysis (Denzin and Lincoln, 2000). Paradigms are thus human constructions that guide thinking and doing, through the worldview developed.

Positivism, post-positivism, constructivism, critical theory and others have been termed major paradigms (Punch, 1994). Epistemology relates to the question of the nature of knowledge, as well as, the relationship between the inquirer and the known (Punch, 1994). Ontology on the other hand, raises basic questions about the nature of reality (Punch, 1994). Epistemology and ontology exert their forces on methodology, which is concerned with the way that knowledge is gained about the world (Punch, 1994).

Major paradigms have been thought to be competing for acceptance as the paradigm of choice in informing and guiding inquiry (Guba and Lincoln, 1994), although the metaphor of the “paradigm wars” (Gage, 1989, in Guba and Lincoln, 1994, p. 116) seems to be overdrawn. Positivism often provides the backdrop against which other paradigms operate (Punch, 1994). It has come under criticism as positivist (including post-positivist) paradigms are unable to deal adequately with the surrounding etic, emic, nomothetic and idiographic dimensions of inquiry (Guba, 1990, in Punch, 1994). Guba thinks that too many local (emic), case-based (idiographic) meanings are excluded by the generalizing (etic), nomothetic, positivist position (1990, in Punch, 1994).

Constructivism has been termed a “mosaic” (Holstein and Gubrium, 2008, p. 7) informing many different research programmes in such fields as anthropology, social sciences, psychology and also management studies. Constructivism adopts a relativist ontology (Guba

and Lincoln, 1994), meaning that multiple realities are mental constructions based on social and experiential input and are local and specific in nature. These constructions are alterable as are the associated realities. Alterable, multiple realities are in sharp contrast to nominalism or idealism (Guba and Lincoln, 1994). The transactional and subjectivist epistemology assumes that investigator and objective of investigation are interactively linked so that findings are created as the inquiry proceeds (Guba and Lincoln, 1994). The methodology has been described as hermeneutical and dialectical, in the sense that individual constructions can only be refined through interactions between investigator and participants (Guba and Lincoln, 1994). The aims of inquiry orient themselves towards the production of reconstructed understandings. According to Schwandt (1989, in Punch, 1994), constructivist approaches basically enact an emic and idiographic approach to inquiry. The latter are preferred approaches in the context of this work, as it is the objective to produce a contribution from within industry.

Social constructivism suggests that the world that people create, in the course of social interaction, is unique in its characteristics (Thomas and Linstead, 2002). It provides the thought, that knowledge is created through exchanges among people. A social constructivist could believe that people forge the meaning of a situation in discussions and/or interactions. Thus a methodology influenced by social constructivism is a distinctive way of disputing a shared comprehension of the social world, through its own vocabulary and language of interpretation (Holstein and Gubrium, 2008). Constructivist research typically deals with practical workings of what is constructed and how the process unfolds (Holstein and Gubrium, 2008). Although this puts constructivism into a close relationship with qualitative research methodology, this may not necessarily be the case (Guba and Lincoln, 1994).

Although social constructivism has received substantial recognition throughout the academic community, several weaknesses are associated with it. The negotiation process may prove to be time consuming, sometimes not only unfolding in the discussion, but also in the questioning part of research. Mitigating this threat requires skills such as negotiation techniques and time management abilities. Furthermore, analysis and interpretation work are difficult to perform. Due to the lack of widely acknowledged techniques, a well-thought through and thoroughly detailed research design is necessary. In comparison, the instruments quantitative research employs are developed and clear.



In addition, low credibility of constructivist research findings with policy makers have been mentioned (Easterby-Smith et al., 2008). This may be due to higher credibility associated with quantitative research, often characterized as *robust*, *objective* or *detached*. In social constructivist research work the aim may not be to produce research with the aforementioned characteristics, but rather promote a better way of thinking and living, by constructing “valuable and beneficial conceptualizations” (Weinberg, 2008, in Holstein and Gubrium, 2008, p. 15). Negotiating processes in research may render desired results such as lowering barriers from opposing stakeholders drawn into the research process. This approach may lead to more sustainable results (see also Kurt Lewin, 2004).

### 3.3.2 Adopting a deductive approach

Bose (2008) considers deduction, induction, pattern recognition and trend analysis as fundamental forms of analyses. Inductive reasoning is related to the ability of combining separate pieces of information and answers to problems, among others, is order to establish general rules or conclusions (Bose, 2008). It involves thinking about why different items belong together (Bose, 2008). This approach requires searching for emerging patterns only after data collection and analysis.

Deductive reasoning means to apply general rules to specific pieces of information or problems for the production of a logical solution (Bose, 2008). This process includes deciding if the solution makes sense (Bose, 2008). It furthermore involves deciding on the premises for analysis before considering the data. This approach is in line with the general theoretical approach in this research, as well as, with the approach used in the systematic review and with Yin’s (2009) demand for theory before practice. Although, social constructivism appears to favour the use of induction through the construction of rich data (Easterby-Smith et al., 2008), this is not generally the case (Roworth-Stokes, 2006; Gubrium and Holstein, 2008).

The research approach here is described as *rather* deductive, with some inductive elements. Although themes are initially constructed before data collection, they are re-visited after data making in order to re-assess their relevance in a pragmatic manner, leading to minor modifications. Qualitative research has sometimes been called an iterative process, with the researcher alternating between literature and data. There is a similar interplay between deductive and inductive approaches, often preventing clear-cut determinations.

### 3.3.3 Qualitative methodologies

Strategies of inquiry include qualitative, quantitative and mixed methods research. They are sometimes referred to as “research approaches” (Creswell, 2007, in Creswell, 2009, p. 5) or “research methodologies” (Mertens, 1998, in Creswell, 2009, p. 5). Although Guba and Lincoln (1994) state that, both qualitative and quantitative methods may be used appropriately with any research paradigm (Guba and Lincoln, 1994), preferences for certain strategies appear to exist (Maxwell, 2005).

Quantitative research has been brought into relation with researchers using logical positivism and employing methods such as experiments and quantitative measurements to test hypothetical generalizations (Hoepfl, 1997, in Golafshani, 2003). In such an approach the emphasis is on (1) facts and causes of behaviour, (2) data in the form of numbers, (3) mathematical processes in analysis, and (4) expression of the final result in statistical terminologies (Charles, 1995, in Golafshani, 2003). Such a position emphasizes that the world is made up of observable, measurable facts based on the assumption that social facts have an objective reality. This stance is opposed by interpretive positions. Pablo Picasso, the renowned painter, expressed in 1966:

*„If there was only one truth, you could not paint a hundred canvases on a single theme.”*

Qualitative research uses a naturalistic approach. It tries to understand a phenomenon as it occurs in a context-specific setting (Golafshani, 2003). Thereby, it produces non-numerical data, and the findings from such research processes are not arrived at by statistical or other numerical means. Instead, qualitative researchers seek understanding and extrapolation to similar situations (Hoepfl, 1997, in Golafshani, 2003). Qualitative research implies that the emphasis of the inquiry lies on the qualities of entities, on processes and meanings, not experimentally examined or measured in terms of quantity, intensity or frequency (Denzin and Lincoln, 2000). In essence, and although qualitative research is many things to many people, it requires commitment to a naturalistic or interpretive approach, as well as, an ongoing critique of the politics and methods of (post-)positivism (Denzin and Lincoln, 2000). Qualitative research differs from quantitative in five significant ways (Denzin and Lincoln, 2000):

- Use or denial of positivism and post-positivism,
- Acceptance of postmodern sensibilities,
- Capturing the individual's point of view,
- Examining constraints of life, being and understanding,
- Securing rich descriptions.

Qualitative research has often been criticized for its lack of scientific rigour (Mays and Pope, 1995). “Unscientific” is a label that is particularly damning, considering the prevailing notion that scientific knowledge constitutes the highest form of knowing (Mays and Pope, 1995). The criticisms most frequently witnessed are those attacking qualitative research at its foundations, that it is but an assembly of anecdotes and/or personal impressions, that it is prone to researcher bias, that it lacks reproducibility, as well as, generalizability (Mays and Pope, 1995). The many methodological techniques employed by qualitative researchers have been viewed as “soft” science – and a relation between qualitative research and artistic activities or journalism have been established (Cook, 1981, in Denzin and Lincoln, 2000; Wolcott, 1995, in Denzin and Lincoln, 2000).

These critics presume nothing less than a stable, unchanging reality that can be studied using empirical methods (Denzin and Lincoln, 2000), which is highly questionable especially in the research of human affairs. In recent years counter-pressures against the quantification of research have emerged and the recognition of qualitative research has steadily increased over the past decades (Flick, 2009). Qualitative researchers may stress that objective reality cannot be captured, and that the thing is only known is through its representation (Denzin and Lincoln, 2000).

Today, researchers such as Flick (2009), see research methodologies separately, but side by side, with the applicability related to the individual overall research question. Agreement with such a position as the author does, suggests that neither approach is per se preferable, but rather it is the context that prefers one or the other (or even a combination of both) methodology.

As qualitative research is contextual, being collected in a natural setting (Gray, 2009), it makes it well applicable for the proposition and the questions that this work addresses.

Qualitative research can show how and why things happen (Charmaz, 1995, in Gray, 2009). A wide range of interconnected interpretive practices may be deployed, all with the aim to obtain a better understanding of the subject matter (Denzin and Lincoln, 2000). Qualitative research has been linked closely to exploratory research, to be used in cases in which there is little known about the phenomenon to be studied (Strauss and Corbin, 1990, in Gray, 2009). Qualitative strategies include a number of approaches such as ethnography, grounded theory, phenomenological research and others (Flick, 2009). It does not have a distinct set of methods that are entirely its own, rather, qualitative researchers use different practices and techniques (Denzin and Lincoln, 2000). No specific method can be privileged over any other, as every single one may provide important insights and knowledge (Denzin and Lincoln, 2000).

This exploratory study will follow a purely qualitative inquiry strategy. It is the preferred method that provides answers to how and why questions, as the focus lies on a complex, contemporary phenomenon within a real-life context, which is the case in the research presented. Some researchers argue, that a combination of qualitative and quantitative methods can produce better results than studies relying on just one method. However, according to Kleining (1982, in Flick, 2009) qualitative methods do not need any quantitative method to complement the results. This research is drawing from a considerable basis of existing industrial market intelligence literature, referring to theoretical and empirical research including quantitative, qualitative and mixed methods studies. The focus is placed on exploring how the process unfolds in an industry that has to date received little attention. This situation allows the sole use of qualitative methods.

#### 3.3.4 Discussing applicable research methods

Constructivist research has its origin in the assumption, that there is no absolute truth, but it is the duty of the researcher to establish how various claims for truth and reality are constructed in everyday life (Easterby-Smith et. al, 2008). Easterby-Smith et al. (2008) present a chart showing the compatibility of research methods and epistemologies. Action research, narrative methods, grounded theory and ethnography have been explicitly mentioned to commensurate well with a constructivist position. Case study research may be referred to as a broad based method (Easterby-Smith et. al, 2008) and has also proven its beneficial applicability in constructivist research programmes (Thomas and Linstead, 2002).

In short, the use of a qualitative case study approach delivers the answers to the questions posed.

Action research has often been used to initiate change, with the researcher itself becoming the agent promoting change. This flexible method has been used in many research programmes, proving its applicability. However, the objective here is not to change industry practices, but rather to construct a conceptualization that has not yet been prepared. The purpose for engaging in this project is fundamentally different than in projects under the auspices of action research. It is considered that action research is not the preferred method in the context of this study.

Grounded theory has often preferred codes, widely used in the analysis of qualitative data, to emerge from the data collected (Easterby-Smith et al., 2008). The method proposed by Glaser and Strauss (1967, in Eisenhardt, 1989) relies on continuous comparison of data and theory, beginning with data collection. Such an approach is not applicable here, as this work draws on existing theory from industrial market intelligence. For this reason, grounded theory is not implemented.

Ethnography is a method that has been used by outsiders to understand social behaviour of certain groups or communities by acceding to them (Gray, 2009). The author is, however, not an outsider to industrial plant building. Ethnography may thus be of limited use in this research, and is so not considered as a research method.

Narrative methods have contributed research findings by emphasizing the importance of stories and myths as a central element of organizational reality (Easterby-Smith et al., 2008). Although proven in its applicability, the focus of this work is placed on exploring the managerial process itself, rather than understanding the process solely through stories and myths. Therefore, narrative methods are not implemented in this research project.

A further point of interest is the construction of theory before turning to the empirical study. This has been argued by Maxwell (2005) as an important component of conceptual framework development, furthermore, developing an initial understanding of theory before turning to data, is according to Yin (2009), a characteristic of advanced research practice. Theory is used to refine and sharpen the subsequent research process. Typically,

ethnography (Lincoln and Guba, 1985, in Yin, 2009) and grounded theory (Corbin and Strauss, 2007, in Yin, 2009) deliberately avoid such an approach, which has been criticized, as being prone to misleading the research direction and process (Yin, 2009). Although theory development is a time-consuming process, it improves rigour and quality of research work. Case studies on the other hand, may implement theory development before turning to an empirical part.

### **3.4 Case Study Research**

#### 3.4.1 Definition and characteristics

A case study is a research strategy that examines a phenomenon in its natural setting, with the boundaries of the phenomenon not clearly evident at the onset, and where no experimental control or manipulation is used. The case study method is implemented in many different fields of science such as psychology, sociology, political science or business management. Case studies seek to illuminate a process, especially why and how it is implemented (Schramm, 1971, in Yin, 2009). The need for a case study arises, thus, from the desire to understand a complex social phenomenon (Verschuren, 2003), and is according to Yin (2009) explicitly applicable for researching managerial processes. Gerring (2004) states that the many attempts to clarify what *case study research* means, have resulted in a disarrangement of definitions. A common-sense definition is therefore likely to be of greater value (Flyvbjerg, 2011). Gerring (2004, p. 342) formulates the following definition of a case study as:

*“...an intensive study of a single unit for the purpose of understanding a larger class of (similar) units.”*

Whereby Gerring (2004, p. 342) connotes the term “unit” with

*“... a spatially bound phenomenon.”*

Case studies are a method having been implemented by researchers embedded in a variety of paradigms (Roworth-Stokes, 2006; Easterby-Smith et al., 2008). Case studies appear to be used in quantitative, as well as, in qualitative research (Guba and Lincoln, 1994, in Roworth-Stokes, 2006; Flyvbjerg, 2011). According to Roworth-Stokes (2006) and Gerring

(2004), however, researchers tend to use case studies more often in association with a qualitative approach.

Flyvbjerg (2011) defines four characteristics of case study research, beginning with the demarcation of the unit's boundaries (the actual case), and the intensity of case studies, where the latter comprise a richer and more complete picture. Flyvbjerg goes on mentioning a developmental factor that a case evolves in time often as a string of interrelated events, where the case then actually comprises the string as a whole. Lastly, the relation to the environment is the importance of the context in which the case is embedded (Flyvbjerg, 2011).

Differences seem to centre around the question of employing either single or multiple case designs (see also Roworth-Stokes, 2006; Gray, 2009). Multiple case designs have been promoted by realists such as Yin (2002, in Easterby-Smith, 2008), whereas constructivist researchers such as Stake (2006 in Easterby-Smith et al., 2008) appear to prefer single case designs. In practice, however, this question is of lower priority to some researchers (Kerr et al., 2006), becoming more complex when confronted with the question of what constitutes a case.

Rigid divisions between multiple and single case designs, as suggested by some writers (Yin, 2002), do not seem to be in place, as many of the so called single case studies may be seen as multiple case studies (Eisenhardt, 1991; Kerr et al., 2006). Mortara et al. (2009) speak of a case study consisting of several cases without feeling the need to label it a *multiple* study. This phenomenon appears to be present in other pieces of research, as well. This ambivalence leads to the perception that one reason for applying the *multiple* label to a case study seems to be the perceived higher credibility of such research results (Yin, 2009). This approach resembles a *marketing label* and is thus useless in social constructivist research. Concerning data collection, constructivist studies seem to rely more on direct observation and on direct contacts, generally in the form of interviews (Stake, 2006, in Easterby-Smith et al., 2008).

#### 3.4.2 Strengths of case study research

One of the main advantages of case study research is that it is used for conducting research on managerial processes (Yin, 2009). As often the case in managerial processes, an

intervention may not always have a single and clear outcome, which may be the case in market intelligence, too. In such instances a case study may be used to explore the situation, and if only to advance the general understanding of the circumstances. This is applicable in exploratory research, where no causal relationships are established.

Case study research allows the researcher to become deeply immersed in the field of study, both in theoretical and practical ways, thus becoming an expert through the study of theory. Case study research makes producing knowledge on different levels possible and adds to the theoretical stock of knowledge, as well as, to finding solutions for problems in practice. Such an approach has often been characterized by the use of emic and etic perspectives. The first one is used to incorporate an insider view, whereby the latter represents an outsider view to the research problem. These terms have been amply used in qualitative research. The etic view is provided by the researcher, who, through the review of literature and the study of theory, has developed a *general perspective*. In the case of this research a theoretical perspective for industrial firms is presented. The emic view, or *particular perspective*, is provided by the interviewees. Although such terms are not clear cut, especially with regard to the position of the author as a manager in the plant building industry, they serve to highlight the relative positions.

The overreliance on the emic perspective may be considered as a drawback in the construction of theory. Therefore, a balanced use of emic and etic perspectives has been argued to be of crucial significance in the correct use of case research approaches (Jönsson and Lukka, 2005). The balanced use of insider's and outsider's views provides a broader understanding. Yin (2009) shares a similar view of the implementation of both perspectives. In Yin's conceptions on case study research, the etic perspective refers to the role of theory to be reviewed before starting, and thus shaping, the research process. By constructing an initial framework based on theory, an outsider's view is allowed in the process. The role of theory shapes the following empirical research process in a way that it tries to avoid researching issues that have already been disseminated in earlier works. The systematic review has been chosen to give the etic perspective a methodological foundation that has received much attention and credibility from academia.

The most important merits are that this kind of research approach enables the researcher to collect more subtle and significant data, than what otherwise be accessed through more traditional methods (Jönsson and Lukka, 2005). The intensity of dealing with the question or



problem is the reason why the researcher is deeply immersed in the field (Yin, 2009). In other words, the researcher has the potential to gain emic understanding of what is going on in the case organization(s). The insight gained may lead to the construction of new realities (Jönsson and Lukka, 2005) and is therefore a preferred method for social constructivists. It incorporates moving between the pure logic of academia and practical logic of the field, which may be considered a major motivation for anyone pursuing a doctorate of business administration. Dealing with a problem originating from managerial practice in a scientific way has been mentioned to be a key starting point in applied research (Hergert, 2010).

Working with practitioners is a great advantage in qualitative case studies. Aristotle (in Flvbjerg, 2011) once stated that people who do not possess theoretical knowledge are more effective in action, especially if they are experienced, than others who possess this knowledge. This is important as it is the aim to re-conceptualize and advance existing knowledge, using a heuristic approach providing a rich picture of practical workings, beneficial to managerial practices. The researcher is an active person in the real-life field, adopting an emic perspective, studying a given system from within (Jönsson and Lukka, 2005). Not adopting an emic perspective, a synonym for an insider or a competent and trustworthy person, appends risks to the research process. Insiders are persons that participants to a study choose to communicate, debate and, possibly, act with (Jönsson and Lukka, 2005). Not being an insider may hinder progress and contribution to knowledge, as the researcher may be regarded as a *tourist* in the field of research.

Plant building, which is an industry formed through historic and cultural norms, has created a reality that is characterized by its unique language and behaviour. Therefore, the emic perspective is advantageous to the research project. It supports the endeavour of the researcher to obtain trust and respect from participants, as their views are formed through aforementioned norms often expressed and communicated in form of stories. An insider is aware of historic and cultural norms, and is able to understand terminologies, stories and industry language.

Exploratory case studies are used to provide deep understanding and illustrate abstract concepts. Exploration thus leads to developing theory and/or contributes to problem solving (Lukka and Kasanen, 1995 in Jönsson and Lukka, 2005; Roworth-Stokes, 2006). The emphasis is placed on building trust with respondents. Its ontological and epistemological

implications have been termed subjective, with the case design using a deductive and purely qualitative approach (Roworth-Stokes, 2006). Roworth-Stokes (2006) states that case studies are compatible with a constructivist predisposition. This research approach has the potential to be meaningful from the empirical, situation-specific viewpoint, as well as, from a more general, theoretical perspective (Jönsson and Lukka, 2005). This may include the motivation to change a general design to a more particularistic solution concept. The particularistic concept is typically produced with the members of an organization and/or the participants of a study (Jönsson and Lukka, 2005).

### 3.4.3 Building theory from case studies

Development of theory is a central activity in research, and different approaches may be applied in the creation of theories. Case studies are an appropriate research strategy to engage in theory development in new topic areas (Eisenhardt, 1989; Eisenhardt, 1991; Yin 2009). The early stages of research on a topic tend to be the most appropriate moments to undertake theory building from case studies (Eisenhardt, 1989). When there is little known about a contemporary, complex phenomenon case study research may produce novel and empirically valid theory (Eisenhardt, 1989). The closeness to the data may lead to an intimate sense of them, “how they smell, feel, seem” (Mintzberg, 1979, in Eisenhardt, 1989, p. 547).

Several researchers have detailed how case study research may be used to build theories, among them Strauss (1987, in Eisenhardt, 1989), Yin (1984, in Eisenhardt, 1989) and Miles and Huberman (1984, in Eisenhardt, 1989). Their methodological and theoretical contributions have shaped the understanding of case study research. In addition, a number of other researchers have further deepened methodological understandings. Eisenhardt (1989) has synthesized many of them and has given an overview of how to engage in theory development from case study research. The process of theory development has been described as being alive, with tension between divergence into new ways of understanding the data and convergence in a single theoretical framework (Eisenhardt, 1989). The process is linked with the empirical evidence and is explained in the research design. Especially Yin (2009), but also Eisenhardt (1989) have put emphasis on the research design as being essential in the building of theory. The similarities and differences have been discussed in detail, with both of the authors agreeing on the importance of multiple data collection methods, which has also been implemented here. Furthermore, overlapping collection and

analysis processes have been termed as being important, whereby this has been facilitated in this research by the use of a reflective comments log. One of the main differences between Yin and Eisenhardt is, that the latter rejects the role of theory in shaping empirical studies, and thus follows the argument of *grounded theorists* as described by Glaser and Strauss. Yin sees theory as shaping the inquiry process, which is followed in this research, consistent with a theoretic and deductive approach.

Theory building from case studies has been misunderstood as being limited by the preconceptions of the investigator(s). In fact, the juxtaposition of the creative insight obtained from reconciling potential differences, focusing on emerging insights (see section 5.7) and reframing them into a new gestalt is at the core of theory building from case studies. Potential differences may unfreeze thinking and minimize bias from the researcher (Eisenhardt, 1989). The latter has also been witnessed in the course of this research, and is affirmed by the author.

Grand theory may require multiple studies, a combination of theory-building and theory-testing empirical studies (Eisenhardt, 1989), which was not the goal of this study. Rather, a refined conceptual framework, as an intermediate type of theory has been formulated as being the main objective. Although this may be seen as a weakness, it may also be comprehended as a major advantage of case study theory building. The latter can be seen as a bottom-up approach in theory building, resulting in idiosyncratic theory (Eisenhardt, 1989).

Although the use of a multiple case study has been promoted in the construction of theory from case study research, this was rejected here. Even though no cases were defined, particular methods in terms of analysis and interpretation were employed on the multiple sources of data leading to replication and extension across the plant building industry. The insights obtained may be called novel, and are justified as contribution to knowledge in section 6.5.

#### 3.4.4 Analysing misunderstandings that lower the credibility of case study research

Case studies have sometimes been viewed as a less desirable research method. This has led exponents of case study research such as Yin (1993, p. 40, in Roworth-Stokes, 2006) to perceive the value of case studies as underappreciated:

*“Most people use it as a method of last resort, and even they use it with uneasiness and uncertainty. Despite the availability of key works on how to do case study research.”*

A number of misunderstandings purported throughout literature have contributed to this notion. Case studies are often related with journalism or ethnography, rather than with scientific rigour. A case study is often seen as merely telling a story (Eisenhardt, 1991; Flyvbjerg, 2011). Such a stance is not understandable as much of the findings gained from case study research have entered the pantheon of classic works (Gerring, 2004). In an attempt to secure wider acceptance and credibility for the case study approach, Flyvbjerg, (2011) a Danish Economist from Oxford University, analysed and corrected the five foremost misunderstandings. As the case study is the central element of this thesis, the main insights are summarized from Flyvbjerg’s (2011) paper.

The first misunderstanding relates to a general conception that stipulates that general, theoretical knowledge (context-independent) is more valuable than concrete case knowledge (context-dependent) (Flyvbjerg, 2011). Flyvbjerg (2011) strongly disagrees with such a stance, purporting that predictive theories and universals cannot be found in the study of human affairs. Therefore, concrete case knowledge is at least as valuable, especially in the domain of the social sciences. Thus, generally privileging theoretical knowledge over practical knowledge is not acceptable.

Generalization is another major concern with regard to case study research. In this work generalizing from research findings to a conceptual framework, applicable to the plant building industry, is a key element, and thus, this reservation needs to be taken seriously. It has been regarded as difficult to generalize from a single case study, although not impossible (Verschuren, 2003; Flyvbjerg, 2011). Mitchell (1983, in Verschuren, 2003) also defends the idea of generalizing with the help of case studies, however not in the form of statistical generalization, due to the fact that case studies do not represent samples. Flyvbjerg (2011, p. 305) states in this regard:

*“One can often generalize on the basis of a single case, and the case study may be central to scientific development via generalization as supplement or alternative to*

*other methods. But formal generalization is overvalued as a source of scientific development, whereas ‘the force of the example’ and transferability are underestimated.”*

Another such misunderstanding relates to the purpose of case study research. According to critics case study research can only be used for generating hypotheses as a first step of a whole research process (Flyvbjerg, 2011). This is not correct, as case study research may be used for generating and testing hypotheses, but is not limited to this. Eisenhardt (1989 and 1991), as well as Yin (2009), agree that case study research may be used for theory generation.

Bias towards verification is the fourth foremost misunderstanding. It has been mentioned that case study research includes a tendency to confirm the researcher’s preformed opinions, which in turn leads to doubtful scientific value. This bias towards verification is, however, not a characteristic of case study research, rather, it has been termed a fundamental human characteristic since the publication of Bacon’s *Novum Organum* (Bacon, 1853, in Flyvbjerg, 2011). As case studies are said to allow the researcher more room for subjective judgment than quantitative methods, this conception remains prevalent in parts of literature (Flyvbjerg, 2011). Donald Campbell (in Flyvbjerg, 2011) and other researchers have shown that such a perception is erroneous as case study research has established its own rigour that is no less strict than the rigour of quantitative methods. Flyvbjerg (2011) maintains that case studies contain no greater bias toward verification of the researcher’s preconceived notions than any other method of inquiry. In this thesis, participants were asked as to the question of bias at the interview stage as well as in the feedback e-mail (see Appendix No. 5). Their answers provided the opportunity to proceed with the analysis.

The difficulty of summarizing the findings from case study research and the subsequent development of general propositions and theories is the last of the misunderstandings portrayed. Flyvbjerg (2011) purports that this arises from the properties of realities under study and not resulting from a limitation of the method.

#### 3.4.5 Tying in a strategy to mitigate case study-inherent weaknesses

In contrast to the above mentioned misunderstandings, which from the author’s viewpoint unjustly affect the credibility of this method, a number of weaknesses exist, which have to

be considered when engaging in case study research. A strategy to mitigate risks arising from such weaknesses is a proper way to deal with such issues.

When implementing the case study method in this research, two items will be of general interest. Firstly the influence of a constructivist position on the research design, as well as, secondly, mitigating the threats and weaknesses associated with case study research. Whereas the first item is a subject of the next chapter, the latter has attracted critics stating that case study research is inadequate for the following reasons (Young, 1998):

- Complexity of theory,
- Lack of rigour,
- Possibility of bias,
- Little basis for generalization,
- Practical difficulties associated with the large amounts of data collected, analysed and reported, and
- Long time needed for the research.

Complexity of theory is a statement that may be affirmed, however, it is not accepted that a complex theory is per se inadequate. Rather, complexity of theory may be mastered through study and training, in this case facilitated through the DBA modules. Careful analysis of literature is indispensable.

Lack of rigour is a criticism that the case study method shares with other qualitative methods, and that has to be taken seriously by the researcher (Yin, 2009). Some case studies have been undertaken without following systematic procedures. This lack of rigour, that has projected a poor image of this method, is sometimes related to the fewer number of texts that portray the method in a detailed and systematic manner (Yin, 2009). Strategies to overcome such concerns are rigorous and systematic, reporting on techniques used, as well as, disclosing decisions taken by the researcher. This topic of improving on quality in case study design, is therefore of special importance, a separate section is devoted to this issue at the end of this chapter.

Large amounts of data may be collected in the course of case study research, and the resulting theory can be very complex (Young, 1998). This point of view is not an argument against case study, this is merely a representation of a reality that in itself is complex. It is

thus rather an argument in favour of qualitative case studies, as these are more individual and fair, instead of silencing many voices as do quantitative methods. Many researchers think that limitations, as for example with regard to the timeliness of research or the massive amounts of data can be minimized by careful planning and execution of the research project (Lincoln and Guba, 1985, in Young, 1998; Yin, 1989, in Young, 1998; Patton, 1990, in Young, 1998). The other elements of Young's (1998) list, little basis for generalization and possibility of bias, have already been dealt with in the previous section.

### 3.4.6 Arguing the use of the case study method in this research

Yin (1989) suggests that establishing appropriateness of a particular research method is related to assessing a number of criteria. These are the research purpose, the control the researcher has in studying the phenomenon, and the contemporary or historical focus. Easterby-Smith et al. (2008) add to these criteria the compatibility of the method with the theoretical position, as well as, the types of questions to be asked.

Table 5: Provisions used in arguing the use of case study research (author's own scheme)

| Criteria   | Description of the argument in favour of case research  |
|--|---|
| Theoretical position (inquiry paradigm)            | A constructivist position is commensurate with a case study research approach (Thomas and Linstead, 2002; Easterby-Smith et al., 2008). |
| Research purpose                                   | Exploratory research has been closely linked to employing the case study approach (Yin, 1989; Thomas and Linstead, 2002).               |
| Control over the phenomenon                        | For studies with little control over the phenomenon (Yin (1989). Especially in complex situations.                                      |
| Historical or contemporary focus of the phenomenon | Real life, modern situation (Yin (1989).  |
| Type(s) of questions to be asked                   | Mostly "how" and "why" questions (Yin (1989).   |

The case study method has been deemed especially appropriate in studies that aim to explore complex social phenomena in context-specific situations (Yin, 1989). Patton (1990, in Young, 1998) states that case studies are particularly useful where the need arises to understand a particular community, a particular problem or a unique situation in great depth. Qualitative case studies have already successfully been implemented in social constructivist

research work (Thomas and Linstead, 2002). In intelligence studies, the case study method has also been successfully applied (Kerr et al., 2006). Therefore, the decision to employ the case study method, provides the opportunity to proceed with the research project.

### **3.5 Ethics in Social Science Research**

Ethics in research is an important topic. Northway (2002, in Flick, 2009) holds, that all aspects of the research process have ethical implications. Murphy and Dingwall (2001, in Flick, 2009) speak of ethical theory, which they see linked to four items: non-maleficence, beneficence, self-determination and justice. Although this seems acceptable, Punch (1994) states that no consensus as to the implications of ethical theory has been reached. The foremost issue in this regard is, that there appears to be a lack of understanding as to what constitutes harm or benefit in qualitative research. A general understanding is provided when agreeing that research is to be conducted to improve existing situations, in contrast to research conducted for its own sake (Flick, 2009). Self-determination and justice are related to treating participants in fair, open-minded and honest way.

Particularly in medical research and psychological experimentation, the past holds examples of a considerable amount of deception and sometimes demonstrable elements of harm. Especially, in association with the Nuremberg trials and medical experiments during the Second World War, but also regarding the role of scientists during the “Manhattan project” and the development of the atomic bomb, the view that science is intrinsically neutral and essentially beneficial disappeared (Punch, 1994). Other examples from medical research included physical harm to participants (Barber, 1976, in Punch, 1994 or Brandt, 1978, in Punch, 1994) or disguise and deception (La Pierre, 1934, in Punch, 1994; Laud Humphreys, 1972, in Punch, 1994).

Three developments were particularly influential in the development of an ethical dimension in research (Punch, 1994). The first one is a product of the women’s movement and has fostered emphasis on issues such as trust, empathy and non-exploitive relationships. A second influential development has been the stream of evolutionist and interventionist work, commonly termed as action research. In this particular work, the participant is seen as a partner, within a constructivist paradigm even as a stakeholder. This partnership in research is based on avoidance of harm, fully informed consent and the need for confidentiality and privacy (Punch, 1994). The last factor in this regard was government agencies controlling



science through restrictions, such as codes of conduct and ethical statements in research proposal, with funding institutions requiring the researcher to follow such practices before releasing financing (Punch, 1994).

Most concern with regard to conducting ethical research revolves around such issues as harm, consent, deception, privacy and confidentiality of data (Punch, 1994). Many research projects in the social sciences can be classified as bearing a minimal risk of harm. Yin (2009) sees included in case study research an obligation to follow ethical practices which include working with special care and sensitivity, gaining informed consent of participants, as well as, protecting the privacy and confidentiality of those who participate. For the latter reason participants will remain anonymous in the study by receiving fictive names. Working with special care and sensitivity means to fully clarify research goals and processes, so that participants can judge for themselves whether participation is beneficial for them or not.

In cases where there exists an absence of generally accepted concepts within the field of the research, it becomes the responsibility of the researcher to prepare and operationalize a comprehensive concept applicable for the research work. In the case of this thesis, emphasis was put on Murphy and Dingwall's ethical theory (2001, in Flick, 2009), including the following items: harm, beneficence, self-determination, as well as, privacy and confidentiality. In addition, the avoidance of deception through fully informed consent was implemented in this study. The individual items have been operationalized in table 6. Particular importance was given to privacy and confidentiality. As stated in the University of Gloucestershire's ethical principles, the anonymity and privacy of participants should be respected and personal information should be kept confidential and secure. The latter are thus so important as market intelligence is often seen as a sensitive topic. Therefore, it was avoided to disseminate data from interviews and documents that may affect participating organizations and individuals adversely. A strategy for visibility of the original data is explained in section 4.6.3. In general, the ethical concept was explained to the participants at the onset of the interviews (see Appendix No. 3, section d).

Table 6: Implementing and operationalizing the ethical concept applied

| Potential threat               | Description of measure to raise ethical profile   |
|--------------------------------|---|
| Harm (non-maleficence)         | Not applicable in this research (mostly medical research).  |
| Beneficence                    | Value of research (see section 1.6).  |
| Deception                      | Clearly informing on the purpose and the methodology and methods of the research before starting the interview.   |
| Self-determination and Justice | Gaining consent of the participant and respecting his or her opinion, working with sensitivity. Interview may be stopped at any time, for any reason.           |
| Privacy, Confidentiality       | Protecting the privacy by using anonymous names of participants<br>Protecting participating organizations by not disclosing any sensitive or confidential data. |

### 3.6 Detailing a Constructivist Quality Concept

#### 3.6.1 Validity, reliability and objectivity

Providing checks and balances throughout the research process is important in order to maintain acceptable standards of scientific enquiry (Bowen, 2005). This relatively undisputed view is contrasted by differing positions as to how to determine whether empirical data are acceptable and scientifically sound. Validity, reliability and objectivity are the criteria most commonly used in such processes (Bryman and Bell, 2007; Yin, 2009; Gray, 2009), but their use is not undisputed (Guba and Lincoln, 1985; Shenton, 2004; Zhang and Wildemuth, 2009).

Internal validity is the criterion that seeks to ensure that the study measures what it is intended to measure (Shenton, 2004). External validity is a test that deals with the problem of knowing whether the findings are generalizable beyond the immediate sample (Yin, 2009). Reliability measures whether the study, repeated with the same methods, with the same participants in the same context, would yield similar results (Shenton, 2004). In addition, objectivity is employed to eliminate bias.

Implementing such criteria in a research project designed and implemented under the auspices of a social constructivist position, is problematic from a philosophical perspective. Maxwell (2003) holds, that individual aspects of a research project need to be assessed for compatibility. The use of validity, reliability and objectivity is often contested here as these have been clearly associated with the positivist paradigm (Zhang and Wildemuth, 2009). Watling (in Golafshani, 2003, p. 598) pointed out:

*“Reliability and validity are tools of an essentially positivist epistemology.”*

In qualitative research, which is often guided by paradigms from the interpretive spectrum, selecting alternative criteria may be necessary due to the differences in fundamental assumptions, research purpose and inference processes (Zhang and Wildemuth, 2009). Although this appears to be plausible, not all researchers agree with such a stance. Yin (2009), Pitts (1994, in Shenton, 2004) and Mays and Pope (1995) recommend using validity and reliability as criteria in case study research.

Guba and Lincoln (1985) recognized the inconsistency of conducting qualitative research in a naturalistic way, but judging the results using criteria designed for research working under the auspices of objectivity. They established the concept of trustworthiness that is related to four criteria designed to evaluate interpretive research work: credibility, transferability, dependability and confirmability. Although critics may not accept these criteria and the concept of trustworthiness in general, Guba and Lincoln’s constructs have won considerable support (Shenton, 2004). The four criteria have been developed to correspond to the criteria of positivist investigators as follows (Shenton, 2004):

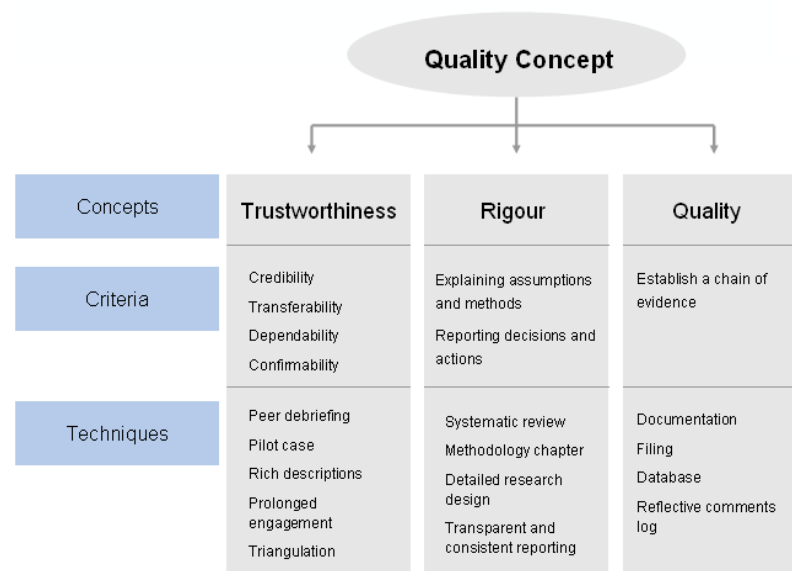
- Credibility (in preference to internal validity)
- Transferability (in preference to external validity/generalizability)
- Dependability (in preference to reliability)
- Confirmability (in preference to objectivity)

No universal agreement with regard to assessing the quality of qualitative research has been reached, and so it becomes the responsibility of the individual researcher to argue the position supported (Zhang and Wildemuth, 2009). In this thesis trustworthiness is preferred to validity, reliability and objectivity. This is due to:

- **Conflicting theoretic positions:** reliability, validity and objectivity are criteria which are not commensurate with a study under a social constructivist position.
- **Inconsistence:** measuring a constructivist study with criteria originating from a positivist position is deemed inconsistent.
- **Methodological problem:** there is no accepted way of measuring generalizability in a qualitative study using participant selection based on personal judgement. Trustworthiness prefers the implementation of transferability in order to show that the findings of a qualitative project are applicable to a larger class of similar settings.

Many constructivists reject positivist and post-positivist criteria when evaluating their work, as they see no value in the application of them (Huber, 1995, in Denzin and Lincoln, 2000). They see such criteria as irrelevant as they are designed to reproduce only a certain kind of science, one that silences (too) many voices (Denzin and Lincoln, 2000). This stance is supported whereby trustworthiness is complemented by two additional concepts: rigour, and quality – both of which are operationalized in Figure 16.

Figure 16: The quality concept applied and operationalized (author’s own scheme)



### 3.6.2 Criteria determining trustworthiness

Credibility is the first criterion and often means that results of a research project are believable. Lincoln and Guba (1985, in Zhang and Wildemuth, 2009) think, that a naturalistic research approach should adequately represent the constructions of the social

world under study. Credibility is achieved through the implementation of a number of techniques, which are detailed in the next section.

The extent to which a researcher's hypothesis can be applied to another context is referred to as transferability (Zhang and Wildemuth, 2009). It has been mentioned that since the findings of a qualitative project are specific to a small community it is impossible to demonstrate the value to a larger population (Shenton, 2004). A contrasting view is offered by many qualitative researchers, such as Stake (1994, in Shenton, 2004) or Denscombe (1998, in Shenton), who think that although each case may be unique, it is possible to transfer findings within a broader group. Flyvbjerg (2011) and Gerring (2004) also state that case studies (even single cases) can be used to ensure transferability, by force of the example.

Another criterion is dependability. It serves two purposes, firstly to examine the internal coherence of the process, and secondly, the way the researcher accounts for changing conditions in the phenomena. In qualitative research such a stance is problematic, furthermore, Lincoln and Guba (1985) stress the close ties between credibility and dependability (Shenton, 2004). However, dependability becomes more impersonal than the issues of credibility, which are closely linked to the researcher itself. Therefore dependability includes operationalized measures that allow the reader to gain a thorough understanding of the methods used and their effectiveness.

Confirmability is seen as the extent to which the characteristics of the data can be confirmed by others who read and review the results (Zhang and Wildemuth, 2009). The difficulty is related to the field of social science where tests and questionnaires are designed by humans and the elimination of bias is not possible (Shenton, 2004). Therefore, confirmability is the criterion to ensure that, as far as possible, the results are products of the data gathered, meaningfully analysed and skilfully interpreted, and do not reflect the predisposition of the investigator.

### 3.6.3 Operationalization of criteria in concrete measures

The four criteria may be operationalized into specific provisions for implementation into the overall research design. Each criterion therefore results in a number of activities or measures. Bowen (2005) recommends using more than one measure for each criterion in

order to improve the overall acceptance of the data, meaning the trustworthiness of the research.

Credibility has been related to a number of operational measures (Zhang and Wildemuth, 2009) such as prolonged engagement in the field, triangulation, negative case analysis and peer debriefing. Shenton (2004), in his paper on ensuring trustworthiness in qualitative research projects, adds the following measure to establishing credibility: adoption of research methods well established in qualitative investigation, random sampling, tactics to help ensure honesty in informants (e.g. giving each person who is approached the opportunity to refuse participation), iterative questioning, background, qualifications and experience of the investigator (i.e. credibility of the person conducting the research) and examination of previous research findings to assess the degree to which the project's results are congruent with those of past studies.

Transferability may be judged based on detailed (rich) descriptions provided by the researcher (Zhang and Wildemuth, 2009). In order to detail contextual information Marchionini and Teague (1987, in Shenton, 2004) highlight the importance of informing the reader about the following: number of organizations taking part in the study, any restrictions in the type of people providing the data, number of participants involved in the fieldwork, data collection methods employed, number and length of collection sessions and the time period over which the data was collected.

Dependability enables the reader of a particular study to understand the methods that the inquirer has chosen and how effective they were (Shenton, 2004). This may imply one or more of the following measures: a thorough, systematic and comprehensive research design, operational details of data gathering, and a reflective appraisal of the project – evaluating the effectiveness of the project (Shenton, 2004).

A main technique for establishing dependability, as well as, confirmability is through audits of the research process and the findings (Zhang and Wildemuth, 2009). Schamber (2000, in Zhang and Wildemuth, 2009) suggests that no confirmability audit is necessary, when there is a significant overlap between criteria identified by the study exists with those identified by other studies. Such results suggest confirmability already, through confirmation by other researchers' works. This, together with detailed documentation of the data handling process

may be used as a technique for confirmability. Other techniques to ensure confirmability are to admit one's own predispositions, detailed methodological descriptions, and explanations why certain methods were chosen or preferred, when others could have been taken (Miles and Huberman, in Shenton, 2004). Shenton (2004) adds to this the role of triangulation, as discussed earlier. Section 6.6.2 shows which of the different techniques proposed in this section have been implemented and how.

#### 3.6.4 Quality and rigour

Apart from trustworthiness, two other concepts are often addressed as having the potential to improve the persuasive power of case studies. These are quality and rigour. Although many of the measures related to quality and rigour have already been mentioned in the section of trustworthiness, it is legitimate to report some statements on these two items as qualitative case studies have often been accused of being less rigorous in execution, resulting in low(er) quality. In this context, Shenton (2004) speaks of an audit trail, Yin (2009) of a chain of evidence.

Yin (2009) suggests that documenting the procedures and individual steps undertaken in the course of research is a method to maintain the chain of evidences. In this context, Yin and Gibbs (2007, in Creswell, 2009) suggest the establishment of an interview agenda, of interview protocols and a database containing all relevant documents, as useful tools. This improves the possibility to self-check for obvious mistakes, as well as, to raise the accountability of a research project. Interview agenda, tape records, reports are documented throughout the research project, so that real contents and situations can be reconstructed. For practical and safety reasons the study database contains all relevant softcopy files, a storage concept is used for hardcopy files.

Eisenhardt (1991) and Yin (2009) reject the view that case studies are free-form as there are definite methods for such an approach. Therefore, it is argued that rigour not only implies detailed discussions of the methodologies and methods chosen thereby admitting personal predispositions, but to purposely include discussions as with to their (suspected) weaknesses together with strategies of how to mitigate them. It is recommended to elaborate why other possibly valuable methods that could have been chosen as well, were declined. This is supported in the research at hand through systematic and transparent reporting on decisions,

actions, as well as, developing strategies to mitigate weaknesses associated with the methods and techniques chosen.

### **3.7 Outlook on the following Chapter**

In this chapter the most important items with regard to the theoretical position, research methodology and methods adopted have been summarized and discussed. In addition, it was argued why the methods selected were chosen, when instead other methods could have been appropriate. Further topics were research ethics and quality in case research. A strategy for both concepts was detailed which is designed to comply with scientific standards.

The next chapter focuses on the research design. The implications of the guiding position on the design are discussed and the operational details are shown. As the plan for how to conduct the research, the research design includes details on data collection, analytical and interpretative techniques.



## **4. Development and Justification of the Research Design**

### **4.1 Introduction**

The focus of this chapter is on the development and the justification of a social constructivist research design. The research design lays out how the study was conducted and addresses the justification for the methodology implemented. The design was prepared and follows the ideas, that acknowledged researchers and authors use for high quality case studies.

In addition, the chapter at hand focuses on preparatory elements in connection with the actual study, such as the participant selection strategy, the development of the agenda, as well as, the instruments and tools used. The purpose is twofold, firstly, a detailed and rigorous preparatory phase has been mentioned as portraying advanced research skills and necessary to properly master such a high-demanding method as the case study. This is essential to overcome two of the main criticisms with regard to qualitative case studies, the large amount of data often produced, and the longevity of the research phase. Secondly, the preparatory phase allows for feedback transformed into lessons learnt. These lessons learnt will be the basis for reflections designed to improve the execution of the study, and so support the iterative nature of this research.

Lastly, this chapter presents justifications for decisions taken in connection with the development of the research design, by applying a protocol template for case study planning designed to improve the quality of case study research designs. Furthermore, similar research projects are identified and discussed. Both are used to assess essential aspects of this research approach by cross-checking the design and evaluating individual methods or techniques employed.

### **4.2 Developing a Social Constructivist Case Study Research Design**

#### **4.2.1 Methodological frameworks governing case study research designs**

The research design is a plan for collecting, analysing and interpreting evidence that will enable answering the research questions posed by the researcher (Flick, 2009). Opponents of case study research have not spared criticism on the methodological framework of this type of research approach. The lack of rigour, as well as, logical and transparent steps are the

central issues (Roworth-Stokes, 2006; Yin, 2009). A number of notable researchers have reported recommendations on how to undertake case study research in a proper and rigorous way, thus the critique seems not justifiable. Two frameworks are described below, followed by the detailed discussion of the approach selected, before the approach used here is explained and detailed.

Yin (2009) and Eisenhardt (1989) have contributed to a better understanding of the appropriateness of implementing case studies by specifically stating that a contemporary phenomenon is to be investigated and providing concepts on the development of research designs. Roworth-Stokes (2006) developed a practical framework, elaborated to support ‘design researchers’, to derive an empirically valid, reliable and credible theory through case study research. Although influenced in part by elements of a positivist epistemology this framework is valuable for this research as well. The practical framework is mainly based on Eisenhardt’s (1989) roadmap and includes eight specific steps for the preparation, execution and dissemination of case studies:

- (1) Getting started: research aims and objectives,
- (2) Selecting the cases,
- (3) Crafting the instruments and protocols,
- (4) Entering the field,
- (5) Analysis of the data,
- (6) Shaping hypothesis: identification of patterns of causality across cases,
- (7) Enfolding the literature: Reintegration of findings into existing literature to establish the contribution to knowledge, and
- (8) Research closure: Justification, hypothesis testing, presentation of findings.

Yin (2009) presents a similar concept for case study research designs, which rests on the following six main components:

- (1) Questions,
- (2) Propositions (if any),
- (3) Unit of analysis,
- (4) Logic linking data to propositions,
- (5) Criteria for interpretation, and
- (6) Validation.

The above-described frameworks indicate the general agreement with respect to case study design, although some variations may be encountered (Brereton, Kitchenham, Budgen and Li, 2008). These frameworks also contradict the critique of lacking rigour, as case studies have implemented rigour in their own way. However, the responsibility of the researcher includes finding and developing recommendations in line with the research, justifying these decisions and consequently applying them in the course of the research process.

#### 4.2.2 General aspects of the research design applied

The research design applied in the context of this thesis blends the proposed framework items addressed above. Based on two rather than on one recommendation alone improves the rigour and quality of case studies. Furthermore, an adaptation is necessary, as to commensurate the design with the epistemological assumptions and methodological predispositions, as well as, with the study purpose. The purpose of this study is related to the fact that no causal relationships are established in exploratory research (see section 3.2.1). Maxwell (2005) purports, that a researcher does not have to follow purely one approach when developing concepts, but may mix different propositions, if they have been assessed for compatibility.

The research design applied in the case of this specific research will thus be based on the following items:

- (1) Research proposition,
- (2) Research questions (and agenda development),
- (3) Unit of analysis (in this case: participant and evidence selection strategy),
- (4) Engaging in preparatory efforts and crafting instruments,
- (5) Logic linking data to propositions (methods and techniques used in the analysis and interpretation),
- (6) Enfolding the literature: reintegration of findings into existing literature to establish the contribution to knowledge, and
- (7) Research closure: Justification of the data, presentation of findings.

Two items mentioned in the original proposals, shaping hypotheses and validation, are not included in this research design. Due to the qualitative nature of the research done, the focus is not placed on these two items; refining the conceptual framework has been emphasized.

Validation or testing of the conceptual framework would therefore provide a possible perspective for future research.

This research takes one specific thought, that Yin (2009) purports, into consideration, namely, propositions are relevant especially in exploratory research. In the following research the proposition supersedes the detailed research questions, thus replacing the overall research question. Propositions make a more theoretical approach to the case study possible.

Research proposition:

*“The initial market intelligence framework has to be re-conceptualized in order to be valuable for the plant building industry.”*

The notion of being *valuable* refers to advancing understanding in theory and practice, especially, because the research is based on current practices in the sector. The aim of the study is to provide support to managers interested in implementing and nurturing market intelligence processes within their organizations. The literature review has already revealed that there is a high need for this specific type of knowledge (see section 2.5.3).

The detailed research questions, addressed in the previous chapter, were derived following intensive reflection on the literature review. In addition, sub-questions are derived from the more general research questions and lead to the development of a final interview agenda (see section 4.5). These are necessary to further ground insights gained in the course of the interview, by critically challenging the researcher’s assumptions which were already discussed openly and in a transparent manner (see section 3.2).

The unit of analysis of a case study identifies the boundaries of the case and hence often the level at which it is studied. It is noted that this case study is not considered to be a multiple case study and the reasons for this choice have been presented already (see p. 115). The unit of analysis is thus considered to be the plant building industry, not any particular firm in that industry. This was noted in the objectives of the research in section 1.5. In order to ensure that the unit of analysis was covered with sufficient depth, a strategy to ensure transferability has been detailed and operationalized (sections 3.6.2 and 3.6.3), as well as, implemented (section 6.6.2). The unit of analysis is represented by the four organizations

included in the research with in total eight interviews. Furthermore, this case implements three archival documents as additional sources of data. Multiple sources of data has been mentioned as important in cases aiming at theory generation. Since the unit of analysis equals the industry, this item of the research design is hence concerned with developing a strategy in order to include informative participants, as well as, evidence that best serves the purpose of finding answers for the research questions posed. A detailed strategy for how to arrive at evidence that is concerned with the quality of entities is presented in section 4.4.

Yin (2009) refers to analysis and interpretation as linking data to the proposition(s) and using specific criteria for interpretation. These criteria are the techniques and methods employed in analysis and interpretation. The issues of analysis and interpretation are not only critical, but highly problematic as well, as acknowledged by Roworth-Stokes (2006). As these procedural steps form the foundation and core of the research design, special attention is devoted to formulating and justifying decisions taken in connection with these aspects. Analysis and interpretation are discussed separately in section 4.7.

The items 6 and 7 to be found on the list of main research design items (see p. 134), are enfolding the literature and research closure, and, are addressed in detail in the final chapter, the conclusion. The idea connected to this approach is to address the re-integration of findings with the literature findings at the end of the thesis, in order to argue the contribution to knowledge. The research closure already indicates its incorporation into a conclusion, and will report a summary of the refined conceptual framework.

Time is an important aspect in case studies. Saunders et al. (2007) address it as the time horizon that is employed, and hold that it is a fundamental element of a case study research design. Although common practice in management research, this study is defined as employing a cross-sectional time horizon. In general, cross-sectional studies investigate a particular phenomenon at a particular time and are in contrast to longitudinal studies.

#### 4.2.3 Considering a procedural perspective on the research design

Detailing and justifying the framework items is vital to a research design, however, a procedural perspective allows a more practical and chronological view on the research design. The research design developed in the previous section, was thus grouped into a table. The framework items were classified according to the three main procedural steps of

the case study, preparation, execution and closing. In addition, individual steps and instruments were allocated to the procedural steps in order to present the overall procedure and design. In order to integrate the quality concept, presented in the previous chapter, from the onset, a number of operationalized quality measures are included (see figure 17).

Figure 17: A procedural perspective on the research design (author’s own scheme, based on Yin, 2009)

|                    | Sub-steps   | Instruments  | Quality features  |
|--------------------|---|--|---|
| <b>Preparation</b> | <ul style="list-style-type: none"> <li>Develop initial theory</li> <li>A strategy for selecting evidence</li> <li>Crafting the instruments</li> <li>The pilot interview</li> <li>Reflection back onto the design</li> <li>Negotiating access to participants</li> </ul> | <ul style="list-style-type: none"> <li>Initial conceptual framework</li> <li>Preliminary agenda</li> <li>Formats for pilot interview, protocols, reports, peer debriefing</li> </ul> | <ul style="list-style-type: none"> <li>Study database</li> <li>Pilot interview</li> <li>Lessons learnt from pilot interview to refine the instruments and gain feedback</li> </ul>                              |
| <b>Execution</b>   | <ul style="list-style-type: none"> <li>Making the data</li> <li>Reducing</li> <li>Coding</li> <li>Collating</li> <li>Analyses (within and cross)</li> <li>Narrative interpretation</li> </ul>   | <ul style="list-style-type: none"> <li>Refined interview agenda</li> <li>Interview reports</li> <li>Tape records</li> <li>Analysis</li> </ul>  | <ul style="list-style-type: none"> <li>Typing based on hand notes and tape record</li> <li>Checking for rival explanations</li> <li>Checking the applicability of the codes</li> <li>Peer debriefing</li> </ul> |
| <b>Closing</b>     | <ul style="list-style-type: none"> <li>Refined conceptual framework</li> <li>Doctoral dissertation</li> </ul>   |  |   |

Two elements are especially important in detailing the design, transparent and coherent research process steps using appropriate instruments, and, specific quality improving measures. Both steps serve to demonstrate that the data made in the course of a qualitative case study are trustworthy, but also authentic. The importance may also be related to rigour and quality (see section 3.6). As for the preparatory phase the main instruments implemented to improve quality include the pilot interview, agenda development, the study database and peer debriefing (detailed further in section 4.3.3).

A set of instruments, made in the course of the preparation will be used, and appropriate software will support effective analysis and interpretation. Again, quality measures are of high importance and include tape recording and storing the interviews conducted, evaluating the data for rival explanations and emerging insights, as well as, peer debriefing. A reflective comments log will support formation of thoughts, as well as, emerging insights. The reflective log is furthermore designed to support the iterative nature of this particular

research. Especially, the pilot interview and the peer debriefing, as specific quality measures, may be brought into relation with a social constructivist perspective on research, as they allow for sense-making in the form of social interaction.

### **4.3 Title, Strategy and Scope of this Case Study**

#### 4.3.1 Title of the case study

The title reflects the major concepts to be investigated in the course of the case. Firstly, the contemporary market intelligence practices are researched as case studies have been mentioned to be particularly applicable in the study of modern, real-life phenomena (processes). Secondly, the plant building industry provides the environment in which the process is embedded. Therefore, the title is defined as follows:

*“A case study: contemporary market intelligence practices in the plant building industry.”*

The title of the case study reflects furthermore the emic perspective that the empirical part predominantly draws on. The contemporary practices relate to type of questions to be asked, which are how and why questions mainly.

#### 4.3.2 Strategy, scope and purpose of this case study

The purpose of the study is to explore the field of market intelligence in the plant building industry, with a focus on contemporary practices. As outlined in the introductory chapter, market intelligence, in general, has been brought into relation with the following items:

- An intelligence process that governs the “doing” of intelligence (Hare, 2008),
- Defined participants to the process (Ghoshal, 1985; Muller, 2007),
- Have training sessions ready to instruct personnel (Hare, 2008),
- Prepare legal and/or ethical guidelines for personnel engaged in intelligence activities (Pease, 1991),
- Support the activities with appropriate software solution (Hare, 2008), and
- Top-management support in achieving an intelligence-oriented culture (Ghoshal, 1985)

Thus far, the literature review has essentially focused on the first item, the “doing of intelligence”, as this has been called the foremost issue in market intelligence (Global Intelligence Alliance, 2004, p. 11). Items two and four in the above list can be reviewed by the interested reader in the introduction. The development or selection of an appropriate software solution, as being subordinate to the market intelligence process, has been excluded from the study (see section 3.2.3). The last item, top-management support and intelligence-oriented culture, have also been excluded from this study (see section 3.2.3), based on the assumption, that a plant building company interested in developing and/or implementing market intelligence operations, will at least have top-management support in pursuing such a strategy.

The overall objective is to construct a conceptual framework, by focusing on the intelligence process. This includes two aims:

- To address the weaknesses and contradictions identified in the literature review (related to research questions 1 to 3 according to section 3.2.2), and
- To explore market intelligence practices, as they unfold in the plant building industry (related to research question 4 according to section 3.2.2) under consideration of major criticisms (reviewed on p. 98).

Formalizing a conceptual framework is a necessary pre-step that is required to balance a formalized corporate process (Muller, 2003). A framework concept is essential as it answers the main questions about implementing the concept within the plant building industry. Furthermore, and as already mentioned, a framework concept precedes the development and/or implementation of a software process (Hare, 2008).

#### 4.3.3 Preparatory steps and instruments used in the case study

Preparatory steps are vital in connection with the execution of this case study and are linked to instruments employed. The list below gives an overview of the instruments incorporated:

- The preliminary agenda developed in a series of steps (see section 4.5) served as the theoretical starting point of investigation.
- Lessons learnt from the pilot interview were seen as insights that led to minor modifications in the final interview agenda (see table 10).
- The final interview agenda as a flexible aide-memoire to guide through the interviews (see Appendix No. 3).



- Notes that were taken during the interviews used to check if all questions were covered, as well as, to keep questions that emerged in the course of the interview in order to ensure a comprehensive interview.
- The *Philips voice tracer* device (a type of tape recorder) was used, following consent to from the interviewees. It made recording the interview as an .MP3 file possible. This supported typing reports from the interviews, as well as, maintaining the chain of evidence, as the interviews records were added as files to the study database.
- Interview reports, or interview transcripts, saved as a .DOC file (word file) to the study database. Reports were transmitted to the respective participant for review and approval before starting with the analysis (for an example of a report see Appendix No. 4).
- The study database is a crucial element in the tool landscape of the case study, which was used to store all the relevant files produced in the course of the study to ensure a chain of evidence. It was enlarged and modified in the course of case study, to suit the ongoing iterative process.
- The reflective comments log was used to capture in an unstructured way, all emerging insights and experiences, with the aim to support the forming of thoughts on plant building market intelligence in a reflective and iterative way (see section 5.3).
- The researcher and his work experience in the business of plant building. This experience proved to be a prerequisite to manage the interviews. Lacking professional experience may result in an image of a “tourist” in the field of plant building. Much of the terminologies used and the stories told are not understandable without previous experience in the field. This is seen as being of essential importance given the approach adopted in this research.

#### **4.4 Selection of the Evidence and Participants**

##### 4.4.1 A strategy for selecting participants from different backgrounds

According to Yin (2009) sampling logic should not be applied in qualitative case study research, as the typical criteria with regard to the sampling size are irrelevant. The relation to the environment, being the context in which the case study is conducted, has been mentioned a main characteristic of this type of research strategy (Flyvbjerg, 2011). Therefore the participant selection strategy is charged to identifying cases (participants)

worthy of investigation. As mentioned in section 3.4.1 this study is defined as a case study, rather than a multiple case study. Consequently, it is the aim of this selection strategy to identify participants rather than cases. Participants having different backgrounds, but with an intimate knowledge of the plant building industry, were approached to place the study into its environment. In order to develop the selection strategy, the main industry structure of plant building is analysed, and served as the basis.

The plant building industry consists of suppliers (plant building companies) and customers (plant operators). These two participants have substantial knowledge with regard to the plant building industry. The client organizations, often incorporate a plant building department that cooperates with the plant building company in the case of plant projects. The role of the plant building company has already been introduced in section 1.4.1, and is not repeated here.

Other participants in the industry that possess significant knowledge are the various consulting firms that operate in the marketplace. Consultants offer a variety of services that range from technological and/or technical consulting, to commercial and contractual advice including or excluding negotiation support, financing and sourcing assistance, or project management. Consultants should not be underestimated, as they are a rich source of knowledge.

Other industry participants exist and are diverse. These include banks and financing institutes, insurance companies, export credit agencies (ECA), erection and construction companies, sub-suppliers for specialized equipment and so on. These industry participants exhibit knowledge and experience in plant building, which is limited due to their confined contribution in specialized areas of plant building.

The participants approached for the case study originate from three industry participants groups. Although a small number of interviewees were approached and included in the study, Thomas (1990, in Eisenhardt, 1991) indicates that the appropriate number of cases or participants depends upon how much is known about a phenomenon, respectively, how much new knowledge may be learned from the participants. This leads to the view, that the absolute number of participants is subordinate to the quality of input expected. This is no unusual as can be seen in the case study of Beverland and Lindgreen (2007), with a total of

nine interviews. So, a rather small number of participants may be considered usual in case study research (Saunders et al., 2007). The first set of potential participants is composed of managers from the middle and upper level, working at the same organization the author is employed by (plant building group). The second potential set of participants work in a consulting position, engaged in plant building projects. A third group of potential interviewees are from the customers' arena. Since the multiple case design is not applied, all participants actually taking part in the study are grouped into one case. The problem in developing a participant selection strategy is the fact that market intelligence may be considered a delicate topic. In this specific case study, competitors of the company the author is employed by, were expected not to cooperate. Therefore, competitors were not approached. The proposed groups two and three were added mainly in order to provide for participant diversity and to support transferability. This participant triangulation required that at least one of the potential participants of each of the two groups agreed to be included in the study. Although it was attempted to include more than one, this was not possible given the time aspect over which this study was conducted.

#### 4.4.2 Discussing criteria of informative participants

Selection of potential participants was based on personal judgement. Saunders et al. (2007) support such an approach and state that this is common practice in management research. The justification lies in the option to select especially informative participants in order to obtain best answers (Neumann, 2000 in Saunders et al., 2007).

Thus as a consequence, the *informative* participant needs to be defined. Morse (1998, in Flick, 2009) defines these criteria. Knowledge and experience are at the centre of interest and thus form two key selection criteria. Furthermore, respondents should have the capability to reflect and articulate, which is implemented in the two-step approach during the interviews (see end of section 4.4.2). Morse (1998, in Flick, 2009) adds, that participants need to have the time to participate and in addition should be asked, if they wish to participate, which relates to ethical issues already discussed. All these criteria were confirmed as essential after the interviews had been performed.

Interviewing middle and upper management is justified, as management hierarchy is an important point in market intelligence. Seniority may relate to the notion of receiving and being capable of analysing (strategic) intelligence. That means no junior participants were

included, as these tend to have limited experience and access to strategic intelligence. A minimum of 10 working years of experience was therefore additionally defined as a criterion. This assumption was later confirmed by Participant No. 8 (see quote of Participant No. 8 on p. 173).

A crucial question is when to stop integrating further interviews. Glaser and Strauss (1967, in Flick, 2009) suggest the criterion of theoretical saturation. The interview process can thus be ended as no additional insights emerge, leading to the final number of interviews. This criterion was applied here, and facilitated by the use of a reflective comments log, in which the main statements, the participants articulated were collected and assessed as the interviews proceeded (see section 5.3). After seven interviews, the additional insights received were marginal and related to individual social realities constructed. This notion was confirmed when undertaking an eight interview, which was identified as the point to stop integrating additional interview data. In this regard, the term redundancy of insights is often used.

#### 4.4.3 Selecting additional evidence

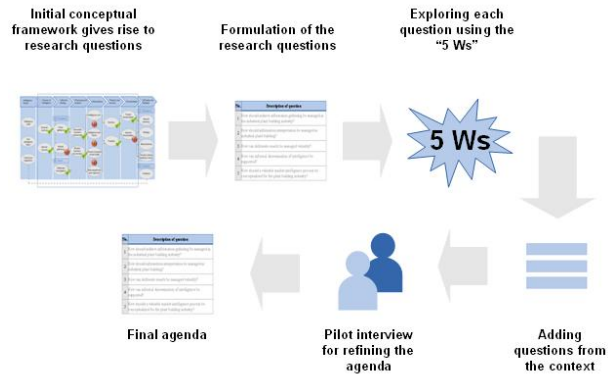
Apart from selecting participants and organizations for the case study, the question of including additional forms of evidence was given due attention. Multiple sources of evidence have been implemented in the past to produce high quality case studies. Furthermore, it has been termed important in cases where theory is to be generated (Yin, 2009). Obtaining additional forms of evidence, other than interview data, was found to relate to a prolonged engagement in the field. The approach implemented is explained in sections 4.6.1 and 5.2.3.

### **4.5 Agenda Development**

#### 4.5.1 The preliminary agenda

A 3-step technique was employed in order to arrive at the preliminary interview agenda. This approach is detailed in figure 18. The bases for the interview agenda are the detailed research questions from the methodologies and methods chapter. This is in line with the deductive approach employed in the case study, and made a theoretical entry into the investigation possible.

Figure 18: Techniques applied in developing the interview agenda (author’s own design)



The research questions were reviewed carefully before proceeding to the other two steps of the agenda development. The second and third step included a check using the “five Ws” technique, as well as, adding auxiliary questions arising from the literature review. Finally, the agenda was tested in the course of the pilot interview. This procedure is detailed in section 4.5.2.

Table 7: Detailed research questions

| No. | Description of question   |
|-----|---|
| 1   | How do plant building managers gather and share competitive information?  |
| 2   | How do plant building managers analyse and interpret competitive information?   |
| 3   | How is market intelligence disseminated informally?   |
| 4   | How can a market intelligence framework for the plant building industry be re-conceptualized in order to add value to the knowledge base of the organization? |

Each of the detailed research questions may be explored using the “five Ws”, a basic technique used in journalism and police investigations (who, does what, when, where, why, in what way – how, by using which means – how). The principle underlying this technique is that each question should elicit a factual answer, facts necessary to include for a report to be considered complete. Of essential importance is that none of these questions can be answered with a simple “yes” or “no”. This technique is therefore commensurate with a qualitative case study approach. Looking for a complete and comprehensive picture may be considered good practice, and can be achieved by employing the 5-Ws technique to each of the research questions. Finally, only a selective use of this technique was adopted. The

criterion used to select specific “Ws” was related to the state of the literature. This criterion was chosen as it is counter-productive to have too many questions in the agenda. The latter is also related to the large amount of data that qualitative enquiries tend to produce, which is sometimes seen as a threat to this research approach.

Table 8: Detailed research questions after applying the “five Ws” technique

| No. | Research question   | Detail questions for the agenda  |
|-----|---|--|
| 1   | How do plant building managers gather and share competitive information?  | Which structures and/or settings are used?<br>Which techniques are applied?  |
| 2   | How do plant building managers analyse and interpret competitive information?   | Which structures and/or settings are used?<br>Who is responsible to organize and maintain such structures and/or settings and who participates?<br>Which techniques are applied?   |
| 3   | How is market intelligence disseminated informally?   | Which means or structures are used to disseminate intelligence?<br>Who disseminates intelligence?  |
| 4   | How can a market intelligence framework for the plant building industry be re-conceptualized in order to add value to the knowledge base of the organization? | Who is responsible for market intelligence in plant building?<br>How does market intelligence work in current practice?<br>Which techniques are applied?<br>What kind of suggestions and recommendations are formulated? |

The table above shows that *what*, *when* and *where* questions were not included in the interview design. The reason is that credible answers to such questions can be found in the existing theory, and that additional exploration is expected to yield little results. Including more questions is related to the exploring the specific context with regard to (1) market intelligence theory, and (2) plant building industry specifics.

Table 9: Detailed research questions after including additional context-specific questions

| No. | Detail questions for the agenda   | Additional context-specific questions   |
|-----|---|---|
| 1   | How do plant building managers gather and share competitive information?      | <p>How does information gathering from internal sources differ from information gathering from external sources?</p> <p>Can information be gathered and/or shared using only a technological solution (software)?</p> <p>Which form of social grouping is mostly used (team, network, community, department, etc.)?</p> <p>How important is inter-departmental coordination in terms of information gathering and sharing?</p> <p>What specifically refers to plant building with respect to information gathering and sharing?</p> <p>How may direct (from external sources) and indirect (from internal sources) gathering and/or sharing of information be integrated with each other? Would it be beneficial?</p>   |
| 2   | How do plant building managers analyse and interpret competitive information? | <p>In what way does the interpretation of information from the macro environment differ from interpretation of the micro business environment differ?</p> <p>Is it possible to rely only on a technological solution (software) for analysis and/or interpretation of information?</p> <p>How important is inter-departmental coordination in interpretation of micro environment information?</p> <p>Which form of social grouping is appropriate (team, network, community, department, etc.) for performing an analysis and/or interpretation?</p> <p>Which techniques are applied to analyse and interpret competitive information?</p> <p>How are different pieces of intelligence integrated with each other?</p> |
| 3   | How is market intelligence disseminated informally?                           | <p>How does formal dissemination differ from informal dissemination?</p> <p>May they be integrated with each other?</p>   |

|   |   |  |
|---|---|--|
| 4 | How can a market intelligence framework for the plant building industry be re-conceptualized in order to add value to the knowledge base of the organization? | <p>What are the main plant building peculiarities in the process?</p> <p>How important is the human intelligence function in market intelligence?</p> <p>Do you see interrelations between knowledge management and market intelligence? Where?</p> <p>How and where is information shared, spread and stored?</p> <p>How is market intelligence connected to organizational learning?</p> |
|---|---|--|

A qualitative interview agenda serves mainly as an aide-memoire. It is understood as a flexible tool to remind the interviewer to add questions if necessary, that is, if these were not answered in the course of the discussion. This was experienced as beneficial in the course of interviewing.

#### 4.5.2 Undertaking the pilot interview

Yin (2009) explicitly suggests that the researcher undertakes a pilot interview before starting the case study. The pilot interview served the purpose of discussing and, if necessary, improving the interview agenda to be used in the following interviews. This included testing the timely duration of the interview, the comprehensibility and meaningfulness of the questions, as well as, plausibility. Furthermore, it was used to understand if the topic was being covered comprehensively.

The insights from the pilot interview were transformed into lessons learnt (see table 10). The original design was carefully reviewed and the need for modifications given consideration. This supports the iterative approach, but is also designed to improve the quality of the process. In the case presented, the pilot interview did not only allow for an intermediary assessment of the data collection technique, but included a complete interview. This is in accordance with the employment of a refined interview agenda.

The pilot interview was conducted on November 21, 2011. The duration of the interview was two hours and five minutes. Permission to tape the interview was received not just in the pilot interview, but in all interview situations. In addition, the main ideas from the conversation were taken as notes, both sources of documentation were used to create a



lessons learnt document that led to necessary improvements in the interview design. Furthermore, a regular interview report was crafted.

Table 10: Lessons learnt from the pilot interview

| No. | Description of items discussed at the pilot interview   |
|-----|---|
| 1   | Changes with regard to the interview agenda.  |
|     | Put more emphasis on the “conceptual briefing” in order to make sure that participants with little theoretical knowledge on market intelligence receive a basic understanding of the process and the results.   |
| 2   | Changes with regard to the details of the questions.  |
|     | Basically no major changes in the research questions were necessary. Minor items, such as clarification of the kind of (competitive) information involved, i.e. from the general market, customers, products and technologies and competitors domain, was stated.   |
| 3   | Additional improvement potential.   |
|     | Some questions were rather similar; therefore re-asking is only necessary if a need is felt (aide-memoire approach). This is important for the time aspect of the interview.  |
| 4   | Overall impression and general remarks.   |
|     | <p>Logical structure in the interview (i.e. the sequence of the six blocks) was deemed suitable and effective as it supported the development of thoughts.</p> <p>Thorough knowledge on the subject matter by the researcher supported clarifying issues and questions by the interviewee that emerged during the interview.</p> <p>Plausibility and comprehensibility of the questions confirmed.</p> <p>Comprehensiveness of the topic confirmed.</p> |
| 5   | Lessons learnt.   |
|     | <p>Positive feedback received from the pilot participant.</p> <p>Implementing lessons learnt from the pilot interview in the other interviews.</p> <p>The interview was used as a source of evidence.</p>   |

As it was found that the pilot interview yielded good results, and was considered well done by the pilot participant, it was decided to include the data made in the course of the pilot interview as regular data into the case study.

### 4.5.3 The final interview agenda

The final interview agenda was elaborated following the pilot interview. In addition to the lessons learnt, the following points enhanced the final agenda:

- More emphasis on the basic information providing an overview on the intelligence process and results to the participant (conceptual briefing). This supported the participants by indicating basic theoretic understandings of the topic at hand. This is related to the issue that managers, often effective in practice, may lack theoretic basics. In a complex process as market intelligence, this threat was overcome by the conceptual briefing.
- A storyline for starting the interview: in order to delve into the topic it was deemed important to ask the participant about his job role, and the role of intelligence in the accomplishment of his tasks. Often this provided for an effect, where the participant, if not fully aware of his use of intelligence in daily routines, started to associate with the topic more intensively.
- The use of common-sense terms: this was anticipated in the pilot agenda already, but proved to be of essential importance. The strategy to prefer common sense terms (“gathering and sharing information”) to terminologies from the theory as described in the literature review (“indirect gathering strategies”) was maintained. It was decided to avoid asking or re-asking questions, if the response if the response to those questions seemed to be indicated by responses to other (similar) questions already.
- The use of a summary and reflective section at the end: in order to reconsider items where the need was detected, as well as to summarize basic insights from the interviews (see Appendix No. 3).

From this information the final interview agenda was crafted, which is attached to the appendix for reference (see Appendix No. 3).

## 4.6 Making the data

### 4.6.1 Case study evidence

Case study evidence may principally come from six different sources: documents, archival records, interviews, direct observation, participant observation and physical artefacts (Yin, 2009). Multiple sources of evidence are an important characteristic in creating high-quality

case studies, together with a study database and maintaining the chain of evidence (Yin, 2009). Collecting data from different sources of evidence is especially difficult, as it typically requires a prolonged engagement in the field in order to be able to judge the availability and relevance of additional sources of evidence.

Observation is a technique that includes ethical considerations, should the researcher not reveal his identity to the participants. By carrying out research so that the group to be observed is aware of the process and person conducting the study, may lead to a change in behaviour and thus not be authentic. The quality of the data may be affected negatively and makes the implementation of observation, in this delicate topic, very difficult. Bearing this possible negative effect in mind, observations were rejected as a source of evidence.

One of the most important sources of case study evidence is the interview (Yin, 2009). Well-informed interviews can provide important insights into affairs or events. Interviews also hold a prominent position in constructivist research. Thomas and Linstead (2002) used semi-structured interviews in individual face-to-face situations, also Mortara et al. (2009), in their study on technology intelligence, employed semi-structured interviews. Both groups of researchers acknowledge the role and importance of interviews in developing theory.

The interview as a medium for the transmission of information is a traditional approach. In social constructivism, however, the interview is more active than in other approaches. This relates to notion that data is constructed collaboratively rather than received. It is thus “made” by both the participant and the researcher (Holstein and Gubrium, 2008). This approach has been termed a “dialogical performance”, a “social meaning-making act” or a “co-facilitated knowledge exchange” (Koro-Ljungberg, 2008, in Holstein and Gubrium, 2008, p. 429). This may raise objections with regard to bias. A social constructivist approach includes the assumption that reality and knowledge are constructed in social interactions, and so, Gubrium and Holstein (2008) see bias as a constant in every meaning making act and not as a particular threat to research. Of course, this does not mean the absence of a reflective and cautious approach, which aims at minimizing the impact of bias. A technique to monitor the possible impact of bias is to question the participants, if the interviews were experienced as biased. This technique has been implemented in this research. The chain of evidence, from the tape record to the report and on to analysis and interpretation is designed and maintained to address credibility and trustworthiness. The

chain of evidence may be used to ensure that insights from the study are products of a shared understanding between researcher and participant.

Semi-structured interviews in a face-to-face situation with individual participants shape the core of this case study research design. This technique was chosen as it was the aim to construct rich data with knowledgeable experts without entirely losing control over this challenging process, which is important due to the complex and demanding topic (supported by Easterby-Smith et al., 2002, in Saunders et al., 2007). Focus group interviews would also constitute a rich way of making data, but were rejected as a source of evidence. Tight time schedules of some of the participants from upper management of different organizations, would have made the application of such a technique overwhelmingly difficult.

Thus, the agenda implemented focused on the main characteristics of the format suggested for qualitative constructivists (Creswell, 2009). This means that attention is given to explaining the goals and the process of the research. It furthermore acknowledges the importance of a conceptual briefing before starting the interview process. It thus places emphasis on achieving a good general understanding by the participant (see section 4.5).

Additional sources of evidence used in this case study were documents and archival records. They were collected as the interviews proceeded. This procedure is discussed separately in section 5.2.3. The documents included confidential information and so the content is not revealed. These documents, products of market intelligence, were analysed, if their preparation methods matched with what participants explained in terms of market intelligence practices (how and why approach).

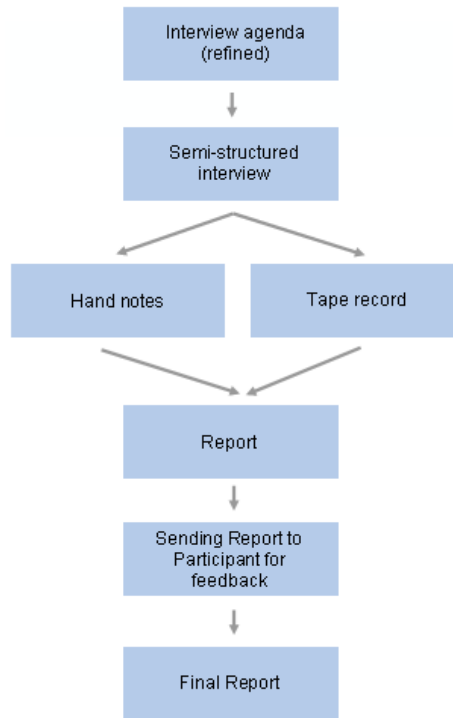
#### 4.6.2 Transcribing the interviews into reports

The routine used in transcribing the data into reports can be described as follows: the interview was documented using a tape recorder and taking notes. After the report was typed, it was disseminated to the participant in order to obtain feedback. The latter was mainly used to check, if the report reflected the content of the interview. Upon approval, the final report was created and saved to the study database (see Appendix No. 4 and 5). The chain of evidence was maintained in the following way:

- Scanning the handwritten protocol to be saved in the study database,
- Saving the audio-file from the tape record in the study database,

- Saving the report (as word file and .pdf file) in the study database.

Figure 19: Routine in data making (author's own scheme)



#### 4.6.3 Visibility of the original data in this thesis

As mentioned, two different sources of evidence were used in the course of data collection, semi-structured interviews, and archival records or documents. With regard to archival records or documents, emphasis on confidentiality was ensured, thus disseminating the original data is and was not possible. Essential items filtered from these data were the questions of how these documents were produced and for what reason. The insights were captured following the cross-interview analysis and are presented in section 5.5.

Visibility of the data is a key issue in any qualitative research work. The large size of the interview data, reports containing 189 pages in total, does not lend itself to inclusion of all interview data into this thesis. The prevalence of German interviews would decrease the usefulness of adding all the original data to persons capable of speaking German. As to show an example, one complete report of an interview conducted in the English language has been included in the Appendix (see Appendix No. 4). As it was perceived that this strategy is not sufficient to cover the topic of visibility of the data, three additional measures were incorporated:

- An example of a colour-coded report is attached to the Appendix (see Appendix No. 6). This colour-coded report is the one generated from the interview report included in Appendix No. 4, as to show the progression of the data.
- The analysis presented in section 5.5 was enriched by adding a total of 64 direct quotes from the interviews in order to support the analysis and confirm that what it presents is what has been discussed in the course of interviewing. This also supports the idea of minimum interpretive acts on the analysis. These direct quotes may sometimes exhibit weaknesses in terms of language, grammar or style. Including quotes with such characteristics was perceived as the lesser evil, compared to changing them in order to improve on the issues mentioned.
- A summary of all reduced and structured interview reports containing 35 pages is furthermore appended and may be referred to in Appendix No. 7. Of course, this summary is highly congruent with the analysis included in the thesis that can be found in section 5.5 and supports the idea of minimum interpretive acts on the analysis.

A further issue with regard to disseminating all original data in this thesis is related to the ethical dimension of research. Confidential or sensitive aspects, which the interviews sometimes included, are not generally disseminated in this thesis. The latter is justified as market intelligence is considered a sensitive topic of business management. Not presenting all the original data may therefore avert harm from participants and participating organizations, which is a central element in the ethical concept applied to this thesis.

## **4.7 Data Analysis and Interpretation**

### **4.7.1 Analytical strategy and methods**

Yin (2009) purports that the qualitative analysis of case study evidence is difficult as the techniques are not well defined. This position is not justified, as there is a wealth of techniques and methods portrayed throughout literature (see for example Saunders et al., 2007; Flick, 2009; Gray, 2009). Yin's critique of qualitative techniques seems to follow the criticisms aiming at the foundation of qualitative inquiry. Roworth-Stokes' (2006) remark is therefore more precise, as he states that the most contentious part in the analysis of qualitative data is the process of transition. This includes the process from the transcript to the categorization (the reduction of data) and the subsequent theory building through the

analysis. Roworth-Stokes states, that the reason for dispute lies in rigour, transparency and consistency (Roworth-Stokes, 2006). Therefore, the idea is to systematically codify, collate, reduce, and analyse the data made in a consistent, but pragmatic manner (Roworth-Stokes, 2006), which has been implemented in this research.

According to Yin (2009) it is essential to define three fundamental items in the analysis of qualitative data:

- The analytic strategy,
- transparent analytical steps, and
- a technique for how to deal with rival explanations.

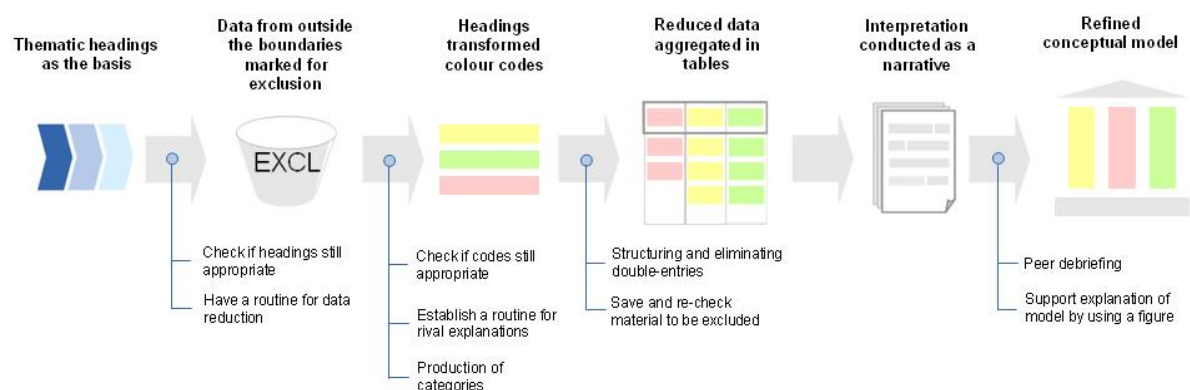
Yin (2009, p. 130) proposes “relying on theoretical propositions” (theoretical understanding) as one of four basic strategies in case study analysis. According to Yin, it is the most preferred strategy in the analysis of qualitative data. The strategy proposed is thus in line with Yin’s preference of theory before empirical study. The method is suitable here, as it allows to follow theoretical propositions (i.e. the thematic headings) established in the literature review, and is thus in line with the deductive approach of this case study. Still, elements of induction have been used to complement the deductive approach in this research. The latter included re-visiting the thematic headings after data collection and the use of a reflective comments log. This has been used to integrate theory and empirical findings, in order to facilitate the process from data collection to analysis and interpretation. It supports the formation of thoughts.

Different analytical methods have been proposed; among them are such preferred methods as content analysis and grounded analysis. The decision on which of the methods to rely on is an important one, and should not be taken hastily. It was decided not to use content analysis in this research, as there exists a perception that content analysis lends itself overly to positivist epistemologies and is mainly (though not exclusively) used in conjunction with quantitative studies. The strength of content analysis appears to be that it mainly considers the frequency and distribution of specific contents, which is not a main point of interest in qualitative analyses. In grounded analysis, King (2004, in Easterby-Smith et al., 2008) argues that codes cannot be determined beforehand, which contradicts the analytical strategy as described above. In this research codes are based on thematic headings, used in principle already in the literature review.

Another technique that has become prominent in use among qualitative researchers is the thematic coding technique (Bryman and Bell, 2007). According to Bryman and Bell (2007) it has reached widespread acceptance in the academic community, and may so be used in the context of this thesis as well. In practice, a colour coding scheme was used following data reduction in order to reach thematic clustering. Following colour coding, the data was structured logically (i.e. in the order of the defined codes), to result in a cross-interview analysis after the individual texts had been merged. In addition, insights from archival records and documents obtained as additional sources of evidence, have been compared with the analysed interview data at the cross-interview stage.

The figure below represents the process steps used in analysing and interpreting the data after the final reports were obtained and permission to use them was given by the participants. This overview adds to the initially formulated need for transparent and coherent research steps (see section 4.2.2).

Figure 20: Process for analysing and interpreting the data (author's own design)



The analysis of the case study data was started with printing the final reports. Final report means that the transcripts from the interviews, the reports, were included as final as the participants approved the use in the thesis (see for an example Appendix No. 4). Then they were comprehensively reviewed. Such an approach is designed to follow Creswell's (2009) advice, who recommends to read and screen reports in order to obtain a general sense and an overall meaning of the data that has been made. A variety of steps were conducted in order to ensure a coherent and transparent transition from raw data to analysed data and to keep authenticity at a high level.



- Data reduction with a clear rule: eliminating all entries that were not directly concerned with answering the agenda questions (such as personal comments or stories from professional experience), items deemed as confidential (such as latest technological developments of a company) and double entries. Data reduction before analysis may be considered common practice as in qualitative research, as large amounts of data were collected. In this case, reduction before analysis is related to the 189 pages of transcripts. Reducing the data before analysis is a pragmatic but necessary step here. It is furthermore related to an ethical dimension of the research project. Reducing the data before analysis can avert harm from participants and participating organizations, for example when a competitor reads the thesis. It is justified as market intelligence is considered a sensitive topic of business management. Avoiding harm, respectively promoting confidentiality, is a central element in the ethical concept applied to this thesis.
- Translation of the reduced data into English where necessary and review of data in order to establish an overall sense of all data to be used in the following processes. Translating only reduced data is considered a pragmatic step, as it reduced the workload resulting from translation. Due to language abilities of the author, this did not compromise the quality of the data made and analysed.
- Re-visiting the thematic headings developed (see section 5.4) and applying the colour codes to particular text chunks of individual reports.
- Structuring the individual data logically under the respective thematic headers within individual interviews, eliminating double entries and searching for differences as well as emerging insights. Potential differences, as well as, emerging insights were added to the reflective comments log.
- Final overall analysis (cross-interview analysis): structuring the statements of different participants under one respective thematic header, eliminating double entries, searching for differences and emerging insights. Furthermore, main items from the archival records and documents were added in order to achieve a balanced and comprehensive analysis of market intelligence practices in the plant building industry.

#### 4.7.2 Emerging insights and contradictory results

Essential in cross-analysis is to look at the data in divergent ways. The reason to cross-analyse the individual reports is not to check whether participants answered in completely

identical ways. Rather, the cross-check is a tool to spot whether individual cases yield similar overall pictures, without totally contradicting explanations. This is due to the fact that case studies are an instrument that allow to collect and analyse data on an immersed level, typically not accessible to e.g. surveys.

The rival explanations strategy is based on Eisenhardt (1989), who thinks that awareness of such incidents and a routine for problem solving, is of importance. It has been said that theory building from case studies is a process based on preconceptions. In fact this is not necessarily true. The juxtaposition, the creative insight obtained from reconciling (potential) differences and reframing them into a new gestalt is what is important (Eisenhardt, 1989). This juxtaposition is at the core of theory building from case studies, as conflicting realities tend to unfreeze thinking and minimize bias from the researcher (Eisenhardt, 1989). If reframing differences into new gestalt is not possible due to statements that are diametrically opposed, the strategy employed is to address this problem by going back to participants and asking specific or closed questions in order to find out if it is actually a rival explanation. In the worst case it implies re-formulating questions until no rival cases are obtained. In this case study, this implied noting all potentially rivalling or contradictory statements into one the reflective comments log (see section 5.6). In a next step, it was analysed whether these potential differences were truly rivalling, or merely data on different levels, which is often so in case study research.

#### 4.7.3 Interpreting the data

The interpretation is important as the design seeks to answer the question “what have I learned” (Lincoln and Guba, 1985, in Creswell, 2009, p.189). Although the latter question may be seen as a personal advancement, this is an essential research step too. The interpretation is thus important in this research, as no real interpretation of theoretical frameworks was possible and undertaken at the literature review stage (see section 2.5.3). “What have I learned”, means that the analytical framework is synthesized into a refined conceptual framework, that supports managers by clarifying how to engage in different market intelligence strategies and for which purpose. This is the main objective of this research and will be brought forward in the course of the next chapter.

In order to undertake a rigorous and transparent interpretation, it was relied on the reflective comments log that provided for emerging insights. The latter provided for the foundation in

establishing the interpretative technique. The importance of reflecting on existing models, discussed in literature, was further implemented. Four potential models have already been investigated during the process of literature review, and the importance of Quinn's (1985) model (see section 2.5.1) in the development of the interpretative technique is discussed in the next chapter. Emphasis in the interpretation was hence put on the following items:

- Prolonged reflection process: using a reflective comments log where emerging insights were cross-checked with existing models for establishing the interpretative technique (see section 5.7).
- Iterative process: alternating between data, analysis and literature to ensure that the interpretative technique is grounded and discussing the differences compared to models of literature.
- Using the narrative method for undertaking the interpretation by taking into consideration the rich data collected and analysed.

## **4.8 The Social Dimension of Reflective Practice**

### 4.8.1 General remarks on reflective practice

Reflection suggests looking back over personal experiences with the aim to reveal one's self to oneself (Sambrook, Stewart and Roberts, 2008). It is an introspective activity. Schön (1983) thinks, that through reflection, a person may surface tacit knowledge to become explicit, which in turn may result in heightened awareness as to the item and possibly discover a need for change (Schön, 1983). Wong et al. (1997, in Freshwater et al., 2005) argue for increased responsibility and accountability as a consequence of reflecting on past incidences.

A philosophical view that acknowledges the importance of change, as well as, the techniques of how to adapt to it, is social constructivism. One of its main objections with regard to positivism is that it lacks abilities to manage complexity (Schön, 1983). Schön (1983) describes it as a mismatch of traditional patterns of practice, whereby modern practice situations exhibit complexity, uncertainty and instability. Of course, market intelligence is predominantly concerned with managing complexity and change. Reflection is therefore a major building block and may be even thought of as forming a part of the methods mix (Schön, 1983). Yin (2009) has characterized the case researcher as a person capable of dealing with changes, complex situations and the lack of standard answers to

problems. This calls for a separate strategy, and the implementation of reflective practice as a key ingredient to it.

Raelin (2002) thinks that reflective practice, in contrast to the introspective appearance that it gains in other conceptions, may include reflecting in public, and puts such an activity in relation to learning dialogues. Wong et al. (1997, in Freshwater et al., 2005) agree to public reflection and that it may include dialogue and discussion of events with other individuals in order to develop a grounded understanding of what happened, why it happened and having what kind of implications. These discussions actively challenge and question existing assumptions based on personal experiences and relate to a social component of reflective practice. Disclosing one's thoughts, ideas, actions, and values to critique from the external world, by allowing different views to impact on oneself, is considered a powerful moment. It allows for the construction of knowledge and reality, possibly resulting in a need for change. It is seen as an aspect in terms of the quality concept established in section 3.6.

#### 4.8.2 Peer debriefing

A main technique to open a particular piece of research to scrutiny is the peer debriefing. It supports the notion of a social reflective practice, and complements the rather introspective moment of the reflective comments log. It is furthermore commensurate with the philosophical standpoint that overarches this thesis.

A peer debriefing is therefore implemented at the end of the empirical study to highlight and discuss main events and insights from the study. It opened the study to an external audit or review, which was concerned with making suggestions on authenticity and trustworthiness of the results. It is another iterative characteristic of the research approach implemented. The details of the peer debriefing are disclosed following the analysis and interpretation of the study data in section 5.9.

### **4.9 Research Design Quality Check**

#### 4.9.1 Protocol template for case study planning

All major steps in the case study design have been supported by taking additional quality improving measures in line with the approach employed in this study. It is thus consistent to undertake a quality check specifically for the research design itself. This is implemented

using two specific measures. Firstly, checking the design with a protocol template for case study planning, and secondly, identifying similar research projects.

The “protocol template for case study planning” prepared by Brereton et al. (2008) was used to check the quality of the research design. This protocol, apart from having been based on acknowledged authors from the field of case study research (Yin, Stake and Eisenhardt, all in Brereton et al., 2008), includes a synthesis of the most accepted and recommended actions governing case study research. It was prepared by the aforementioned authors following a series of case studies in order to frame a template that discusses their experiences in improving the rigour and consistency of case studies (Brereton et al., 2008). This template was copied and it was examined whether the design in general, as well as, the individual measures proposed, are adequate. Specific measures have been added, showing how the items proposed by the template are supported and implemented in the actual research design.

Table 11: Mapping the protocol template against the research design developed (based on Brereton et al., 2008)

| No. | Description of protocol template items   | Applicability and justification | Specific measure adopted in this research |
|-----|--|---------------------------------|---|
| 1   | Background: identify previous research   | Yes                             | Section 2.3.7                             |
| 2   | Define main research questions   | Yes                             | Section 3.2.2                             |
| 3   | Define additional research questions   | Yes                             | Section 4.5                               |
| 4   | Identify whether to use multiple- or single-case design                                | Yes                             | Single case design                        |
| 5   | Describe object of study   | Yes                             | Section 1.5                               |
| 6   | Describe any propositions or sub-questions and measures to be used to investigate them | Yes                             | Sections 3.2.2 and 4.5                    |
| 7   | Criteria for case selection  | Yes                             | Section 4.4                               |
| 8   | Procedures governing field procedures  | Yes                             | Sections 4.2.2, 4.3.3, 4.5, 4.6 and 4.7   |
| 9   | Roles of case study research team members  | No                              | Not applicable                            |
| 10  | Identify the data to be collected  | Yes                             | Sections 4.4 and 4.5                      |

|    |   |      |   |
|----|---|------|---|
| 11 | Define a data collection plan   | Yes  | General plan established for personal use only  |
| 12 | Define how data will be stored  | Yes  | Section 4.3.3   |
| 13 | Identify the criteria for interpreting the findings   | Yes  | Section 4.7   |
| 14 | Identify which data elements will be used and how the data will be combined                 | Yes  | Section 4.7, summary in Figure 20   |
| 15 | Consider the range of possible outcomes   | Yes  | Section 4.5.2   |
| 16 | The analysis should take place as the case study progresses                                 | Yes  | Iterative process, ongoing analysis, reflective comments log section 5.3  |
| 17 | Validity: check against Höst and Runeson's (2007, in Brereton et al., 2008) checklist items | No   | Not applicable, as qualitative criteria and concepts are used (section 3.6)   |
| 18 | Construct validity: show that correct operational measures are planned                      | N.a. | Credibility, dependability, transferability and confirmability used as qualitative criteria to measure overall "trustworthiness" of the research (see section 3.6). |
| 19 | Internal validity: only for explanatory or causal research                                  |      |   |
| 20 | External validity: identify the domain to which findings may be generalized                 |      |   |
| 21 | Explain study limitations   | Yes  | Sections 3.2.3 and 6.8  |
| 22 | Identify target audience.   | Yes  | Academic panel  |
| 23 | Give time estimates for all major steps.  | No   | General time schedule established for personal use only   |

This quality check confirms that all items identified as relevant for this case study research design could be related with specific measures implemented here. Hence, the basis for taking the decision to proceed was obtained. Additional optimization potential has been revealed and implemented during the preparatory works and especially when writing a reflective comments log throughout the data making and analysis processes.

#### 4.9.2 Identifying similar research projects

This section has been included to additionally support the credibility of the research design and the methods and techniques implemented. Shenton (2004) mentions that it is important

to identify whether the methods proposed and used in a particular piece of research have already been used in similar research projects. Apart from the study by Thomas and Linstead (2002) which has already been mentioned several times, Beverland and Lindgreen (2007) in their multiple-case study on implementing market orientation in industrial firms, have used a set of similar methods and techniques. They argue in favour of qualitative methods when studying complex processes (Yin, 1994, in Beverland and Lindgreen, 2007), and chose a multiple-case approach in their efforts to generate theory (Eisenhardt, 1989, in Beverland and Lindgreen, 2007). Beverland and Lindgreen used two cases which they selected for their (expected) rich insights. They held a total of nine in-depth interviews, with participants from middle and upper management levels, stopping the interview process when saturation occurred. Saturation was related to the point in time when few new insights were gained (Strauss and Corbin, 1998, in Beverland and Lindgreen, 2007). They have used Eisenhardt's methods for case analysis (within-case and cross-case analysis), including the coding technique to produce theoretical categories.

Mortara et al. (2009) have also embarked on a qualitative case study approach using semi-structured interviews in their efforts to construct a framework model on technology intelligence. It was not mentioned, whether Mortara et al. (2009) preferred multiple case studies, or case studies. The latter term has been used in their research, although they speak of individual cases that are covered within their study. Apparently, the authors see no advantage of labelling a case study a *multiple* case study.

The methodology and methods adopted in this approach, as well as, the design implemented have apparently been used in similar projects already. Hence, it can be said that:

- A qualitative case study is a sensitive methodology that enables making rich data at different levels, constructing a comprehensive picture and presenting different voices rather than silencing many of them. It is thus useful to achieve new insights into the subject matter that can be framed into new theory.
- Semi-structured interviews, participant selection based on personal judgement with few participants is not necessarily in contrast with creating a high-quality case study. Successful examples indicate that such approaches yield acceptable results.
- Thematic coding is an appropriate strategy in analysing qualitative data.

#### **4.10 Outlook on the following Chapter**

This chapter has dealt with the development of the research design, and has transparently disseminated all relevant decisions in this process together with justifications for the decisions. The next chapter will render visible to the reader the actual empirical case study. Details connected to the data collection are addressed; in addition, the chapter will present the analysis and the interpretation of the data. A peer debriefing is implemented as an additional measure of the quality concept applied. Most importantly, it will disclose the foundations of the revised conceptual framework, which is then summarized in the final chapter.



## **5. Data Collection and Analysis**

### **5.1 Introduction**

This chapter holds the empirical case study, and focuses on the analysis and interpretation of the data. The raw data itself is not included in this thesis due to its large size, among other reasons. Instead, an example of the raw data (i.e. one interview report) is included in the appendix as evidence. In addition, one example of a reduced and colour-coded report, as well as, the summary of all reduced and structured interview reports are shown in the appendix. This approach has been chosen to disseminate the individual steps in line with the establishment of a chain of evidence. The chapter sets ground for the revised conceptual framework, by detailing specifically the narrative synthesis of the cross-interview analysis, as well as, the interpretation. In addition, the chapter will provide justifications for the approach chosen, implemented in the form of a peer debriefing.

### **5.2 Reporting on the Data Collection**

#### 5.2.1 Negotiating access to selected organizations and participants

The search for informative participants required implementation of the criteria mentioned in the description of the selection process (see section 4.4.2). A pre-requisite for participation in the study was, that the potential candidate was known to have the necessary experience, as well as, the expert knowledge in the field. This was implemented starting with persons from the author's network as well as, recommendations from potential participants. This tentative list was taken as the starting point in negotiating access.

From this tentative list potential participants were contacted either personally or via telephone. The objective was to obtain information whether the potential participant was able and willing to be included into a final list of participants. Apart from one potential participant, all tentatively listed persons agreed to participate in the study.

The final list of participants was then used to organize dates and venues with the people concerned. This again involved direct communication with them by telephone or face-to-face. The final list of participants consisted of people who fitted with the mentioned criteria having a minimum of 10 years of work experience, significant knowledge in marketing and/or sales and/or project management in the plant building industry, and had technical,

engineering or business management backgrounds. The participants had knowledge of plant building market intelligence in managerial practice both, on strategic, as well as, on tactical and operational levels.

The plant building industry is as an industry predominantly globalized, therefore it was important to invite participants with different backgrounds to the study. Over-reliance on Austrian participants with their traditions and norms was avoided. Diversity was essential and participants from Brazil, the U.S. and the U.K were ready to contribute. This measure was set to support transferability. In total eight interviews were conducted with experts from the plant building industry, this figure holds and included the pilot interview. These experts are employed by four different companies, including two plant building companies, one exponent of a customer organization and a representative of consulting (see section 4.4.1). The organizations taking part in the study are briefly described below.

Plant building company No. 1 with its headquarters in Austria is one of the global leaders in the field of plant building, with more than 10,000 employees worldwide. The company is active in the field of metallurgical plant building, although the company once also engaged in chemical plant building and fabrics building. Today, plant solutions are provided for the mining, ironmaking, steelmaking and rolling, as well as, the aluminium industries. Five participants were included from this company, with diverse backgrounds in terms of education, nationality, age, and management hierarchy. This group of participants included one Senior Vice President (MSc, 20 years of professional experience), one Head of Marketing (BA, 10 years of professional experience), one Commercial Head of a Business Segment (MSc, 19 years of professional experience), one Senior Project Manager (MSc, 15 years of professional experience) and one Specialist in marketing and media relations (PhD, 30 years of professional experience). The details are referred to in table 12.

Plant building company No. 2 is an affiliated company with Plant building company No. 1 and is located in the U.K. It is specialized in blast furnaces, rolling mills and aluminium rolling. The company employs a total of more than 500 people. Plant building company No. 2 employs the senior manager in the sales and account management area, included in the list of participants. This participant is of special interest, apart from having 10 years of experience in metallurgical plant building, has more than 10 years of experience in power plant building for both British and Austrian companies. The participant holds a bachelor's

degree in engineering and the expertise provides a wealth of information for the study (see table 12).

Company No. 3 is an Austrian holding that owns a number of enterprises. The number of employees exceeds several hundreds. These companies are engaged in services, spare parts, consulting, plant building and sale of metal products. One senior vice president from this company was included to the list of participants. This participant has over 30 years of work experience, a background in business management (see table 12) and exposure to plant building as a senior consultant in structuring plant building projects (see section 4.4.1, second group of potential interviewees).

Company No. 4 owns one of the largest mining enterprises in Eastern Europe. It is a holding company based in Cyprus and has about 70 employees. Experience in structuring large-scale plant projects for the mining company was the reason for selecting one of the board members. The customer's perspective shapes the area this particular participant can add (see section 4.4.1, third group of potential interviewees). This participant, apart from being a member of the board, holds two university degrees, one of them in business administration and has 17 years of work experience.

### 5.2.2 Making the data using semi-structured interviews

Each interview first aimed at informing the participant about the goals, methods and processes of the research. A short overview of the most important issues provided as a conceptual briefing was given to familiarize the participant with the topic of the interview. The latter was identified as important from the findings of the pilot interview.

The interview began with two basic questions in order to *pick up the interview partner and proceed*. Firstly, the immersion strategy involved asking the participant about the position held in the company. The second question posed included asking for the perceived relevance of market intelligence. This strategy provided for the opportunity to open field of the subject.

The interview continued by targeting the weaknesses and contradictions located in literature. The third part of the interview included an exploration of how the process may unfold in the

plant building industry, which gave the participant the opportunity to reflect. Table 12 gives an overview of the operational details of the interviews.

Table 12: Overview on the interviews

| No. | Participant's background | Work experience (in years) | Nationality | Date of the interview          | Duration of the interview |
|-----|--------------------------|----------------------------|-------------|--------------------------------|---------------------------|
| 1   | Technical and commercial | 19                         | Austrian    | Nov. 21, 2011                  | 2 hours and 3 minutes     |
| 2   | Commercial               | 30                         | Austrian    | Nov. 24, 2011                  | 1 hour and 54 minutes     |
| 3   | Scientific, technical    | 30                         | American    | Nov. 25, 2011 and Jan.13, 2012 | 2 hours and 27 minutes    |
| 4   | Commercial               | 17                         | Austrian    | Dec. 04, 2011                  | 1 hour and 20 minutes     |
| 5   | Commercial and technical | 10                         | Brazilian   | Dec. 12, 2011                  | 1 hour and 45 minutes     |
| 6   | Technical and commercial | 20                         | Austrian    | Dec. 23, 2011                  | 1 hour and 34 minutes     |
| 7   | Technical                | 15                         | Austrian    | Dec. 23, 2011                  | 56 minutes                |
| 8   | Commercial and technical | 30                         | British     | Jan. 10, 2012                  | 1 hour and 43 minutes     |

The data making procedure lasted from November 2011 to January 2012. During this period eight interviews were carried out with a total length 13.7 hours (822 minutes). The average interview lasted for 103 minutes (1 hour 43 minutes). The longest interview lasted for two hours and twenty seven minutes and was, on ground of limited time availability of the participant, divided into two sessions. Data collection ended after eight interviews. The saturation of insights became evident after seven interviews, and confirmation of the notion became clear after the eighth one was carried out. Saturation was perceived after a sufficient amount of rich data had been gathered, and repetition occurred. Repetition may be referred to as redundancy of insights. One complete interview is in Appendix 4.

The feedback obtained, provided the confirmation that the interviewees considered the interviews carried out well and that the reports were correct (see Appendix No. 5). All participants furthermore confirmed that the topic was covered comprehensively that the

questions were formulated plausibly and in a reflective manner. Feedback was received on two occasions:

- Before ending an interview, each participant was given the opportunity to remark on how the interview was conducted and if the topic was covered comprehensively. Participants also had the opportunity to make additional comments before closing the interview procedure.
- Reports were sent to the participants for confirmation. A major concern was if the participants felt that the interview was conducted in a reflective manner and not overly biased (see Appendix No. 5).

Typing the reports proved to be time consuming, as an hour of interviewing resulted in approximately seven to nine hours of typing work, depending on the speed of speech. One hour of an interview was equal to approximately 15 of DIN A4 pages using word format, Times New Roman font, font size 12 and single space.

Table 13: Overview on the amount of data produced

| No.          | Date of the interview                          | Duration of the interview      | Number of pages of the report | Word count (circa) |
|--------------|--|--------------------------------|-------------------------------|--------------------|
| 1            | Nov. 21, 2011                                  | 2 hours and 3 minutes          | 44                            | 14,600             |
| 2            | Nov. 24, 2011                                  | 1 hour and 54 minutes          | 18                            | 7,100              |
| 3            | Nov. 25, 2011 and Jan. 13, 2012 (two sessions) | 2 hours and 27 minutes         | 30                            | 15,700             |
| 4            | Dec. 4, 2011                                   | 1 hour and 20 minutes          | 19                            | 8,400              |
| 5            | Dec. 12, 2011                                  | 1 hour and 45 minutes          | 24                            | 12,000             |
| 6            | Dec. 23, 2011                                  | 1 hour and 34 minutes          | 18                            | 9,200              |
| 7            | Dec. 23, 2011                                  | 56 minutes                     | 15                            | 5,600              |
| 8            | Jan. 10, 2012                                  | 1 hour and 43 minutes          | 21                            | 10,900             |
| <b>Total</b> |  | <b>13 hours and 42 minutes</b> | <b>189</b>                    | <b>83,500</b>      |

The interviews resulted in reports amounting to 189 pages of data, with a total word count exceeding 83,500 words. For this reason only one example of an interview report is attached

to this thesis (see Appendix No. 4), whilst a summary of reduced and structured interviews can be found in Appendix No. 7.

The interviewees received the reports in order to confirm the content and give permission for use in the thesis. One participant (Participant No. 7) pointed out some spelling mistakes, which were then corrected. The positive responses (see an example in Appendix No. 5) provided the basis to continue with the analysis and the interpretation of the data. After conducting and transcribing all the interviews, the reports were carefully read and the essential substance of the statements obtained. A separate reflective comments log proved to be helpful in this context (see section 5.3).

### 5.2.3 Additional evidence from archival records and documents

Searching for archival records and documents was included in the data collection strategy, as means to locate multiple sources of evidence. A concise search for suitable sources of evidence from within Plant building company No. 1 was conducted in the following way:

- The corporate intranet,
- The departmental drives (marketing department and sales and key account management department),
- The IRC (corporate “Information Research Center”): is a separate corporate staff unit that operates a huge database with articles, studies and other literature for many (almost all) relevant topics (management and technology topics mainly).

A total of three documents could be retrieved by using this strategy:

- An internal guideline for market intelligence used by one business unit (non-plant building) was retrieved from the corporate intranet and studied.
- A presentation on market intelligence and its connection to a reporting tool used in the company was retrieved from the departmental drive and studied.
- A management report on “competitive intelligence – maximizing the intelligent use of information” was retrieved from the IRC and studied.

After carefully reading and reflecting the content of the documents, none of the retrieved pieces were used. The first and the last of the above mentioned documents were excluded because they were issued by a corporate holding and not specifically designed for use in plant building. The general knowledge was available from other sources (i.e. the literature base); no additional value justified inclusion in the case study. The second item was

prepared for use in the plant building industry, however, the perspective was rather one-sided from an IT and reporting point of view. Rejection was based on the limitations of the research as defined in section 3.2.3. For reasons of confidentiality documents and archival records cannot be disseminated in this thesis.

Yin (2009) states that any of the proposed sources of evidence have been the sole basis for entire case studies. This means, that although it seems possible in case study research to rely on one source of evidence only, the search for additional sources of evidence was not abandoned. During the interviews, participants were asked to suggest useful documents or archival records, as additional sources of evidence. This strategy is in accordance with a prolonged engagement in the field. The following additional documents could be retrieved following this approach:

- Participant No. 5 provided a market analysis and a competitor report as outputs of a business unit market intelligence project. These have also been incorporated into the analysis, especially the information how they were produced. In this case the data cannot be made public published for reasons of confidentiality.
- Participant No. 6 provided a general benchmarking study (evaluation of main competitors) prepared by a central department of the firm, and was classified as a strategic type of market intelligence product. After careful consideration the document was included in the data suitable for analysis, as it contained important information about its preparation methods. The data is confidential and cannot be made public.

### **5.3 Reflective Comments Log**

#### **5.3.1 General aspects with regard to the reflective comments log**

A main characteristic of case studies aiming at theory generation is considered to be overlapping data collection and analysis processes (Eisenhardt, 1989). This feature has already been introduced in section 3.4.3. In order to ensure such overlapping stages it was deemed important to start and maintain a reflective comments log.

The reflective comments log was started after the pilot interview was conducted and was maintained parallel to data collection and analysis. It supported the formation of thoughts

and facilitated the transition from data making to analysis and interpretation by following an iterative approach.

The log created had a total volume of 29 pages, with almost 16,700 words. The reflective comments log was started in December 2011 and kept until March 2012. The ongoing reflection was supported through several entries per week. During this period, emerging topics, rich descriptions, potential differences, main statements and reflections on the case study data were entered and reflected upon. All the issues that emerged were noted on the day they emerged, and in an unstructured manner. After completing the data making procedure the comments were analysed and reflected upon.

This reflective comments log served two purposes:

- Firstly, experiences from the data collection process were discussed. This provided for an opportunity to use experiences in order to improve interviewing techniques of the author as the process continued (see section 4.5.1).
- Secondly, it supported the analysis and the interpretation of the data by enhancing the methods and techniques applied with a reflective and iterative approach. The alternation between data and theory supported identification of differences, emerging insights and confirmation of existing knowledge. These insights are disseminated to the reader after the analysis of the data, and are part of sections 5.6 and 5.7.

### 5.3.2 Lessons learnt from the interviews

Although the interviews were conceptualized in a semi-structured approach, a gradual evolution into a more in-depth nature was observed as interviewing proceeded. Although the distinctions are not clear-cut, the most pertinent result was that the interviews lasted longer than originally anticipated. Thus the role of the agenda changed in the course of the interviews, leading to a more flexible approach in the interviews. It was used as a pure aide-memoire, with most of the essential insights naturally emerging from the conversations. Consequently, some of the interviews, especially the longer ones, could be referred to as narrative based, the way in which the interviewees responded to the questions was often in the form of episodic narratives of how particular things had happened.

Flexibility proved to be a key issue when conducting the interviews. It relates to adapting to the differences in character and knowledge stock among participants. Some participants were highly structured and hence preferred a structured approach as originally outlined in the agenda (see section 4.5). Other participants were determined and intuitive, which



resulted in a process characterized by the inclusion of stories from professional experience and alternation between individual blocks of the agenda.

Careful time management proved to be more important than originally conceived. It was related to tight time budgets of participants. Although Saunders et al. (2007) explicitly recommend typing the interview report shortly after the actual interview, this was not always possible due to the author's employment status. The strategy to mitigate the threats associated with not typing the reports immediately after the interview, included combining tape records and hand written notes when crafting the reports.

Most participants had a superficial understanding of market intelligence *theory*. Thus it was imperative to have questions formulated in a comprehensible and pragmatic way. The latter relates to omitting technical terms, while relying on common sense formulations. This approach supported participants in associating these formulations to their personal and professional experiences. In general, the theoretic approach to agenda development, which resulted in a logical order of questions, supported the interviewing procedure. This was confirmed by participants at several instances.

Participants with different backgrounds (see section 4.4.1) was vital, thus a broad variety of positions on the topic was made possible. The diversity of the participants made it possible to obtain a comprehensive understanding of the topic. Narrations provided detailed rich descriptions. Dealing with the statements of participants proved to be challenging, thus developing a method to comprehend meaning was essential. As potential differences were located in the data, the prepared routine was followed (see section 4.7.2), and such entries were extracted as reflective comments and discussed separately (see section 5.6).

The underlying theory about the informative participant proved helpful and the characteristics knowledge, experience, openness, communicativeness and reflectivity, were confirmed (see section 4.4.2). In addition, the criteria that the participant had to have at least 10 years exposure to plant building was confirmed during the interviews. Participant No. 8 indicated his experience as follows:

*“And then you need a couple of years, usually it's about ten years in the business, before you get a good feel of the people, the market, the customers, the company, the network - to add value.”*

Occasionally, the terminology used in the interviews was not clear to some of the participants. Unfortunately, some participants did not admit to not understanding a concept. For this reason technical terms were introduced with short explanations, thus dealing with the insufficient understanding of terminology was avoided. One example was the concept of knowledge management, that had to be explained on two occasions.

Interviews were held in either German or English as preferred by the participant. Three participants were non-native German speakers, resulting in three interviews conducted in the English language. German-speaking participants sometimes confused the term market intelligence with intelligence as a property of the mind. An adequate German term for this concept does apparently not exist, although it may advance the understanding of the concept in German-speaking countries.

Bias has been seen as a major drawback of constructivist and qualitative interviews. Although objectivism has to be rejected from the point of view adopted in the thesis, bias was not perceived as a threat in this study. Participants from middle management or senior managers were very experienced in terms of negotiation techniques. This is an important fact to consider, as constructivist interviews are said to “negotiate a shared understanding” (Koro-Ljungberg, 2008, in Holstein and Gubrium, 2008, p. 431). This made interviewing an interesting, but challenging procedure, as participants were able to negotiate their views by substantiating them with experiences from their professional domain. The expert knowledge of the interviewer and that of the participant was perceived as balanced. In addition, participants were asked if they felt that interviews were conducted in an overly biased way (see Appendix No. 5). The participants found that the interviews were conducted well and bias was not an issue. The confirmation provided the basis to further proceed with the analysis.

## **5.4 Analysing the data using thematic headings and colour codes**

### **5.4.1 Definition of the thematic headings established for the analysis**

The thematic headers established in the literature review were used to develop the interview agenda (see section 4.5) and to guide the development of the thematic headers used in the analysis of the case study evidence. This is in line with the *rather* deductive approach, as well as, with the analytical strategy adopted in the case study (see section 4.7.1). Re-visiting

themes after the data was collected, may be considered as an element of induction, and is a pragmatic characteristic designed to adapt the headers to fit with the research progress. This led to minor modifications compared to the initial headers. The use of the reflective comments log supported this approach.

Thematic headers established led to omitting previously used headers, *definition of intelligence needs, sources of environmental information, storing intelligence and utilization and feedback*, in line with the limitations of the study as established in section 3.2.3. *Collection strategy* was renamed into information gathering, giving particular consideration to indirect gathering approaches. Information synthesis and intelligence integration were added to the thematic headers used here, due to the importance of merging information and intelligence from different sources to obtain a comprehensive picture of the operating environment. *Products and services from intelligence operations*, as previously used, was changed into results of market intelligence, in order to place more emphasis on intangible results of market intelligence. Furthermore, the header plant building specifics was added, in order to support the construction of an industry-specific framework. Each thematic header was then related with a specific colour to be used in the analysis of the texts. In practice, coloured text markers were used and applied in the context thematic analysis.

Table 14: Relating thematic headings and colour codes

| No. | Thematic heading                          | Colour Code |
|-----|---|-------------|
| 1   | Plant building specifics                  | Yellow      |
| 2   | Information gathering                     | Green       |
| 3   | Information synthesis and triangulation   | Magenta     |
| 4   | Analysis and interpretation               | Orange      |
| 5   | Intelligence integration                  | Blue        |
| 6   | Dissemination and communication           | Violet      |
| 7   | Results of market intelligence activities | Brown       |

#### 5.4.2 Data reduction, colour coding and cross-interview analyses

Data reduction before analysis was necessary, as exploratory, qualitative studies usually produce large amounts of data (see table 13). A justification for this procedure has been given already in the previous chapter. Data reduction was conducted with marking those aspects in the reports that were to be used for the final analysis. The reduction criterion applied was, that only items providing answers to particular questions posed in the agenda were left for analysis. As a result 60-70% of the data made was reduced. This high percentage is justified because participants often highlighted specific aspects of their answers by elaborating on situations from their professional life (stories). Confidential items or repetitions were also excluded thus leading to data reduction.

Translation of the German interviews into English was done only after data reduction in order to reduce the work load. At this stage the translated data was unstructured, meaning that the data was in the order in which the interviews were conducted. Coding can result in a fragmentation of data due to the loss of the context of a statement. This is associated with the loss of the narrative flow of the interview (Bryman and Bell, 2007). Therefore, after translation of the reduced data, a check for comprehensibility was conducted. In any case, the focus remained on keeping the authentic meaning of the data, as much as possible, without compromising on comprehensibility. Any interpretive work is susceptible to changing the original meaning constructed in the interviews; a reflective and careful approach is considered necessary to mitigate this risk.

The colour codes were applied to individual text chunks using coloured text markers. The coloured data was clustered in order to structure it within the word file. This means that individual items were positioned logically to the respective thematic heading, arranging the headings in the order as established in table 14. This procedure led to eight documents in total, that reflects the number of interviews conducted. A summary document of this procedure can be referred to in Appendix 7.

Although a separate within-interview analysis could have been performed on the individual interviews (Eisenhardt, 1989), this was rejected. Within-interview analysis would have been necessary, if the social reality constructed in the particular interview would have been in the focus, which was not the case. Cross-interview analysis was considered sufficient to draw

out the necessary insights, as this study focused on a phenomenon in the context of an industry. The personal context is thus considered to be subordinate in the construction of a framework. Regular entries in the reflective comments log, supported additionally whether the individual interviews yielded similar descriptions. This was affirmed, thus the decision not to carry out a within-interview analysis was supported. Nonetheless minor differences in the social realities constructed were obtained and discussed (see section 5.7).

Then, the data reduced, translated, colour coded and structured, was collated into one single word file. This file was used for the cross-interview analysis. The seven thematic headings established were included in the cross-interview analysis file, and the individual contributions of the interviews were arranged and combined according to the structure specified. This step was implemented to again eliminate double entries, whereby the item with a more informative content was kept. This is referred to as keeping data with higher explanatory power. In addition, relevant data from archival records or documents were added to the cross-analysis. In the cross-interview analysis, emphasis was kept on minimum interpretative acts in order to maintain the data as authentic as possible. Furthermore, the data was checked for inconsistencies and differences, as well as, emerging insights that served as a basis for the discussion and interpretation of the data (see sections 5.6 and 5.7). The analysis was conducted over a period of five weeks, from mid of February to mid of March 2012. This included data reduction, colour coding, structuring and eliminating double-entries, as well as, cross-interview analysis.

## **5.5 A Narrative Synthesis of the cross-interview Analysis**

### **5.5.1 First Theme: Plant building specifics**

In order to structure the theme of plant building specifics, a total of five sub-headers were implemented. The sub-headers are important as to highlight the main particularities of plant building, that influence market intelligence processes.

#### **5.5.1.1 General statements with regard to plant building specifics**

All participants see the plant building industry as being unique in its characteristics. All of the characteristics portrayed below, are to be reviewed for their significance in terms of constructing a refined conceptual framework on plant building market intelligence.

#### 5.5.1.2 Internal and external complexity

Complexity is a main characteristic of the plant building industry, that was mentioned by all participants. Complexity relates to both internal and external factors. Firstly, there are different disciplines (knowledge bases) involved in the plant building business, such as, but not limited to, engineering, technology, marketing and sales, financing among others. These disciplines may be seen as interfaces and result in a particularly high need for interaction among representatives of the disciplines.

Participant No. 2 related complexity to a high need of interaction (interfaces):

*“It is necessary to include a relatively high number of specialists from different disciplines in order to examine a plant project from different angles – from financing, to technical feasibility and ecological aspects. This is a main characteristic of plant building. Especially topics connected to environmental requirements and emissions have spread from Central Europe to China.”*

External complexity relates to the amount of participants included in the actual plant building project such as the plant builder, the customer, construction and erection companies, financing and credit risk covering institutes, commercial and technology consultants, among others (Eberle, 2008).

This insight was reflected in the title of this thesis, as the relation to the environment (see section 4.4.1), is a main characteristic of case studies (Flyvbjerg, 2011) and serves to position the study into its environment and the company in its (market) environment. Thus, this market intelligence investigation was placed in the plant building *industry* due to internal *and* external complexity.

#### 5.5.1.3 Direct selling approach

The plant building industry is characterized by a direct selling approach, mostly omitting sales intermediaries. That means, that plant builders sell their technology and equipment (mostly) directly to the end customer, which is typically an operating company. As a result, managers of plant building companies have detailed knowledge on the customers and their respective markets. Managers of the plant building industry, but not only sales managers, around the world in order to promote their technologies, search for cooperation and drive developments in technology (for example confirmed by Participants No. 2, 5 and 6).

Representatives of plant builders are challenged by the external operating environment, as they receive input directly from external partners (Participant No. 3). These multiple, direct inputs are, from a market intelligence point of view, essential and need to be integrated. It relates to the section above, as information needs to be shared with a high number of internal interfaces, which increases complexity.

A characteristic of the plant building industry is that the customers of the customers are also relevant in terms of developing future market scenarios. Industrial plant operators can only produce as much steel, chemicals or energy as there is demand for cars, bridges, fertilizer or electricity.

As Participant No. 8 explained:

*“I have to understand what is the customer’s strategy, where is he today, where does he want to be down the road, and we have to find a system, a roadmap that we need in order to be successful.”*

Sales approaches and activities in plant building differ from those of other industries. Participant No. 2 mentioned in this regard:

*“Sales activities are fundamentally different in plant building, than in other industries. The sales process is more detailed, diversified, a certain amount of engineering resources are put into it – that means resources, time. Therefore, market intelligence is so vital in the plant building industry. It serves also to prioritize activities, to put your resources on promising projects – and not hunting white elephants.”*

This means that project and customer intelligence are fundamental aspects in plant building as dealing with them well can ensure financial viability of operations. This type of project intelligence serves to prioritize activities in order to concentrate on promising prospects. As projects are connected with individual customers, project and customer intelligence can be seen as two independent sides of a coin.

#### 5.5.1.4 Long-term relationships and lifecycles

The plant building industry operates in an environment, that is characterized by long-term relationships among suppliers and customers (Participant No. 5). This is in part related to the long lifecycles of industrial plants, from design and delivery, to commissioning,

operation and dismantling, and may include decades of operating time. This influences and promotes the building of personal relationships among industry members, which can be related to the number of personal interactions among suppliers, end users and decision makers (Participant No. 3). This has influences on market intelligence routines, as specific information may only be obtained if a relationship exists among participants. When asked about peculiarities of plant building that may influence market intelligence, Participant No. 5 said:

*“Plant building is complex because you have to consider internal factors, external factors, you have a time schedule, a budget. This turns the business different. Plant building and project-executing business is related to long-term business relationships.”*

#### 5.5.1.5 Institutionalized decision making processes

Another characteristic is the decision making process in industrial purchases. Such processes due to their relative importance tend to be institutionalized, and the unit that is usually involved, contains several organizational members (Participant No. 2). This has its effects on market intelligence, especially with regard to customer intelligence when identifying priorities, expectations and aspirations of individual members of a decision making unit.

#### 5.5.1.6 Transferability among plant building sectors

It seems possible to transfer the findings from this study to the entire plant building industry, although most participants have their background in metallurgical plant building. According to participants and based on their extensive experience, the competitors operates very much in a similar way and the managerial processes are also quite similar (Participant No. 8). One participant, who worked in the power plant building sector affirmed, that there are no significant differences with regard to market intelligence at different plant building sectors (Participant No. 8).

One participant also purported that the plant building industry, has a lot in common with the larger capital goods industry (Participant No. 5). This includes similarities in terms of managerial processes with other capital goods industries such as complex civil projects (e.g. tunnel construction), heavy mechanical engineering and other such types of businesses. The reason seems to be that the businesses are also project-centred businesses, typically on large



budgets, long-term supplier-buyer relationships with complex structures in use (Participant No. 5). This form of wider transferability beyond the plant building industry could not be affirmed by other participants, because they did not have sufficient knowledge and experience (see section 6.8).

Acknowledged limits in terms of transferability are cultural differences in the various markets that plant builders operate in (Participant No. 8). These tend to be primarily Europe, the CIS countries, China, India, the U.S.A., Brazil and the Middle East. Local peculiarities, as there is no one rule that fits all, have to be taken into account when exploring business processes. This increases complexity, as culture influences views, attitudes and work ethics, among other aspects. It appears that the study conducted, comprises mainly an image of the European plant building industry, as is reflected in the title of this thesis. According to Mokhtar et al. (2009) this insight is partly confirmed by market orientation, emphasizing the importance of culture in business.

#### 5.5.2 Second Theme: Gathering competitive information

A total of nine sub-headers have been implemented to structure the wide topic of information gathering. This is designed to support readability and comprehensibility.

##### 5.5.2.1 Relationships as a basis to secure competitive information

The prerequisite to acquire competitive information from external personal (referred to as direct gathering in the literature) sources appears to be determined by relationships with knowledgeable persons.

Participant No. 1 stated:

*“The prerequisite to acquire information – even critical information – is to have a relationship with somebody, who is knowledgeable about a topic.”*

Participant No. 2 added to this by explaining the following:

*“The most essential and topical customer and project information can only be received from customers directly. This may include project opportunities, feasibility of projects, time schedules, financing issues and the like. Since it is the client companies that realize projects, their representatives are naturally the most direct source of information.”*

In order to obtain such information it is necessary to be at the geographic location of the client at regular intervals and to be proactive when asking for latest developments (Participant No. 2). Regular contact with the customer is essential, as well as, knowing who possess the information required.

Participant No. 8 added to this:

*“A good sales man is thus so valuable to an organization, because his position gives the organization the possibility to extend its domain onto customers, partners, maybe even suppliers and so on. Especially valuable pieces of information are received mainly via informal means of communication, in such instances the most relevant items tend to come up.”*

#### 5.5.2.2 Sources of competitive information

When considering technology or product information a variety of different sources appear to be useful and important. Competitive information may emerge from screening the media, publications and contributions at conferences (Participant No. 3). The importance of the internet is increasing steadily, due to the increased online availability of technical and technological information.

Information that is not available from the public domain, may include knowledge about the competitive realm, for example as individual customer strategies, pricing levels in specific product markets. However, there is one constraint sometimes neglected and that is that some information is stored in peoples' minds rather than on paper (Participant No. 5). These are shared, if at all, to a great extent using informal means and structures.

Participant No. 3 indicates that exchanging internal sources of information is directly associated with trust that relationships convey. Literature refers to this as indirect gathering. The participant emphasizes this as follows:

*“Exchanges with experts are also important sources, if not the most important ones, of technology or product information, if supported by personal relationships. These experts are then willing to make available more detailed information that they would not reveal to someone that they do not know.”*

### 5.5.2.3 Competitive information entry modes

Different modes exist of how competitive information enters an organization. Examples of information push may include minutes of meetings, memos or trip reports, alternatively, information push may be implemented verbally or by telephone calls. Information push is dependent on the person's willingness to share particular pieces of information (Participant No. 5).

Often, it is necessary to pull additional information from potentially knowledgeable persons within the organization (Participant No. 1). Apart from factual information, feelings or intuition from sales persons that visit and speak to customers' frequently, are considered another source of information (Participant No. 5). Information pull is characterized through telephone calls, calling in (ad-hoc) meetings or locating directly prospective persons in order to receive (pull) competitive information (Participant No. 1). The literature refers to such strategies as indirect personal gathering strategies.

Participant No. 1 stated in this regard:

*"We use (regular, added by the author) departmental meetings to ask for and get additional information and knowledge held by participants and so to make it available to the whole department."*

Participant No. 1 means that such strategies are becoming a commonplace today. Pulling information and making it available to the entire department is important, as not all relevant information that organizational members obtain in the course of their activities, are pushed into the organization proactively. Pulling additional information is supported in the course of meetings, including the opportunity to ask questions, and refine views developed.

Participant No. 6 portrayed this trend:

*"There has been a shift from information push to information pull in the recent past. This trend is accompanied by the increasing use of software tools that force personnel to constantly place latest information within organizational boundaries."*

The importance of indirect gathering strategies, closely related to information pull, is witnessed also from literature. Constantly pulling additional information is relevant due to

the fact that many organizational members may need to refine their own views, especially front office employees and managers. Software tools are used to aggregate and store such information.

#### 5.5.2.4 Differences in internal and external information gathering

Gathering from internal sources (referred to as indirect gathering in literature) differs from gathering information from external sources (direct gathering). Especially information originating from internal personal sources are said to have “emotion” (original word used) attached to them (Participant No. 5).

Participant No. 4 said:

*“Internal information is often sugar-coated, to make them look more interesting and to drive a certain agenda.”*

Information directly from external sources are in turn said to be more reliable than information indirectly received (Participant No. 5). This may relate to credibility, where a piece of competitive information received by a plant building manager directly from e.g. a customer, may be seen as more trustworthy than if the same piece of information was received (indirectly) via a colleague.

Considering the volume of information that is available, a time factor emerges that has to be taken into account given time constraints of organizational members. It is often time consuming to access certain competitive information (Participant No. 3). A common technique is, thus, to revert to indirect gathering strategies by focusing on internal sources. Indirect gathering strategies may therefore decrease the time necessary to get to the core of a particular matter (Participant No. 3). This has a number of implications. Firstly, what then is received is usually more than plain data, and sometimes even more than information. This means, that information is mixed with personal knowledge of the source (Participant No. 4). Secondly, talking to people who are aware of specific business or market aspects, allows the investigator immediately ask specific questions turning gathering into a two-way activity, in order to develop and sharpen a refined view (Participant No. 6). A term often used by participants in this context is information or knowledge sharing (Participants No. 2 and 3).

#### 5.5.2.5 Responsibilities with regard to gathering information

Gathering competitive information is not the responsibility of one person alone and involves many people due to the sheer amount of information available (Participant No. 8). This may also be seen in connection with internal complexity (section 5.5.1.2).

Participant No. 8 explained:

*“Everybody with contacts should have a “sales man’s hat” on, and should be sensitive with regard to gathering information and feeding it back into the system. One problem is that it is not always clear where people should put or forward such information to.”*

The ultimate responsibility to ensure that a sufficient amount of competitive information is available to the department lies with the head (Participant No. 2). Different kinds of organizational units are considered in business management, one of the most basic differentiations is, whether the respective unit holds income responsibility. Operational divisions (sometimes called business units) are usually charged with income responsibility, whereas central departments are not. Central units are departments such as Strategy Development, Marketing, or Research & Development (R&D). Central units drive information gathering in indirect and to a lesser extent in direct modes – but seem to prefer formal methods and structure of gathering (supported by documents and archival records obtained from participants).

Another characteristic of modern indirect information gathering are software tools for different applications (such as sales reporting tools). Information is gathered by forcing designated organizational members to contribute input in the form of competitive information. Providing access to the data or information collected to different organizational members is facilitated by implementing software tools (Participant No. 6). Official meetings are then used for example to clarify certain issues connected to the data or information. For more strategic intelligence activities, formal interviews or questionnaires are used as a gathering technique (supported by documents and archival records obtained from participants). Central departments may also rely on external sources, such as commissioned market research, as a form of information input to central intelligence activities (Participant No. 1).

In order to verify the above, a benchmarking report, one of the foremost outputs of central units' intelligence, was obtained from a participant and evaluated (see section 5.2.3). In the introduction of this document, information on the methods, as well as, on the preparation of the findings were explained. Information gathering was done in both direct and indirect ways. Direct information gathering included formal interviews with externals and secondary information in the form of reports. Indirect gathering included in-house data obtained from software tools and interviews with employees. Analysis and interpretation was done within the strategy department using formal methods such as thematic analysis or SWOT. Although, the report cannot, on grounds of confidentiality, be made available to the reader, the value of this discussion is that this document confirmed the notion received from the interview partners. Central departments rely on formal methods when preparing market intelligence.

Operational divisions, sometimes called business units, may use formal and informal methods to gather information, depending on the purpose of the intelligence to be produced (Participant No. 1). One purpose may be that the intelligence produced is forwarded to top-management, another purpose is that intelligence is used for the business units' application.

Participant No. 5 explained the role of formal methods:

*“If it is only for the understanding of people, the analytical processes will be rather informal, also with regard to methods and techniques applied.”*

Operational divisions are in charge of information and intelligence that is concerned with their respective businesses mostly. This narrower scope is a main differentiating factor to the broader scope that the central units must have. The formal approaches used by operational divisions, such as market research or interviews, differ little from those that the central units use, but may generally include ad-hoc or regular meetings, in order to pull information that is otherwise not obtained. Interviews or commissioned research are mainly used to for more strategic applications, when operational divisions elaborate their market strategies or R&D roadmaps.

Two outputs of operational divisions' intelligence were obtained from Participant No. 5 (see section 5.2.3), a market analysis of an operational division, as well as, a competitor report. The two documents were analysed to examine whether the above stated is reflected in the

methods and preparation techniques of the documents. They were prepared for use by the operational unit itself, by implementing secondary information as the basis for investigation. This information was then refined using indirect gatherings techniques, such as conversations during and outside meetings with knowledgeable employees. These reports were prepared by knowledgeable experts in the area, which facilitated the tasks involved for preparation. The latter favoured the implementation of rather common-sense techniques in the course of elaboration.

For more operational, day-to-day business decisions and activities, regular meetings are used to exchange competitive information, discuss and evaluate it in order to produce conclusions and set the agenda. One example describing the informal nature of exchanging information is the so called employee's round table giving employees the opportunity to speak freely. The employee's round table is a dedicated meeting to facilitate the exchange of information and knowledge, particularly with regard to the external operating environment.

Participant No. 1 explained the reason for embracing informal structures as well:

*“With all the systems and tools in place, informal gatherings sometimes work better than anything else.”*

#### 5.5.2.6 Informal information gathering approaches

Purely informal information exchanges, as autonomous, non-directed approaches, take place within existing networks that people develop and maintain (Participant No. 5). Informal collection may render different and/or additional types of information than the formal approach may collect, which is distributed in more formal settings and structures. In informal structures, information may not only be exchanged, but as well evaluated in order to check validity and compare the information against existing knowledge in an integrated approach. Relationships appear to be highly important in informal structures.

Participant No. 6 explained in detail his view on the development of networks:

*“The prerequisites for such networks are often a shared past of participants in terms of having worked together before, sympathy for the other person, geographic proximity, and trust that the other person provides factual information.”*

Participant No. 8 highlighted the relationship of the inquirer to the knowledgeable person, in addition, explaining knowledge and experience of the respondent as a main motivation:

*“You-ve gotta know the company, you’ve gotta know whom to call. So obviously, if we’re talking about a specific business field, your try to find out from the persons dealing with that respective customer.”*

Social gatherings are an important component of informal information exchanges. They favour the inclusion of two or more persons, which is important due to internal complexity. Information exchanges may emerge in the form of (informal) meetings, or when going for lunch together, when undertaking a business trip and at many other such instances.

#### 5.5.2.7 Network-based communities emerge from prolonged relationships

Communities may emerge from personal networks and relationships. In these communities, participants share a continued, common interest, be it a project, a new technology, a certain customer or a specific market region. The reason is, that participation or membership to communities (of practice) is dependent upon expertise and not a product of organizational affiliation (Wenger et al., 2002).

Participant No. 3 connects the emergence of communities with relationships and long-standing experience in the particular field of business:

*“I have been in the company for 30 years, I know many of the people in important positions of the company – particularly, in the technology areas – and it is these good relationships and connections, which you have with these people, which is extremely important [...] I find that it is good relations which is extremely important for getting honest, quality information. So that I can evaluate shall we push this technology, or we do not really have any chance in that.”*

The fact that these informal relationships represent communities of participants working in different organizational units that centre around specific interests is also confirmed by Participant No. 3:

*“These are people specifically involved with the project in some respect [...] So two sources are generally the most reliable sources, the process technologists, and product managers and the people involved in the project implementation directly at site. [...] Inter-departmental coordination is extremely important.”*



Participant No. 5 explained why one person may be a member of several different communities:

*“What happens in this process is: you would meet these people because you have an objective of something, I have a reason, I want to gather information about something, a specific client, a specific project, I may have a specific market target – so we will meet personally, because these guys will not make this available on paper. And then there will be specific questions with opinions, ideas followed by what needs to be done.”*

Participant No. 3 answered, when asked, whether he thinks that these are communities that emerge out of existing networks:

*“I think they are communities, yeah. Communities, or interacting communities that centre around specific interests. There are cases where people working with a company have to very specifically focus on key topics.”*

Participant No. 6 also put emerging communities into relation with networks and sees them on a more operational level:

*“These informal structures are more relevant in terms of activities that are on “lower layers” such as on project levels. Within the latter there are more of the personal contacts and meetings going on. Informal communities mostly centre on geographic proximity of members, that promotes communication, personal sympathy, and a personal relationship based on common cooperation in the past.”*

Participant No. 4 addressed the question pertaining to knowledge management structures used in plant building as follows:

*“Communities of practice, yes, we have these in plant building. Although most methods and techniques from knowledge management appear to be useful in market intelligence. Storytelling for example.”*

Such forms of social gatherings are not guided through by a moderator, although one participant added that they could be developed more in a moderated direction, which may result in discussions becoming more focused. Inter-departmental coordination, that has been mentioned an important issue in plant building (internal complexity), appears to happen more frequently in such informal structures. An inter-departmental approach is used by

participants to mitigate the perceived risks of the approach employed by business units. The latter appear to integrate inter-departmental cooperation to lesser extent (Participant No. 1).

Another reason for employees to engage in network-based communities, is that access to competitive information is restricted, often based on hierarchy in an organization. Participant No. 3 literally said:

*“Often what you have here, you’re allowed to attend a meeting or conference. This depends not only on your capabilities, but on your connections. There are many top-specialists that do not get the information that they need [...] It is the queen bee that gets the royal jelee”.*

Information that is broadly, formally disseminated throughout the company is often filtered, without providing the possibility of a two-way conversation (Participant No. 2 and 3). The latter is connected to the method of dissemination, often newsletters or the corporate intranet are used. Additional information can be gained through networks and through the communities in which the experts participate. A company may choose to tolerate such structures, or even foster them, by establishing discussion centres, coffee zones or a canteen where people can lunch together (Participant No. 2, Participant No. 6). Participant No. 7 adds to this the time aspect. Such informal approaches are then possible, when employees, specialists and managers are allowed time to exchange and refine views.

The participants indicate that human interactions are often seen as far better tools than software programmes, often referring to the timeliness of information (Participant No. 2). Confronted with the question why human interactions are favoured Participant No. 8 admitted in this regard:

*“It’s natural, after all we’re humans!”*

Another threat, frequently expressed, was information overload, which is also associated with software tools (Participant No. 5). Participant No. 7 added to this:

*“Too much information prevents from action, developing systems that hold huge amounts of – let’s say questionable – information is a threat. Since there is an information overload present anyway.”*

#### 5.5.2.8 Information technology in information gathering

Information technology makes saving and storing information possible. Once gained, the information can be kept within the operating boundaries of the organization. Another functionality of a software application is to grant a circle of users' access to the information collected. This is in line with the aforementioned shift from information push to information pull. Participant No. 6 explained the role of IT tools as follows:

*“IT tools make it possible to standardize the input of information, in order to facilitate communication and reporting. Main duties with regard to IT systems are entering information, saving information and storing it.”*

Two participants explicitly stated, that the use of software tools is on the rise and that an intranet platform would be needed to foster network-based communities as to strengthen an informal approach of market intelligence which is seen as useful, if not indispensable.

Participant No. 3 explained this suggestion:

*“As a plant builder we are a multinational company, we should aim at utilizing knowledge available at different locations. [...] Our company has made steps into this direction.”*

Organic approaches are indispensable, as IT solutions cannot replace the wide array of social interactions used in the construction of market intelligence (Participants No. 1, 2 and 5). Software applications may rather complement or expand market intelligence operations. Technology platforms without any organic strategy to support them, would pull people arbitrarily together. These people, may not have a shared, past, may not know each other, and may not know what they could expect from each other. Therefore, it is the organic approach that form the basis of any market intelligence operation.

#### 5.5.2.9 Essential aspects in information gathering

Training people is important especially with regard to key intelligence topics. Participant No. 7 added to this:

*“The collection of competitive information can be fostered by the general management in form of special time allocations for people to actively engage in information gathering activities. Furthermore, raising awareness of managers with regard to the*

*importance of collecting competitive information, motivating them to contribute, and training of personnel with regard to how and what to collect and how to pass it on, respectively where to store it is useful.”*

What is essential for producing conclusions and recommendations is to have a sufficient amount of relevant information available. Another aspect is to have a sense of what information is or might be missing. Therefore, inter-departmental coordination is related to mitigating the problems associated with excluding oneself from valuable information that is available to other departments and organizational structures (Participant No. 3). Participant No. 3 added the following to this idea:

*“It means taking into account other people’s facts and information into the whole picture. Staying in the box means getting a very one-sided picture of the reality of projects, technologies, future prospective products.”*

A major problem, especially, of formal intelligence activities and acknowledged by all participants, is that these provide for less room for inter-departmental coordination (Participant No. 3). The latter weakness is, therefore, mitigated by participants engaging in networks and network-based communities. Inter-departmental coordination is absolutely important in terms of information exchange. In most companies opportunities thereof are missed due to lacking inter-departmental coordination (Participant No. 4).

Participant No. 4 said in this regard:

*“Inter-departmental coordination is a priority which is disregarded in many organizations. Inter-departmental coordination is a main tool to leverage synergies within the organization.”*

Hence, different steps of the market intelligence cycle may occur in an integrated way. This means that gathering, merging different pieces of information, analysing and interpreting information or personal knowledge may take place all at the same time on one occasion, for example in the course of an informal meeting. In other cases, these steps may be separately conducted.

Participant No. 5 indicated:

*“Integrated processes in terms of gathering, synthesis, analysing and interpreting are especially crucial in the short term. Here the need to act fast is most pertinent.”*

Participant No. 2 added to this, as follows:

*“We need an integrated approach very much in the short term, for operational measures and decisions. Since I have to fulfil my targets, this is a priority for me.”*

When implementing a tactical perspective, decisions and planning activities involve several steps that require time, time necessary for refining and considering alternatives. This is also related to the hierarchy in an organization, when information collected and merged together, is presented for analysis and interpretation, for example to the head of a business unit.

Participant No. 2 stated in this regard:

*“In terms of tactical measures I have somewhat more time, the intelligence used in such instances is allowed to be not completely mature yet, as I have the opportunity to realize the benefits from refining it. In terms of strategic plans and decisions this is even more true.”*

Even more time is available when embracing a strategic perspective in market intelligence. Therefore the steps of gathering and synthesis are often separated from analysis and interpretation and these again are separated from the decision, with the degree of involvement of the head of the unit increasing as the process moves on. So, hierarchy is important in this regard, as the compiled information or the analysis and interpretation is presented to (top) decision makers. The latter can even revise the analysis and interpretation undertaken, and suggest different conclusions to be taken from the information available (Participant No. 2). In order to present compelling cases to top decision makers, involved in strategic perspectives of market intelligence, more emphasis is placed on formal methods in data gathering and analysis (supported by archival records and documents). This was confirmed when analysing the benchmarking report document from a central department (see section 5.5.2.5).

### 5.5.3 Third Theme: Synthesis and triangulation of competitive information

#### 5.5.3.1 General aspects in information synthesis

Information synthesis, that is compiling and merging information from different sources, is the step necessary after information has been gathered. Different forms of synthesis exist in this regard, and again formal and informal synthesis processes may be identified. The department that potentially benefits from the information received, has the responsibility to merge or consolidate the information with other related information (Participant No. 2). Additional responsibilities include sorting information chronologically and keeping the information up-to-date (Participant No. 2). In the recent years a shift to store the merged information in computerized databases has been noted (Participant No. 6). Such processes are considered formal synthesis processes and are mostly undertaken in intra-departmental approaches.

Participant No. 6 stated in this regard:

*“To make sure that information that belongs together gets together and remains up-to-date, it is in the responsibility of the head of the department that benefits of that information. If the information received was some long-terms trends for the industry to name an example, it would be the strategy department.”*

#### 5.5.3.2 Formal aspects in information synthesis

Connecting information from external and internal sources is additionally supported through meetings (information pull), as competitive information is often not proactively communicated, but remains stored in the heads of organizational members (Participant No. 1). Meetings with an official character are, for example regular (departmental) meetings, project meetings, sales meetings and other such designated events, with the formality being characterized through items, such as an invitation, meeting reports, memos among others. These reports, also, constitute an information synthesis and are disseminated afterwards to possibly interested persons, sometimes also beyond departmental boundaries (Participant No. 2).

Participant No. 1 stated in this regard:

*“Merging external and internally available competitive information is mainly done in the course of regular or designated meetings. [...] It is not possible to cover this huge field entirely via computer systems. There is a human factor involved.”*

Merging information has been compared to building a puzzle, in which more parts are missing than there are parts available (Participant No. 5). Therefore, it is the experience and knowledge of those persons involved in such tasks, that are of importance, not only in analysis and interpretation, but at the earlier stage of information synthesis.

Participant No. 8 drew a similar picture:

*“Aggregating different pieces of information together to obtain a full picture is compared with the job of a detective. “*

Some participants referred to a hierarchy applied, when merging different pieces of information. Essentially the broader market environment (macro environment), that is often influenced by trends and critical themes, is at the top of information synthesis. Then, the synthesis moves along to the micro environment and further down to individual competitors, customers and projects (see figure 3). Thematic clustering, which has been mentioned, is an applicable technique (Participant No. 6).

Participant No. 6 explained in detail the approach:

*“It is the general market environment, being composed of macro and micro environment that have to be generated first. These more general aspects then influence the customers in their respective market region and in their strategy, to rather invest, or rather not invest, together with other factors. Then the individual customer views have to be investigated, investment behaviour – all down to the individual projects, the priorities, preferences and time schedules. Then it is important to take into account the competitors, where they focus, why and how they do it. Again, from a rather strategic level, all the way down to the actual project level.”*

Informal types of social gatherings are furthermore implemented by departments to merge information, for example round table meetings. Interested persons meet and discuss topical issues of the operating environment.

Participant No. 1 explained the importance:

*“In official meetings, with the head of the department being there, everybody watches the speaking person. This may result in a situation where nobody wants to be exposed. Additionally, people sometimes do not want to give away information at such instances.”*

This has, in part, led to departments *institutionalizing* informal venues in order to foster information exchanges followed by the merging of information, leading to participants being able to construct overall images of the current and expected operating environment. In informal structures, information may also be evaluated in order to check the validity, e.g. through questioning. One example has already been reported, the employee’s round table (Participant No. 1).

Thus joining information from external and internal sources often happens on a personal level, and is not restricted to meeting-type of gatherings. Business trips, talking on the plane, in hotels, in a restaurant, among other occasions, provide opportunities to exchange information and to refine views (Participant No. 4).

#### 5.5.3.3 Informal routines in information synthesis

Information synthesis can be achieved with the help of expert communities and networking strategies. Informal meetings provide opportunities for people, who share similar interests, or work in a particular area to meet and discuss recently obtained competitive information (Participant No. 4). The topics range from referring to contacts with customers to the results of the latest business trip.

One advantage of informal meetings is the exchange of information among people from different departments. The constraint associated with a formal setting is that it allows less space for inter-departmental coordination (Participant No. 3).

Participant No. 4 explained one approach to informal synthesis processes as follows:

*“Usually a person hears or reads something, for example in a newspaper article. The most natural phenomenon to happen is that this person then meets with other people who may be knowledgeable about this particular subject. Such venues may include totally informal type of gatherings, for example at a coffee, in order to check the information newly received against existing knowledge of participants.”*



As noted earlier, individual process steps of market intelligence may occur as an integrated process in such circumstances. This may include, that information is merged and evaluated, leading to (preliminary) results through producing conclusions and recommendations (Participant No. 5).

Triangulation, as a process of cross-examining information, may be an important aspect in information synthesis. The reason is that conflicting information may be obtained by different participants or from only one participant, that needs to be clarified before engaging in any analytical or interpretative process (Participant No. 8). Such occurrences promote an iterative approach in information synthesis.

Participant No. 8 described the notion of an iterative approach to triangulation:

*“Of course there is always conflicting items, so there may be several loops. This may imply that you pick up the phone, or you discuss with somebody that may be knowledgeable about it, be it internally or externally.”*

#### 5.5.3.4 Organic strategies to improve information synthesis

As mentioned in section 5.5.3.2, departments may choose to incorporate informal approaches into their intelligence strategies. Informal approaches may include information exchanging and sharing events, among, for example, project managers. Such events, apart from leading to the discovery and exchange of topical information, has been put into relation with the sharing of best practices, and may take the form of project manager communities (Participant No. 7). Inter-departmental coordination is thus emphasized using such an approach, as many departments may encounter similar problems and situations. Participants confirm a lack of inter-departmental coordination in formal settings. Therefore, it is sharing of knowledge and information, that might reduce potential mistakes, due to the transfer of successful past actions.

Participant No. 3 explained the importance of sharing information, as follows:

*“The problem in any large company with a complex structure is that people increasingly become ‘compartmentalized’. People that exclude themselves from valuable information available to other departments and organizational structures are faced with one-sided pictures.”*

Participant No. 3 promoted the idea of moderating and steering the intelligence networks and communities within the company as a way to improve on inter-departmental coordination. Participant No. 3 argued in favour of information and knowledge exchanges that would then be conducted in a more efficient way, possibly leading to a situation where information deficits are located more efficiently.

Participant No. 1 provided an example of a manager and member of the department. This particular manager engages in activities such as attending conferences and fairs, collects competitive information and then distributes it within the entire organization.

Participant No. 1 stated in this context:

*“In our department we have a manager, Mr. K. (name anonymized), he is the one that goes to many international fairs and conferences. He serves as a central point of merging together different pieces of competitive information, and he also distributes this information to many people within the company, not just within the department.”*

#### 5.5.3.5 Information technology in information synthesis

Accumulating information from different sources using a software tool is related to a database problem. Much of the competitive information that is held by participants is more than data, and may include information and personal knowledge (Participant No. 4). Finding appropriate ways to organize the information requires categorizing the pieces of knowledge.

Participant No. 8, who is confronted with this problem, admitted that the problem is difficult to deal with:

*“ [...] Under what heading? In which box is that going? Is that a customer problem? Is that a market problem, the customer is just a – let’s say – a symptom of? Is it a personal problem with this guy? Is it at the end a technological? At the end it’s classifying! That’s the problem, how to classify information.”*

As a result networks and communities focus on exchanging information, then jointly evaluating the pieces obtained. This is often perceived as more effective than writing reports or using databases (Participant No. 8).

Without proper information technology, however, information synthesis is not manageable in today's organizations (Participant No. 6). A main issue remains securing a reasonable degree of data quality over time. The notion of information technology rounding off or balancing a structured and comprehensive market intelligence approach may be formulated.

#### 5.5.4 Fourth Theme: Analysing and interpreting competitive information

##### 5.5.4.1 General aspects in analysis and interpretation

Analysis and interpretation are processes that are undertaken after, a reasonable amount of, information has been accumulated. This may imply aggregation of information from different sources, possibly using different approaches. Analysis and interpretation are largely conducted within groups of people (Participant No. 5). The complex business environment, as well as, the complexity related to the product technologies of plant builders, favours the inclusion of several persons in analytical and interpretative processes (Participant No. 2).

Participant No. 2 said in this regard:

*“If a single person undertakes an analysis based on competitive information and comes up with a conclusion, that is always a risky thing. In order to have a balanced view, different disciplines are necessary. [...] This also relates to complexity.”*

There appears to be a connection of such processes to the leadership function within the unit where the analysis is being conducted. It is usually the head that confirms the results of the analysis and interpretation (Participant No. 2). Formal analysis and interpretation are often conducted (or reviewed) in the course of meetings.

##### 5.5.4.2 Different approaches for macro and micro environment information

Analysing and interpreting more general information of the macro and micro environment is often based factual data, implemented from studies, market research or interviews (Participant No. 6). Such forms of information may be obtained from consulting firms, market research companies or be from the public domain. These data can be analysed by generalists, such as professional analysts (Participant No. 6). An analyst may be employed by a central department in order to in-house such activities. Findings from such analyses may portray long-term perspectives on industry developments, including a global

perspective (supported by the documents and archival records obtained). Central departments profiting from such analyses include the strategy department, central marketing or the R&D department.

Participant No. 6 noted in this context:

*“If we look at general, macro environment related information, the approach is different (than in micro environment related issues, added by the author). Much of what is analysed here comes from external sources, specialized institutions. It is possible to revert to analyses from the public domain, to commission an external consultant with that, or to have internally an analyst taking care of that.”*

Specific items, such as market segments of particular product technologies, or competitors to certain product portfolios are relevant for operational division intelligence (supported by documents and archival records obtained). This is related to the particular expertise necessary in order evaluate such competitive information. Operational unit intelligence, include all types of perspectives from short term issues to mid-term and long-term developments (supported by documents and archival records obtained). Higher levels of management are essentially interested in longer-term perspectives and intelligence, and information of this nature is often conveyed to a central department and upper management.

Participant No. 4 explained in this regard:

*“In formal settings, information is analysed to feed the higher levels of management. The latter may not be interested in too much detail, more than that, it is necessary to give overviews, summaries and present intermediary results.”*

Participant No. 4 emphasized, that information or intelligence transmitted into the higher levels of hierarchy may contain less details, due to time constraints and other such issues. In contrast to that, intelligence produced for specific situations, such as operational divisions, require presentation of more details (supported by documents and archival records obtained).

The business unit (operational divisions) heads are in charge of conducting correct and comprehensive analyses and interpretation processes within their organizational boundaries (Participant No. 2). These forms of analyses are related to formal planning routines, and are supported through internal processes and documents (Participant No. 8). The structures

include also meetings within business units in order to analyse and interpret more operational and short-term oriented intelligence, as their depreciation may outpace any formal planning procedure. A main differentiator in terms of involved persons that is mentioned in the literature, was confirmed during the interviews. It is the people from the actual business domain, that is experienced in a way, that it may judge and analyse information from the actual business domain. Analysing general trends, macro-economic issues and global competitive situations, does generally exert other prerequisites on the competences of participants (supported by archival records and documents).

Analysis and interpretation of information from the customer level were mentioned as being more chaotic, more unstructured and unsurprisingly, also conducted in a more emotional way (Participant No. 5). One reason appears to be the limited transferability among different customers or projects, with their specific background, strategies and situations, which eventually limits the amount of potential participants that is competent to contribute in such settings. Only people from the actual business domain, with an in-depth knowledge of the issues at hand, are in a position to analyse and interpret such information.

#### 5.5.4.3 Evaluation replacing analysis and interpretation in informal structures

Informal analytical processes in market intelligence are related to discussions, typically on the project level, customer level or product or technology level. Informal analytical processes happen, for example also in the course of community meetings (Participant No. 3). Inter-departmental coordination is vital to evaluate and to generate a comprehensive picture of the operating environment.

Evaluation was the term that was preferred to analysis and interpretation in informal analytical processes by participants (Participant No. 3). One reason may be that evaluation implied a less methodical approach. Another reason is that participants relate evaluation to informal analysis and interpretation processes, that are often integrated with information and knowledge sharing, as well as, the construction of the intelligence that is then used to set the personal or community agenda. Evaluation is therefore often used in integrated intelligence processes. Evaluation seems to be closer to the decision making process and may thus be used in operational types of intelligence (Participant No. 3). Informal modes include characteristics of best practices sharing (Participant No. 4).

Participant No. 3 explained in this regard:

*“[...] but evaluation is already ... I am putting a certain emphasis, this is more important than this. And analysis – here are the facts [...] but to evaluate ... here I make conclusions.”*

This means that evaluation appears to be more than just plain analysis, that is being conducted in formal intelligence operations, where individual steps of the intelligence process may not be integrated. Hence, the terms analysis and interpretation are often used in situations where the intelligence creation is detached from the utilization of the intelligence. Detaching intelligence production from the utilization of intelligence requires handing over intelligence products to other persons (supported by archival records and documents). That is often the case in intelligence produced by central department, as well as, intelligence from individual business units that is relevant for the entire organization.

#### 5.5.4.4 Analytical methods used

Analytical methods may differ according to the context that they are used in. Again, a main differentiator are formal and informal types of activities. In informal intelligence activities, common-sense or pragmatic techniques may replace the methodical techniques, that are also proposed and presented throughout literature. Pragmatic techniques are for example putting information in chronological order or thematic clustering (Participant No. 6). Furthermore, historic and current situation comparisons are used in such contexts (Participant No. 8).

SWOT and PESTLE are also considered useful but appear to be used on more strategic levels (Participant No. 5). Other techniques may include scenario building, especially with regard to forecasting future market developments. In general, the more formal and strategic the level is, the more formal and methodical the analytical approach is.

Participant No. 5 added to this, that:

*“If it is only for understanding of people, the analytical processes will be rather informal, also with regard to methods and techniques applied.”*

Storytelling appears to have a prominent place in evaluation, as stories serve to transmit tacit knowledge that is otherwise hard to verbalize. Its use appears to be related to mainly informal structures. Participant No. 4 said in this regard:

*“Knowledge that is used to evaluate information gets passed on in the form of storytelling. These stories base on personal experiences.”*

On another occasion the same participant further elaborated on the verbalization and exchange of knowledge:

*“Knowledge management may provide methods to improve market intelligence, one example is certainly storytelling. The latter is used in market intelligence in order to support knowledge sharing. Knowledge management and market intelligence are like gear wheels.”*

Storytelling is used in the context of evaluation, as knowledge gained through experiences may be used as the backdrop against which to evaluate new topic information.

#### 5.5.4.5 Importance of inter-departmental coordination

Inter-departmental coordination is relevant in analysis and interpretation due to internal complexity. Therefore central units, mostly in charge of strategic intelligence, implement inter-departmental approaches via regulated planning procedures (Participant No. 8), or when interviewing people from different departments (supported by internal document). The first approach is supported through transmission of prominent business unit topics to a central department, in order to include of the findings into central intelligence (Participant No. 8).

In addition, inter-departmental coordination naturally evolves from implementing communities to support with intelligence processes (Participant No. 3). Informal intelligence often supports the creation and dissemination of short-term and operational insights, where the speed of depreciation of information may outpace many formal planning procedure or routine business process. Business units, or operational divisions, have been mentioned to lacking mechanisms for implementing inter-departmental coordination (Participant No. 3).

#### 5.5.5 Fifth Theme: Integrating intelligence products

##### 5.5.5.1 General aspects

The responsibility of integrating different kinds and products of intelligence processes is dispersed on several functions within a company. Participant No. 8 used a picture to explain this moment:

*“To digest the elephant it has to be sliced up. I cannot envision one person that does it all.”*

Participant No. 8 suggests, that the integration of intelligence implies, to some extent, a process of division. As market intelligence may take different forms, such as customer intelligence, product intelligence or competitor intelligence, and additionally implies different time horizons, the notion that not all intelligence is capable of being integrated, is acceptable.

Alternatively, a cross-discipline integration of intelligence may happen on strategic levels, especially considering findings relevant for the longer-term (supported by internal documents). Here, the depreciation of the intelligence does not outpace the time that is needed for its integration.

#### 5.5.5.2 Integration of intelligence on a strategic level

Effective, cross-departmental intelligence integration, seems to be implemented mostly at the strategic level. Here, organizational routines and processes make provisions, that intelligence produced by all major organizational units can be integrated into one (set of) document(s) (Participant No. 8). This intelligence integration is undertaken by central units, but with assistance of operational divisions (business units). Two examples of operational divisions' intelligence (market analysis and competitor report) obtained support this notion. A central department in charge of cross-departmental intelligence integration is in literature referred to as intelligence unit. In practice, such a unit may not be available, and so, it is the central department that potentially profits from such an intelligence integration, that is charged with its implementation (Participant No. 6). This can be the strategic planning department.

Participant No. 6 confirmed this insight by stating:

*“In terms of central intelligence, the integration of different pieces of intelligence is done on a strategic level. All the available input is consolidated into one central document, which is then maintained and kept up-to-date.”*

In terms of business unit intelligence, integration of different products relates mostly to those from its own organizational sub-structures (supported by documents and archival



records obtained). This often eliminates the possibility for inter-departmental coordination, which has been criticised already at several instances. In such cases, the head has the responsibility to supervise the culmination of different kinds of intelligence available to the unit (Participant No. 2). Both examples of business unit intelligence (market analysis, competitor report) confirmed this notion.

Or as Participant No. 2 added:

*“Integration of intelligence is related to a responsibility that the respective head of department has.”*

Networks and communities are again social structures developed autonomously by participants (of different units) to achieve a certain degree of intelligence integration on a personal, network and community level (Participant No. 5). It entails a similar interplay as in information synthesis, as already presented, as such structures often implement integrated intelligence processes (information exchange, synthesis, evaluation and conclusions). The main benefit for participants of such informal structures is to mitigate the perceived threat of lacking inter-departmental coordination (Participant No. 3). Integration of intelligence products is thus a formal, as well as, an informal activity. Integration is conducted for different purposes with the formal processes relating to planning and business processes, and the informal ones to balance and round-off (rich) pictures used for learning, decision making and problem solving.

#### 5.5.6 Sixth Theme: Disseminating market intelligence

##### 5.5.6.1 General aspects

Intelligence is communicated within the organization using different means and methods. Heads of organizational units are responsible to disseminate the intelligence, that is available to them to their members, as they see fit. This can be undertaken via formal meetings through presentations, or via personal communication, respectively e-mail and telephone. Formally disseminating intelligence is thus part of the leadership responsibilities.

Participant No. 6 explained this approach:

*“From the overall strategy, which is to a large extent based on market intelligence, the unit-relevant items are extracted and communicated to organizational groups or individuals. Apart from formal dissemination personal communication is important.”*

#### 5.5.6.2 The management as amplifier in disseminating intelligence

The management has an amplifier function with regard to spreading market intelligence throughout the organization (Participant No. 2). Formal, as well as, informal means may be integrated in order to ensure that their organizational members possess a reasonable stock of intelligence.

Participant No. 2 stated, that:

*“They (the management, added by the author) have to pass on intelligence to their subordinates. They act as an amplifier. In doing so they integrate formal and informal means of market intelligence dissemination.”*

Participant No. 2 added another dimension, the motivating factor, involved in passing on intelligence:

*“Passing on topical information or intelligence, and now I do not know whether this fits to what we were discussing, but I think it is motivating for the employee and even for entire teams to receive topical intelligence.”*

Participant No. 2 thinks, that being considered trustworthy and thus being endowed with one of the organizations most important assets, information, may be perceived as motivating.

#### 5.5.6.3 Formal intelligence dissemination

Formal ways of distributing intelligence include presentations at different kinds of meetings, in all areas of the organization. Furthermore, intelligence is disseminated formally using, for example reports or memos (supported by documents and archival records obtained). The latter are usually transmitted by e-mail (Participant No. 5). Formal dissemination modes relate to higher effectiveness, that means many people can be informed on one occasion, e.g. standardized reports.

Participant No. 5 added the importance of credibility in disseminating intelligence, as follows:

*“Formal dissemination should ideally be done by the producer of the intelligence; otherwise it might lose credibility.”*

It is the trust, that the receiver has to have in the sender, that the latter provides quality intelligence. Hence, if the producer of the intelligence is also the distributor, this may improve the credibility of the particular piece of intelligence. A similar notion has already been presented in the topic of information gathering. External, directly received information, was related with higher credibility. Whereas, indirectly gathered information not directly coming from the source, was given less credibility. Trust, relationship and sympathy are also in intelligence operations vital.

#### 5.5.6.4 Informal intelligence dissemination

In addition to formal dissemination, personal communication has been mentioned to be of high importance in terms of spreading intelligence throughout the organization. The latter may occur in informal settings or may partly be formalized. A big advantage of personal communication appears to be that information lacks can be identified easier, and a comprehensive picture may be obtained through a two-way communication (Participant No. 6). This two-way communication may include room for feedback and clarification. In such instances it appears, that dissemination becomes exchanged by other related terms, such as intelligence communication.

Purely informal intelligence communication may occur among peers, with hierarchical differences taking a backseat. Participant 8 the following:

*“Informally disseminating intelligence is compared to a spider’s web. Something lands on that spider’s web, and the spider in charge of that web which feels that this intelligence will have to get somewhere. It’s always better if the spider knows that he is supposed to bring it somewhere. It needs both, pull and push. It is important to know from whom potentially intelligence can be sought, if there is a perceived lack of intelligence. So it is not a one-way approach, to communicate it, but it should be more actively, in terms of also drawing this information from other personnel.*

This again is related, at least partly, to networks (for exchange of intelligence) and network-based communities, which allow not only for exchange of intelligence, but for active (re-) construction of intelligence, that includes conclusions and implementation recommendations. Speed is another argument in favour of informal modes of intelligence communication, as Participant No. 4 stated:

*“Informal ways of communicating intelligence are still the most efficient ones. They allow for information to go around quickly.”*

It is justified to speak of intelligence dissemination in the course of formal events. Intelligence communication may be preferred in the context of informal dissemination.

#### 5.5.6.5 Integrating formal and informal dissemination modes

Combining or integrating informal and formal dissemination methods was a topic addressed in literature (see end of section 2.3.7.6), that was included in the investigation. Participants think, that this integration of modes is possible, though not always easily achieved (Participant No. 1). Participant No. 1 brought forward an example of a Christmas event, which was designed as an informal departmental event, eventually used to include short presentations about topical issues that organizational member faced. Another example was presented by Participant No. 5, who mentioned, that the market report, already portrayed as an additional source of evidence here, was initially disseminated formally via e-mail, to be followed by a management presentation. Both are considered to be the formal dissemination modes. In a next step, Participant No. 5 engaged in personal conversations with other employees, with the aim to mutually refine the picture obtained, when crafting the report. So, promoting a stance may in some cases generate discussions, and so bring up additional knowledge and information held by participants. The amplifier position of management, as already stated before, is a preferred means of integrating formal and informal dissemination modes (Participant No. 6).

#### 5.5.7 Seventh Theme: Results of intelligence activities

##### 5.5.7.1 General aspects

Market intelligence operations lead to the production of different kinds of intelligence products (see section 1.6.2). These products can be utilized in planning activities or decision making, ultimately leading to defending or maintaining competitiveness.

Participants, however, neglect market intelligence as a self-contained function and often relate it directly with the activity that follows the intelligence process. As Participant No. 5 stated in this regard:

*“It is necessary to start with an end in mind.”*

Participant No. 5 sees market intelligence in many cases not a final result, not an activity in its own, but rather as a *pre-activity* undertaken to achieve something else. One example is customer or project intelligence to be used for the area of sales. This supports the notion expressed in the abstract of this thesis, where market intelligence is termed as a methodology of practice. Therefore, market intelligence is to be directed. Informal market intelligence activities can be implemented as a community activity without explicitly having to reach a goal or accomplish a task. Maintaining such a stance leads to the notion that, market intelligence does not only produce products, but delivers results.

It is important to state this, as market intelligence has been a trend in business management, and is often portrayed without making clear what kind of results may be expected or for which specific purpose(s) it is to be undertaken. This is a disadvantage, as managers will engage in activities they understand, especially when benefits are obvious. The benefits of market intelligence are sometimes intangible in nature. Nonetheless, it may be *one* method of taking successful actions, as participant No. 8 said:

*“Success has many fathers, and failure is an orphan.”*

The reason is that the benefits of the market intelligence concept are in some instances hard to measure. Participant No. 8 further elaborated:

*“Commonly, only what gets measured, gets done.”*

Therefore, top-management may be reluctant to acknowledge the value creating contribution of (more informal) intelligence operations. Participant No. 5 stated that especially highly experienced managers often portray an “I know it all” type of mindset (see section 2.5.3), which may diminish the results of more informal or operational types of intelligence – as these are generated in less formalistic or methodical ways.

Integrated processes in intelligence, depicted to a far lesser extent in literature, allow for immediate, and more importantly, for additional results – apart from those mentioned in

literature. Participants mentioned, that intelligence may foster a more reflective approach to taking action, especially in more informal approaches, as these allow for more inter-departmental coordination (Participant No. 2). Sharing information and knowledge, comparing new topic information against experience using stories and integrating the construction of intelligence with its utilization may result in learning processes or even in knowledge creation (Participant No. 7). The latter two items are described in more detail in section 5.5.7.3. The interviewed participants confirmed the high importance of market intelligence and implement this strategy. As Participant No. 4 acknowledged:

*“... if market intelligence is important to me? Yes, definitely! That is true.”*

#### 5.5.7.2 Specific results of market intelligence processes

Results of market intelligence processes have already been presented in the course of this analysis, among them results of formal processes such as benchmarking studies, market analyses and competitor reports. In literature these are referred to as products of market intelligence. Production of intelligence, however, starts at the (hierarchical) bottom of the organization (Participant No. 2). Managers engaged in a particular project typically produces project intelligence as a result from its activities. A Key Account Manager may support in the production of project-specific intelligence, as well as customer intelligence (Participant No. 6). Therefore, intelligence results are sometimes part of ongoing activities – and so emerge from specific tasks.

Participant No. 2 stated in this regards:

*“As just said, the production of intelligence starts at the (hierarchical, included by the author) bottom of the organization. It’s the members of the project team that create it, than it may get refined as it passes through the hierarchy to the head of a business unit and maybe even to the corporate intelligence.”*

Participant No. 6 confirms this statement:

*”In our project-centred business we get confronted with competitors in the course of negotiating a specific project [...] in such cases our key account management system supports the creation of project and customer specific market intelligence.”*

It is thus fair to establish, that project and customer intelligence, deliver results to sales and customer relationship activities. This is brought into connection with adopting a more critical and reflective stance. Not applying such intelligence to e.g. sales activities is

therefore dangerous as the basis from where to deploy evidence-based decisions and plans may be lacking.

At the business unit level, market analyses and competitor benchmarking studies are products of market intelligence activities. They may be culminated into the market strategy or the portfolio strategy. Both are products of formal intelligence and may be included in tactical or even strategic considerations (supported by documents and archival records obtained). Business unit levels have to provide for product and technology intelligence which is usually merged with customer intelligence, to be used in decision making or planning (Participant No. 6).

A benchmarking study is a specific result from central or business unit intelligence, and is used mostly on a strategic level (supported by documents and archival records obtained). A strategy becomes structured, through a methodical approach and may take a longer-term perspective, based on facts. It usually includes an action plan. The central strategy documents are largely based on market intelligence.

#### 5.5.7.3 Additional intelligence results from integrated analysis frameworks

Integrated approaches to market intelligence, often as part of informal intelligence activities, usually allow for additional results. In addition, market intelligence and knowledge management appear to be connected, as suggested by participants, and are said to influence each other positively.

Participant No. 4 purported in this regard:

*“Knowledge management and market intelligence are like gear wheels.”*

Knowledge management as a managerial concept may provide methods and techniques to improve market intelligence operations, and especially in terms of informal intelligence activities (Participant No. 4). Storytelling serves as an example. Knowledge management is, among others, concerned with sharing (transferring) knowledge among organizational participants (Jashapara, 2004). Market intelligence requires knowledge to analyse or evaluate competitive information. Supporting the externalization of knowledge through the sharing of stories, is beneficial in terms of evaluating topical information from the competitive realm. This is plausible as comparing historic and current situations has been

mentioned as being a preferred method in the evaluation of competitive information (see section 5.5.4.4) where stories seem to have a prominent position with regard to externalizing historic situations.

Communities of practice are another concept from the knowledge management arena, that appear to improve market intelligence activities. Their use is related to autonomous and self-directed behaviours (Participant No. 3). Communities of practice support in making transparent information, intelligence and knowledge held by participant, and thus transfer the aforementioned onto a community level (Participant No. 4).

Integrating knowledge management and market intelligence has been related to optimizing the latter in terms of results. Market intelligence communities can, for example, be an impulse for learning processes which might then even lead to knowledge generation. Participant No. 7 provided the following example, that substantiated the idea, that learning and intelligence are connected. A project team received the information about a particular piece of hardware, that a competitor was re-designing to make it lighter in weight. The result would be lower production costs. This information was then used to investigate in detail, if a similar or better solution could be designed in-house. The resulting technical intelligence was then converted into new technical knowledge, after the new hardware solution was designed. This implied a learning process. The learning and knowledge creation processes involved were arrived at by integrated intelligence processes.

Summarizing, integrated intelligence approaches may allow for additional results of engaging in market intelligence activities. Reflection and reflective approaches to decision making, learning impulses and processes, knowledge transfer through the use of storytelling and even knowledge creation were mentioned by the interview participants, together with examples from their experience. Integrated approaches are especially prominent in informal market intelligence processes. The reason is, that intelligence results are often used to immediately progress with personal, team or community tasks, and so, comparison of intelligence results and their application are possible, leading to feedback, improvements and refinement.

## **5.6 Discussion of Differences among Participants**

Differences in the data are not contradicting, but relate to individually constructed social realities with particular participants. A routine to deal with specific differences in the data is



available, and has already been discussed in section 4.7.2. The reflective comments log proved to be supportive in the discussion of differences. In order to render visible the differences encountered in the data to the reader, this section has been established.

A main difference was the location where competitive data or information is found. Participants from middle management tend to say, that such information is mostly available with other managers or specialists directly. Participants of upper management, on the other side, often referred to software tools as the location of where to search for competitive information. This is in part related to personal preferences, in addition, representatives of upper management can oblige organizational members to input data into computer applications. The latter is often not possible for representatives of the middle management. Hierarchically, higher-ranking participants appear to have a stronger preference for IT tools as such applications bring competitive information into their remit. Middle-ranking participants prefer personal contact to IT systems, especially when more details and personal appraisals are necessary. The accessibility of competitive information in software tools is sometimes restricted on hierarchical basis, leading middle managers to revert to their networks and communities as a method to obtain additional information or intelligence.

Another example is the topic of the informal networks or communities. Upper level managers tend to see it as a “softer” topic, thus less controllable and less important for the company. Representatives of middle management tend to see networks and communities as indispensable to their jobs, because they can gain access to additional information. Older employees, who have worked for the company for many years, seem to be integrated better in their networks and communities. They seem to make use of their *participation* in communities more effectively, due to this exposure, and the knowledge related to *knowing whom to call for which issue*. This is supported by Wenger et al. (2002), who think that participation to a community of practice is mainly dependant on expertise. The latter statement by Wenger et al. however, is not comprehensive as in many cases it may take expertise *and* relationship to enter into communities.

Top-level managers are less concerned with the details involved in the production of intelligence and, sometimes, live well with more superficial information. The latter is related to their limited time budgets, which does not allow them to go into details in all aspects of intelligence. This in turn is an explanation for their preference for IT tools. In fact, these

tools often contain a limited amount of useful information and need to be supported by organic approaches at the stage of synthesis of information. During the latter stage, software-held information has to be enhanced by personal knowledge and information, especially when applying a more operational perspective. In such instances, the importance of human, group, and social processes increases, in which in-depth, detailed information and knowledge is exchanged and evaluated to obtain comprehensive pictures related to the external operating environment. Top-managers on the other side, would like to see *the world's wisdom on just one PowerPoint slide*, a demand that is not always easily fulfilled. As mentioned in section 2.5.2, it is considered a distraction to explicitly focus on the *management* of intelligence processes, as they seem to be a blend of manageable and autonomous processes undertaken for different purposes.

Although different positions on individual aspects of plant building market intelligence were captured throughout the interview, they are not seen as contradictory. Rather, they represent rich data on different levels, that make it obvious that different positions, priorities and perspectives exist with regard to market intelligence.

One of the characteristics of case studies is intensity which Flyvbjerg (2011) has defined as comprising more detail, richness, completeness and variance. This depth is in this case study achieved by the cross-analysis leading to emerging insights and differences. This provides for additional explanations, and a more complete understanding of what market intelligence is in the plant building industry.

## **5.7 Discussion of Emerging Insights**

The emerging insights presented in this section are a product of reflection on the literature, data collected and the analysis, that were supported by the use of a reflective comments log. In essence, it emerged that market intelligence can be implemented in a variety of different ways. In general, three approaches can be distinguished: intelligence produced at central units (first pillar), intelligence of business units or operational divisions (second pillar) and intelligence of informal activities (third pillar).

This insight is advanced and grounded when integrating the critique expressed (see section 2.5.2) and develop new concepts. Recapitulating, the essential points of critique towards existing concepts were as follows:

- There appears to be a need of organizations to form integrated analysis frameworks (Wolter, 2011, in Keuper et al., 2011), a request that is in line with Mortara et al. (2009) who suggest employing social networks resources to maximize intelligence outreach. This claim can be supported as Ghoshal (1985) argued that only managers, that have relations to the industry are able to receive topical information, and that only managers with knowledge and professional experience are able to analyse and interpret such information. In plant building, which is an industry that is characterized as complex, long-term oriented and having a direct sales set-up, integrated analysis frameworks within the individual pillars, strengthen the exchange of information and the active construction and exchange of intelligence. As such, the individual pillars are forms of social networks resources, a combined use of all pillars maximizes intelligence outreach.
- Stauffer (2003) purports that market intelligence has to be connected to many different levels of the organization, in line with Bose's (2008) request that the market intelligence programme should not be distinct and isolated, but incorporated in the entire organization. The three pillars described above as emerging from reflection on data and literature are capable of integrating market intelligence into many organizational units and participants through its deliberate inclusion of both formal and informal market intelligence approaches.
- Drott (2001) sees the issue of market intelligence as a knowledge management issue, as ways to foster exchange of information and knowledge and connects it with learning processes. The incorporation of informal market intelligence activities, that implement communities of practice and storytelling, may be seen as explicit ways to foster the exchange knowledge and information, not bound by any database paradigm. Such integrated approaches have a connection to learning and even to knowledge creation processes.

Additional emerging insights were witnessed in the course of reflecting on the data and analysis and are provided below as a summary of the reflective comments log.

There appears to be a trend to formalizing specific managerial tasks and processes in larger companies. In the past, many managerial activities have been shaped by personal discretion. Formalization implements a stricter, more rigorous approach to managerial tasks, demanding that the same task needs to be undertaken by different people in the same way. This trend was forecasted to still increase in the future. This has affected market intelligence

activities, especially strategic and formal approaches, where market intelligence has been integrated in standard routines, business and planning processes. Informal market intelligence approaches are seen as softer, less controllable and therefore less susceptible to such formalization trends. This may be a reason why informal market intelligence has received less attention in management and research, although its value-adding contribution has been established.

The term information gathering, used throughout literature, may sometimes be replaced by information exchanges or information sharing. In such instance, exchanges may include also personal knowledge. These alternatives terms refer to informal market intelligence practices mainly, as these are privileged by personal relationships. Establishing a relationship may allow participants to exchange information and knowledge, whereas, information gathering is sometimes related with a commanded activity. Both are advantageous to market intelligence operations.

Evaluation may replace analysis and interpretation especially in informal market intelligence, where little formal analytical techniques are employed, or where these are replaced by more common-sense or pragmatic techniques. Pragmatic techniques include thematic clustering, applying chronological order to different events and comparing new topic information with existing knowledge. The latter is implemented in discussion rounds and by using the method of storytelling. Evaluation is used in more operational, short-term type of issues, where evaluation of information and the utilization of intelligence are partly integrated with each other. This is, though to a lesser extent, implemented in formal intelligence processes as well. The latter refers to findings where business unit market intelligence deliberately implements more informal intelligence approaches (e.g. employees' round table) in order to enhance information exchanges and learning. Analysis and interpretation may be preferred in cases where the intelligence product (e.g. a market analysis or competitor benchmark) is delivered to a higher hierarchical decision making unit. This instance could be confirmed with the help of the two examples of business unit intelligence (see section 5.2.3, documents as additional sources of evidence).

Dissemination is a term that is used by large parts of the literature to cover the communication of market intelligence results within the organization. From the study results, this term is only partly applicable in current market intelligence practices.

Depending on the structure used, it may be replaced by such terms as reporting (strategic intelligence) to top-management, or communication (diffusion throughout the company), when more informal intelligence communication allows for a two-way conversation that includes feedback. Dissemination on the other hand implies a one way distribution of intelligence, favoured by use of formal means and methods.

Project-specific intelligence was another emerging topic. It is not mentioned in the literature, as projects are specific to the plant building industry. As projects, especially larger ones, have the potential to have an impact on the financial statements of an organization, their importance is high in plant building. Project-related intelligence is used to prioritize activities, concentrate on promising prospects and is used for the acquisition of contracts.

Although not explicitly investigated, results of market intelligence practices also emerged as themes in this thesis. Market intelligence is also constructed within integrated approaches, where intelligence production and utilization are integrated, the term intelligence products may be seen as forming part of intelligence results. Intelligence results from integrated approaches are used for immediate progression in operational routines are implemented in business unit approaches, as well as, informal approaches.

Reflection and provoking reflective thoughts as a product of engaging in market intelligence activities is an example of market intelligence results. Reflection may be considered as an important form of learning. Reflectivity is a method to embrace a more active, critical and thoughtful approach in management for example in decision making or problem solving. It may result when project-specific intelligence is created and implemented in order to craft a project strategy. Active participation in market intelligence activities increases the reflectivity of organizational members. Another example of market intelligence results was knowledge shared among participants, leading to best practice sharing and the use of synergies. Furthermore, one example shows that in the course of engaging in market intelligence activities a learning process, guided by the needs of the market, leads to knowledge creation. Learning processes and knowledge creation, guided by market needs, is considered to improving the competitiveness of an organization.

A different insight are cultural differences. They are often not appropriately taken into account by the literature. Much of the literature has been developed in the United States or

Europe, and although the normative perspective is often implemented, it is rarely stated that the appropriate implementation of the concepts may be restricted to the Western culture. Plant builders have grown into multinational or global organizations. This is related to a process of integration that taken place the last thirty years, considerably reducing the number of (European) market participants. In any field of plant building, such as power generation, mining, metallurgy, chemicals among others, there are only a few, but larger, participants left. The participants interviewed were mostly Europeans, or, due to their prolonged experience of working in a European company, “cultural Europeans”. This suggests that, the perspective that is presented here includes a European view on market intelligence. The title of this thesis does reflect the European perspective. The regions of primary interest for the European plant building industry are the USA, Brazil, China, India, Russia and the Middle East and, of course, Europe (see introduction). Cultural differences and its effects on market intelligence is one area of future research to focus on (see section 6.8).

## **5.8 Interpreting the Findings**

### **5.8.1 Developing the interpretative technique**

The emerging insight that plant building market intelligence comprises three pillars is partly supported by the literature (Quinn, 1985; Lichtenthaler, 2004). In determining an interpretative technique, focus was kept on reflecting on existing models. This is advantageous to exploratory research (Kerr et al., 2006). Models included for reflecting on the interpretative technique are the ones by Quinn (1985), Lichtenthaler (2004) and Kerr et al. (2006), and have already been amply discussed in this thesis.

Kerr et al. (2006) and Lichtenthaler’s (2004) models were rejected as the basis for an interpretative structure. The first one lends itself heavily to the intelligence cycle, which is too simplistic to implement a complex phenomenon as market intelligence. Lichtenthaler’s (2004) model bases on three different approaches, but distinguishes between hybrid and structural forms of coordinating market intelligence, which were not identified in this research. Rather, this research identified centralized (central department) and decentralized (business units) approaches within formal market intelligence.

Quinn (1985) differentiates between four fundamental types of market intelligence: the dedicated central unit, inclusion within a central group function, decentralization to operational divisions and diffusion throughout the company. This differentiation is useful in reflecting on the interpretative technique, as the emerging insights have produced a similar structure, but needs modification.

The first two types in Quinn's model are mutually exclusive, as companies either have a dedicated central function (sometimes referred to as central intelligence unit) or attach the intelligence function to a central department (e.g. the strategic planning department). The first two types, the dedicated central unit and inclusion within a central group function, are combined to central unit intelligence here. Lichtenthaler's (2004) appraisal that dedicated central intelligence functions are not available in most organizations is a conclusion that the case study also supports. Hence, the integration of both structures is additionally grounded.

The other two pillars of market intelligence, complement this first one by focusing on particular perspectives and operative ranges, other than the central perspective. In this interpretative technique they are referred to as decentralized intelligence and informal intelligence. In addition, to these three pillars *general aspects of plant building* are included in the interpretative technique, in order to present and discuss the basic particularities of plant building market intelligence. *Integration and dissemination of intelligence*, as well as, *results of market intelligence*, are further included as they support the integration of market intelligence operations with the organization.

General aspects of plant building market intelligence are important, as the particularities of the plant building industry influence the three pillars. General aspects of plant building market intelligence serve thus as the idiosyncratic foundation of the concept and are revisited in section 6.2. The analysed data established that some integration of intelligence, beyond the immediate pillar where it was constructed, is necessary and occurs. Together with the results of market intelligence, they are implemented to integrate the intelligence function and the organization.

The interpretative technique used to interpret the findings of this case study is thus based on the emerging insight, where a reflection phase has allowed for comparison with existing models. The interpretative technique is established as follows:

- *General aspects of plant building market intelligence.* This section reviews and implements those industry characteristics outlined in section 5.5.1, that are essential in structuring a conceptual framework on plant building market intelligence. These factors are used to locate the study in its context and a market intelligence framework into its environment. Plant building aspects are related to the intensity and the relation to the environment of case studies (Flyvbjerg, 2011).
- *Central market intelligence.* This particular approach may be regarded as the first pillar of the framework. It is a particularly formal intelligence approach and serves mainly to inform the top-management of an organization about the developments in the external operating environment implementing a more long-term and strategic perspective. The latter is especially useful as an input to corporate strategic planning.
- *Decentralization to operational divisions (decentralized intelligence).* This is identified as the second pillar of plant building market intelligence and uses a primarily formal intelligence approach, however, informal elements are also implemented. Decentralized intelligence is designed to inform the operational divisions (or business units) with intelligence ranging from short to long term perspectives, used in planning, strategy and decision making or problem solving.
- *Informal intelligence.* This third pillar of market intelligence complements the other two (mainly) formal approaches. It implements networks and inter-departmental intelligence communities based on relationships and expertise. Informal intelligence is essential to middle management of an organization, and often employs an integrated approach. It serves members to remain up-to-date, refine and develop their views and set ground for operational agendas.
- *Integration and dissemination of market intelligence.* This item is added to the interpretative structure as the analysis has shown, that some intelligence is integrated beyond its immediate scope in order to disseminate general intelligence insights. It serves to integrate organization and intelligence.
- *Results of market intelligence.* This item is based on the finding that market intelligence does not only result in products, but in an array of results. Apart from the products, known from literature, market intelligence may result in reflective and learning processes, sharing of best practices, as well as, knowledge creation. It provides additional arguments for the implementation of a comprehensive and continuous market intelligence programme.



The topic of a software solution complementing an organic strategy in market intelligence was excluded from further interpretation, in line with the limitations of the study (see section 3.2.3).

#### 5.8.2 General aspects of plant building market intelligence

The plant building industry has developed its own characteristics, that differentiate it from other industries of the business-to-business arena. The foremost aspect is the length of time necessary to develop a new product or technology. Other activities such as selling a plant project and executing a contract are further examples that require time. Each of these activities may take up to several years. During these long periods, personal relationships among participants within and even across organizational boundaries develop and grow. These grown relationships may influence market intelligence operations, in a way that networks develop due to the contact in such phases, from which, eventually, more or less, stable communities emerge. Especially these items supports the diffusion of intelligence throughout the company.

These relationships also emerge over corporate boundaries, and result in increasing personal relationships, that govern the plant building industry. This favours a multiple-to-multiple approach in plant building market intelligence, that requires market intelligence to be implemented in many organizational units and with many organizational members, if it is to work effectively. In turn, relationships are a guiding factor in supporting a three pillars framework.

Another aspect is the complexity of the business. Complexity requires experience to manage a plant building business effectively. Established social networks resources advance the exchange of information and knowledge among participants over organizational boundaries, and favour the inclusion of several organizational members in information sharing, analytical and interpretative processes. As complexity requires experience, and the latter is a prerequisite for participation in communities, it favours the evolution of such communities in conjunction with the relationships developed.

The direct sales approach entails that representatives of plant building companies are in direct contact with end-customers, including representatives of sales-related functions, engineering and technology departments, purchasers and commissioning managers, among

others. This results in a large amount of directly gathered competitive information and thus makes this people as informants in market intelligence processes (Participant No. 8). On the other hand, being able to investigate from multiple internal sources, results in many opportunities in terms of indirect information gathering. This may be seen in connection with Bose's (2008) statement, who thinks it is necessary to connect market intelligence to many organizational layers and functions. Gathering from multiple sources is thus possible and implemented in plant building (Participant No. 3).

The main building blocks (see figure 3) of market intelligence have so far been: (1) the general market, (2) individual customers (including prospects), (3) product and technologies and (4) competitors (including emerging competitors). Another major block and of importance to a plant building company, are the actual projects. Especially larger projects, of which there may be only few at a given time, may be highly relevant, due to their potential impact on the financial statements of plant building companies. Therefore, the project, as the fifth building block, is added to the market intelligence framework.

Consciously experienced market intelligence processes are much related to specific tasks, such as preparing market analyses or competitor benchmarking studies. Participants do, however, implement a wide array of market intelligence activities, many of them classified as informal intelligence. This type of intelligence is used to share and verify information, participants have received, remain up-to-date and set ground for further operational agendas. Informal types of intelligence may unfold and emerge in the course of daily business tasks, and thus not be specifically related with intelligence activities at first sight. They are often related with pre-steps necessary in the successfully dealing with the daily agenda. Market intelligence may therefore be seen as a *methodology of practice*, that guides the work of front office personnel. Inter-departmental coordination, although acknowledged to be highly useful, is often used to a lesser extent in formal intelligence approaches and thus provides an additional argument in favour of the inclusion of informal market intelligence approaches into a refined conceptual framework. Within rather formal market intelligence, central unit market intelligence and decentralized market intelligence operations can be identified.

These pillars are not completely separated from each other, but may influence each other, sometimes. For example, a head of sales in a business segment may be a key participant of decentralized market intelligence, but may also be a user of centrally produced intelligence,

and at the same time be a member at one or several intelligence communities. This person is then influenced by a plethora of different views and perspectives, and may actively challenge assumptions and beliefs through the multiple perspectives integrated. This is a strong argument in favour of intelligence, as one option to engage in more reflective actions and decisions. The three pillars are, thus, seen as *communicating vessels* within the organization, a notion that supports the view that intelligence may be integrated beyond its original scope and outreach and communicated throughout the organization.

Stauffer (2003) states that market intelligence builds on the tenets of knowledge management and that it should be connected to many levels of the organization. This can be the case when all pillars of market intelligence operations are present and functional in a plant building company. The tenets of knowledge management (if it is even possible to *manage* knowledge) is interpreted as applying techniques and structures from the knowledge management field of science, such as communities of practice and storytelling, both of which have been identified in the course of this research. A supporting argument relates to Drott (2001), who purports the need to enhance the exchange of information and knowledge by deliberately looking beyond computerized databases and connect market intelligence with learning processes. Especially, inter-departmental coordination is a vital topic here, and may substantially be advanced through implementation of intelligence communities, as these are not restricted by organizational boundaries. Intelligence communities may actively implement learning processes and lead to leveraging of synergies and sharing of best practices. It remains questionable if intelligence communities can be *managed* effectively.

The perspectives in market intelligence are strategic, tactical and operational (Ding, 2009). Their distinction is not clear-cut and hard to apply concretely in many instances, as organizational structures may be responsible for more than just one perspective, giving rise to the issue of demarcation. The three market intelligence pillars are also not easily assigned to particular perspectives. Therefore, any allocation made here is in not strict and rigid, but indicated as to advance the general understanding.

### 5.8.3 The first pillar: Central market intelligence

Central market intelligence is related to a central corporate department or unit that caters mostly to the intelligence needs of top-management. In producing central market intelligence the central department provides the foundation for developing strategies and

giving advice dedicated to answering more general and long-term type of questions. Central intelligence, in cases with an absence of a central intelligence unit, may be conducted by department such as the strategic planning department. It focuses on the topic of general competitiveness of the firm.

This first pillar of the market intelligence framework forms part of formal market intelligence approaches and is often dedicated to crafting strategic intelligence. Strategic planning based on sound intelligence allows for prioritizing the right topics by concentrating on items relevant for setting a long-term agenda. Strategic intelligence, a concept that a large portion of the literature reviewed concentrates on, appears to be the relatively similar to central market intelligence. The method of its preparation is to a high degree analogous to the original intelligence cycle and portrays less iterative characteristics, but is instead more linear. In order to mitigate the threats associated with a more linear approach, a formal and methodical approach, in part analogous to a research project is favoured and implemented.

The results of central intelligence, often referred to as intelligence products, may find their application in strategic planning and key decisions involving the top management. This supports an approach where the production of intelligence and its utilization are separated in terms of participants to such processes. The opposite approach, portrayed later in this section, is the integrated approach. Examples of central intelligence products are key documents, as market analyses and competitor benchmarking studies. This finding was substantiated by analysing documents, identified as additional source of evidence.

Producers of central intelligence are usually detached from day-to-day business operations, which is a differentiator to producers of decentralized intelligence. Producers of central intelligence tend to be professionally trained in order to perform the tasks expected, whereas the producers of decentralized intelligence have to be professionally experienced. Therefore, the information gathering techniques implemented in central intelligence are more varied and include several sources of information. Synthesis and triangulation of information is supported through interviewing of knowledgeable participants.

The analysis is supported through application of formal analytical methods, which are congruent with the techniques portrayed in the literature reviewed. Central market intelligence applies formal analytical methods to the greatest extent, compared to other

market intelligence approaches. Analytical methods may include such well known techniques as PESTLE, SWOT or the 5-Forces model by Porter, among others. Interpretation is supported through group discussions, and may involve the end-users of this kind of intelligence, that is the top and upper management.

Inter-departmental coordination is supported through routines and processes, that include managers and material from various departments. Interviews are deliberately undertaken with proponents of various disciplines. Operational divisions may in this context escalate or forward prominent intelligence topics from their remit into central intelligence. This represents a comprehensive integration of intelligence outputs from various disciplines.

As discussed, dissemination appears to be mostly undertaken in a one-way process. Products from central market intelligence are distributed to the higher ranking officers of a company. Lower hierarchical layers of the company are thus often not involved in dissemination. The dissemination methods are characterized as formal, with the means involved ranging from newsletters, to presentations and transmitting summaries via e-mail.

Upper management may serve as an amplifier by distributing informally parts of central intelligence to lower organizational hierarchies. This suggests that, upper management does become an integrator of formal and informal intelligence dissemination, thereby modifying dissemination into a two-way communication. This has been termed an important aspect of the duties that upper managers have, as the notion of receiving topical strategic intelligence may be perceived as motivating by junior managers. It furthermore serves to integrate an intelligence perspective with the organization.

#### 5.8.4 The second pillar: Decentralization to operational division

Decentralized intelligence is related to intelligence produced by business units. The latter assume income responsibility, and develop and market a defined portfolio, servicing their customer base throughout the lifecycle of plants. Business units are also referred to as operational divisions or business segments, depending on the organization.

Decentralized intelligence is an approach that is somewhat narrower and more focused in terms of scope (see section 2.3.7.1), as decentralized units will focus on intelligence that is directly concerned with their portfolio and markets. Central intelligence may, in contrast to

that, implement a broader perspective, as it is concerned with the general competitiveness of the firm. The time horizon applied to decentralized intelligence can range from short-term to long-term. As business units are not primarily market intelligence departments, their intelligence approach includes the perspective, that the intelligence is only a basis for successful accomplishment of their strategic, tactical and operational tasks. Therefore, decentralized intelligence is often not as methodical as central intelligence, especially in cases where the intelligence is used within the business unit and not forwarded to a central department. Decentralized intelligence may implement forms of informal intelligence, e.g. the employees' round table.

Participants performing decentralized intelligence have to be experienced. This approach involves processes, that are less linear than those described in central intelligence, with the notion of decentralized intelligence working as a filter. This filtering function serves to identify prominent topics to be escalated to the central units' remit, using planning and reporting processes.

The fundamentally different sales process in the plant building industry, as compared to other industries within the business-to-business realm, is characterized by larger projects in terms of potential revenues, complex technical solutions, time invested until contract signature and a certain amount of engineering work to be invested into bid projects. This requires carefully elaborated bid strategies in order to focus resources and budgets on promising project opportunities. Project intelligence is, therefore, a building block within business unit-driven market intelligence, as the absence of such activities may result in costly endeavours with no financial remuneration connected to it. In many cases business unit-driven intelligence is deeply immersed within the unit and is a part of many daily work routines.

For internal information gathering, meetings are a highly effective method, which are furthermore designed to pull additional information from organizational members. In order to ensure, that sufficient competitive information is transmitted, all relevant front office personnel needs to be trained in order to be receptive to competitive information and to further ensure that this information is transmitted and forwarded to the right places. Apart from pulling information and data, information push is a main factor in business unit-driven market intelligence. Competitive information is received and transmitted from

organizational members via for example trip reports, memos, telephone calls or e-mails, whereby the responsibility in terms of having a knowledge base, that is sufficient, up-to-date and useful for operational and strategic tasks lies with the head.

Information synthesis and triangulation is a major problem in second pillar market intelligence affairs, sometimes due to a perceived lack of inter-departmental coordination. This is a downside of many larger companies. Apart from pulling additional information, departmental and team meetings have the purpose to facilitating information exchange by making visible knowledgeable personnel, and to enable synthesis and triangulation of data, information and knowledge. The reason is, that information from internal sources may sometimes be mistrusted. Meetings are seen as a method, not only to gather information but, to actively challenge different views. Triangulation is easier in terms of markets, competitors and general, as well as, regional trends. Triangulation is hardest on the customer and project level, as there are less people with substantial knowledge in order to provide many different views. Software applications furthermore support synthesis of information, and have been widely implemented in many organizations.

An analysis using analytical techniques, as described in many parts of the literature, happens mostly in central intelligence processes. Analysis and interpretation in decentralized intelligence seem to happen in meetings mostly, due to the fact that several persons may be required to analyse meaningfully complex situations (Participant No. 2). Analytical methods seem to be replaced partly by more common-sense or pragmatic techniques, such as putting events into chronological order, thematic grouping or matching latest competitive information against existing personal knowledge and challenging it in group discussions (Participants 3, 5 and 6).

Dissemination of intelligence is usually undertaken in two ways. One-way dissemination is conducted in terms of formal market intelligence products, such as market analyses or competitor reports, where a paper or report is sent by e-mail to a specific circle of receivers within that unit. Another way of disseminating intelligence was mentioned to happen in the course of different social gatherings, such as formal and informal meetings where intelligence produced was presented and discussed with room for feedback and discussion. Decision makers are usually involved in the processes of elaborating this type of intelligence and again display an amplifier position.

In general, the methods applied are not as sophisticated as in central intelligence, but may in certain cases include formal methods. This is related partly to the participation of decision-makers or end-users in parts of the intelligence preparation process. From a quantitative perspective, fewer information sources tend to be used, but due to the in-depth knowledge held by participants, particular emphasis is put on qualitative issues and highly qualified conversation partners.

#### 5.8.5 The third pillar: Informal intelligence

The third pillar of the refined market intelligence framework is an informal one and may take the form of network-based intelligence communities. Participation does not require any particular hierarchy level, rather it is the experiences and knowledge that participants bring into the community together with the relationship developed among participants, that is decisive. Intelligence communities are comprised on experts interested in and focusing on particular market regions, clients, projects or technologies.

A multiple-to-multiple approach grounded in inter-departmental coordination supports the exchange of topical information, challenging its plausibility, authenticity and trustworthiness and its evaluation in order to construct intelligence, that is designed to set operational agendas. In addition, it is the aim of community participants to obtain additional information and intelligence, otherwise not available to them, on for example hierarchical grounds. Furthermore, Participant No. 5 purports, that informal routines make it possible to access information, that is not written down anywhere. Participant No. 3 adds the time advantage, as such discussions allow to determine the problem and find solutions more quickly. This is a significant and powerful aspect of market intelligence but remains difficult to describe.

Communities implement group discussions which are not moderated, or only informally by spokespersons (Participants No. 3 and 6). Informal market intelligence addresses the importance of short-term issues, without neglecting other perspectives including strategic information and intelligence. A sharp differentiation, among the perspectives predominantly used in inter-departmental intelligence units, seems not easily described. One of their benefits, as perceived by participants, is the possibility of mitigating threats due to the lack of inter-departmental coordination of other intelligence approaches, and thus integrate the advantages of best practice sharing and synergies.



Inter-departmental communities establish market intelligence operations as an iterative process, often using integrated approaches in terms of intelligence steps. They are soft i.e. hard to measure in terms of outputs, but very powerful methodologies of practice. This may lead to members of the community being more sensitive to emerging trends and events in the market, and taking more reflective actions. Production of intelligence and its utilization are often closely linked. Inter-departmental intelligence communities connect the processes of market intelligence with many organizational layers and members. Communities promote learning, reflection, maintaining of trust and relationship among participants and sharing of knowledge and information.

Central intelligence has been accused of a certain superficiality. People often feel that the views developed are too narrow, too confined (Participant No. 3). Participants of communities thus look proactively for exchange, triangulation and verification. Decentralized intelligence on the other hand is sometimes criticized for its lack of inter-departmental coordination. This is why communities advance informal intelligence to a greater extent, than the networks of which they eventually emerge. Networks are often maintained by their members to keep participants up-to-date, relating them with information and intelligence exchanges. Communities implement the construction of intelligence, through information exchanges, discussion and evaluation, as well as, the production of recommendations and conclusions. It is a characteristic of community participants to meet continuously, over a longer period, and to have more intense contact than to other members of the respective network. It appears thus hard to *foster* and to *steer* them. Many of the informal conversations happen on the hallway, during lunch break, and other such informal venues. Participant No. 7 added, that such processes may be supported by allowing for time resources at the discretion of employees, in order to engage in such activities, or by providing locations for open communication (Participant No. 3). Participant No. 8 added training of employees and managers with regard to market intelligence theory and practice.

Evaluation replaces analysis and interpretation in informal intelligence. Analytical techniques are often rejected and common-sense techniques are used. The latter include the comparison of recent information with previous experiences, matching competitive information against personal knowledge of participants and group discussions. Storytelling has a prominent position in such approaches. Stories are used to externalize existing personal knowledge, whereby the latter is used to match it against topical information,

allowing for comparison. In such cases knowledge may also be shared and transmitted, which is another advantage associated with communities of practice. Dissemination is usually replaced by communication. Communicating intelligence is a two-way process, that allows identifying information needs, and opens space for clarification.

#### 5.8.6 Integration and dissemination of market intelligence

Integration of different outputs of different intelligence approaches is a major problem. The responsibility of integrating different results of intelligence into one concise picture is divided. A formal and cross-departmental integration therefore happens mostly on a central (strategic) level. Access to (strategic) intelligence is limited, often on grounds of hierarchy. Integration of formal and informal means of intelligence dissemination seems first of all a management task. Upper and middle managers may make available central market intelligence that is available to them on grounds of their hierarchy to lower-ranking employees. Their amplifier position allows for an integration of formal and informal dissemination modes and further advances an informal integration of different kinds of intelligence results.

A notion, that is advanced by the insight of the three pillars as communicating vessels, indicates that a certain integration of intelligence beyond the immediate effect of the individual pillars occurs. As participants become aware of the variety of intelligence outputs available to them, they may integrate these and refine their views in the course of intellectual and group processes. Networks and communities are used in such processes of integration and dissemination as well, and so imply their own routine of integration. The goal of integrating intelligence beyond their respective approaches, is to increase the overall stock of knowledge of the participants, including awareness of emerging trends, as well as, refining the understanding as to the operating environment.

#### 5.8.7 Results of comprehensive market intelligence

A variety of products of market intelligence operations are mentioned in literature. Apart from such tangible outputs, a number of additional *results* are established in this study. Especially, intelligence constructed in integrated approaches, such communities, may stimulate learning processes. This means, that if the intelligence co-produced by a participant is of interest to this person (Participant No. 5), it may trigger a learning process,

especially if a need for change is detected by the participant. Reflective processes may lead to identifying the need for change.

Best practice transfer may also be facilitated in the course of market intelligence operations (Participant No. 4), which may lead to an organization leveraging synergies. The latter are related to knowledge sharing, which may happen in the course of information evaluation, especially, when storytelling is used as a method. One example described, has even revealed, that market intelligence may result in the creation of new knowledge.

A major benefit of market intelligence as described by participants, is the fact, that it provides for business decisions, that are actively and reflectively taken (Participants No. 2 and 6). Basing decisions on evidence that has been discussed and evaluated, may prove to be more successful, than relying on guts feeling or tradition. Market intelligence requires additional thoughts to be invested into the phase before entering an action. However, this additional investment may pay off later, in terms of quality of actions.

*What gets measured is what gets done*, is a corporate attitude that may hinder the implementation of market intelligence. In many cases, the absence of KPIs makes the measurement of market intelligence results overly hard. MI is often related to the qualitative side of investigation, though not exclusively; therefore managers sometimes find it too hard to implement the entire strategy. This appears to be one reason for the absence of well-formulated and argued advices with regard to organic strategies destined for informal market intelligence. Therefore, and due to the fact that it is easier to engage in strategic intelligence, it is the latter that many organizations focus on. The tremendous potential, that the informal market intelligence operations have, has yet to be realized, although this research has shown that many managers are at least implicitly aware of that. The latter is of course the reason why managers engage in such activities.

## **5.9 Undertaking the peer debriefing**

Since emphasizing reflection and reflective practice has been a key component of this work, a form of social reflective practice was integrating into what is usually referred to as an external audit. The peer debriefing was implemented to assess the thoughts with regard to methodology and methods, but also to scrutinize the research development process and the outcomes of it in terms of comprehensibility and plausibility.

Table 15: Operational details of the peer debriefing

| Details                  | Description   |
|--------------------------|---|
| Participant              | Dr. Robin Bown  |
| Location                 | Munich at the premises of the University of Gloucestershire |
| Date                     | Saturday, April 28, 2012                                    |
| Starting and ending time | 16:40 – 19:30   |
| Overall duration         | 2 hours and 50 minutes                                      |

The aim of the peer debriefing was, thus, to run over the entire research process, to discuss individual episodes – what happened, how it happened, why it happened and with what result. The process was designed to support the overall quality concept implemented here. With regard to the social reflective aspect of the peer debriefing, the session also allowed for active discussion of the decisions taken in the course of the research. It also supported ongoing reflections, leading to essential improvements. The peer debriefing was conducted using the following structure:

Table 16: Format for peer debriefing (author’s own scheme, based on Yin, 2009)

| Step  | Description   |
|---|---|
| 1) Results from reviewing the literature                  | <ul style="list-style-type: none"> <li>- Discussing the initial conceptual framework.</li> <li>- Reflecting on weaknesses and contradictions.</li> </ul>                        |
| 2) Research purpose                                       | <ul style="list-style-type: none"> <li>- Detailing the research purpose.</li> <li>- Discuss the research questions in line with the overall inquiry strategy.</li> </ul>        |
| 3) Theoretical position                                   | <ul style="list-style-type: none"> <li>- Discussing the characteristics and implications of the social constructivist position.</li> </ul>                                      |
| 4) Qualitative research methodology and research approach | <ul style="list-style-type: none"> <li>- Discussing the merits and weaknesses of a purely qualitative methodology and the appropriateness of the deductive approach.</li> </ul> |
| 5) Research method and research design                    | <ul style="list-style-type: none"> <li>- Detailing case study research and the influences of the philosophical position to the research design.</li> </ul>                      |
| 6) Interviews   | <ul style="list-style-type: none"> <li>- Reviewing the questions including a brief overview on the results obtained from the interviews.</li> </ul>                             |

|                                |   |
|--------------------------------|---|
|                                | - Reviewing the reports and the routine in data making.   |
| 7) Analysis and Interpretation | - Discussion of analytical strategy and techniques and the findings from analysis and interpretation. |
| 8) Final remarks               | - Discussing the quality and trustworthiness concept of the research project.                         |

The result of the peer debriefing was perceived to be satisfactory. This provided the basis to proceed with the thesis. Follow-up conversations were agreed and undertaken to further refine the views developed.

### 5.10 Summary

This chapter has dealt with the empirical case study. Upon analysis of the data, it was possible to interpret the data reflecting on known models from literature (Quinn, 1985; Lichtenthaler, 2004), when developing the interpretative technique.

The interpretation of the data incorporates six major themes: general aspects of plant building market intelligence as the basis and the three pillars: central intelligence, decentralized intelligence and informal intelligence. Furthermore, and due to their importance to this research work, integration and dissemination beyond the three pillars, as well as, results of market intelligence activities have been integrated with the framework.

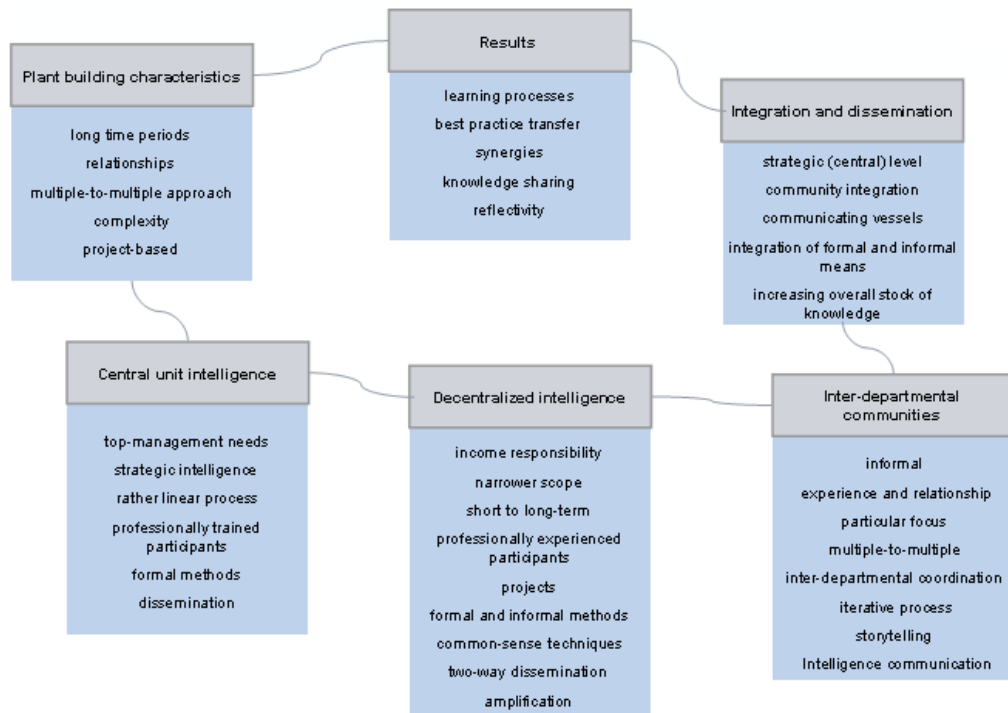
This structure now makes it possible to:

- Set-up an organizational framework, that connects market intelligence to as many organizational layers, units and participants, as possible,
- Take information and knowledge exchanges among participants into consideration, thus, looking beyond computerized databases avoiding the database paradigm,
- Incorporate knowledge management techniques in market intelligence through the implementation of communities of practice and storytelling, thereby consolidating the connection of market intelligence to learning processes and,
- Transform the conceptual framework into integrated analytical frameworks, using and leveraging social networks resources (organic strategy).

Due to the importance of communities of practice in the active construction of informal market intelligence, the denomination was changed from *informal intelligence* to *inter-departmental intelligence communities*. Figure 21 depicts a diagram of the structure

implemented in the interpretation of the case study evidence. It integrates the six main themes as discussed earlier in this section.

Figure 21: Diagram of the structure implemented in case interpretation (author's own design)



This revised interpretation structures builds on current industry practices, emphasizes an organic approach, for review and implementation by interested managers of the plant building industry. The refined conceptual framework is disseminated in a next step in section 6.2, as a narrative summary of the interpretation and a diagrammatical concept.

### 5.11 Outlook on the following Chapter

The following chapter presents the concluding remarks connected to this research. The main building block is the refined conceptual framework (summary), together with the re-integrating and discussion of the findings with the literature. The latter provides the basis for mapping the contribution to knowledge and professional practice. This includes an assessment on the effectiveness of the research project. In addition the limitations of the research findings are presented and recommendations for future research are addressed.

The main contributions of this research work are highlighted in detail. This contribution is a key factor in doctoral research work, which is designed to advance theoretical and practical knowledge in contrast to research conducted for its own sake. The last chapter is completed by presenting concluding remarks and future perspectives.

## **6. Conclusion**

### **6.1 Introduction**

This chapter focuses on the refined conceptual framework. The main findings from the case study are summarized into a refined framework, composed of a narration and a diagrammatic model. The concept is then re-integrated with the findings from literature as far as possible, including a discussion of similarities and differences. This discussion serves as the basis to establish the contribution to knowledge and managerial practice. Furthermore, specific provisions, allowing for an assessment of trustworthiness, are presented here. In addition, this conclusion presents the limitations of the research findings, important as to an assessment of transferability. Recommendations are included for future research in market intelligence. The chapter at hand closes with concluding remarks and future perspectives.

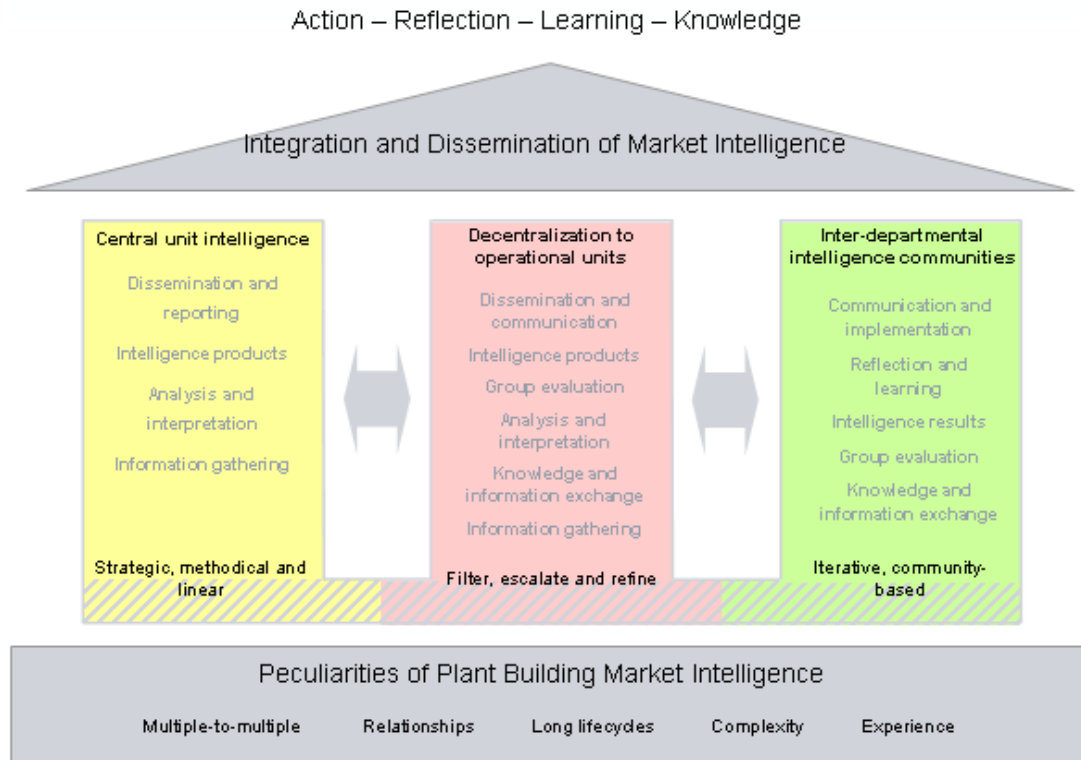
### **6.2 A Refined Conceptual Framework for Plant Building Market Intelligence**

#### 6.2.1 Narrative summary and diagrammatic framework

The refined conceptual framework on plant building market intelligence was formulated as the main objective of the study. It is established using two techniques, firstly, the framework as a narrative summary and, secondly, the concept as a diagrammatic figure. A combination of narration and visualization is used to support the dissemination of this framework concept. Figure 22 depicts the refined conceptual framework in the form of a diagrammatic concept. A larger version of this figure has been included in Appendix No. 8.



Figure 22: Conceptual framework on plant building market intelligence (author's own design)



In the course of this research, it was established that market intelligence incorporates a variety of approaches. It was confirmed that the intelligence cycle, as the most basic intelligence structure, is too simplistic to implement an organizational perspective on market intelligence. Other models, available from literature, are not specifically designed for the plant building industry, and may so not be applicable as the model of choice in this industry. The latter relates to a number of characteristics, that nurture the uniqueness of this industry. The industry particularities are defined as:

- Internal and external complexity relating to the high number of stakeholders and knowledge bases involved in plant building. Complexity favours communication to establish an understanding of the external operating environment. This internal and external complexity implements an inter-departmental approach in information gathering, as well as, information analysis and interpretation. Complex knowledge becomes a source of market intelligence processes, and serves also to evaluate new topic information.

- The direct selling approach requiring inter-departmental coordination implemented as direct and indirect gathering strategies, or when substituting gathering strategies with information and knowledge exchanges among participants of market intelligence processes.
- The plant building industry is characterized by long-term relationships, that evolve as a result of long lifecycles, that industrial plants have. These relationships evolve not only among client and supplier firms, but also on personal levels, which lead to information flows over organizational boundaries. Relationships and experiences are vital factors to be considered in a refined market intelligence framework, as they may favour the evolution of communities within existing personal networks. Market intelligence establishes thus a connection with reflection, learning and knowledge creation.
- The project, both as sales project and during contract execution, is critical to plant builders. This importance favours the inclusion of the project into the scope of intelligence as a fifth building block, together with the general market environment, customers and prospects, competitors and products or technologies.

Participants of plant building market intelligence processes implement different approaches of market intelligence, not relying on just one approach. Participants blend formal and informal approaches, as perceived useful. The participants themselves connect the different market intelligence approaches, rather than organizational structures.

From these basic understandings, a three pillars concept was developed and established as a conceptual framework for plant building market intelligence. The three pillars are: central intelligence implemented for defending the general competitiveness of the firm, and decentralized market intelligence to plan, guide and assess the strategic, tactical and operational choices of operational divisions. Both are predominantly formal approaches. In addition, participants implement informal market intelligence activities, emerging as autonomous and self-directed behaviours. These pillars relate to the three basic approaches employed in plant building market intelligence. Apparently, all of them are of value to the organization, as well as, organizational members, so they actively engage in such approaches. Although partly similar, each of the three approaches implements their preferred methods and strategies to ensure that a comprehensive picture of the external environment is constructed.

The reason for including three different pillars in the market intelligence framework is justified resulting from the differing purposes, time horizons and responsibilities connected to business management. This supports the view that market intelligence has to be undertaken using different approaches, in order to cater to these aforementioned differences. It has been mentioned by several participants to this study, that it is neither realistic nor practical to include all market intelligence related tasks within one department, place or responsibility.

The pillars established here are not completely separated from each other, but may be seen as *communicating vessels* which influence each other and are also partly inter-dependant. Market intelligence as a methodology of practice guides the work of front office employees and managers, primarily of those engaged in marketing, sales, project management, product development and general management. Inter-departmental coordination is a cornerstone in market intelligence in general, but often neglected in managerial practice. This drawback of intelligence concepts is partly mitigated through the implementation of informal market intelligence practices, as well as, of the inter-relation of the market intelligence approaches.

Central market intelligence includes intelligence produced (mostly) for top-management to develop strategies and general plans and to provide evidence for decision making. The focus of such activities is on more general, strategic and longer-term issues, related to the overall competitiveness of the firm. A close connection between central market intelligence and strategic intelligence, as portrayed in literature, is thus established. Central market intelligence processes are generally more formal, methodical and analytical than those of other market intelligence approaches. These characteristics are at least partly related to the hierarchical aspect that they imply. Central intelligence is also closest to the original intelligence cycle that is portrayed in the literature. The methods used in this regard are:

- Interviews, surveys, commissioned research
- Reports containing data from internal software tools,
- Analysis using formal methods such as PESTLE or SWOT, including interpretation of the data, often conducted within the central unit
- Production of formal intelligence products such as reports or benchmarking studies,
- Integration with other intelligence products from decentralized intelligence via the organization's planning routines,

- Formal reporting of findings to the top management, and the
- Dissemination of findings to the (upper) management for implementation.

Decentralized intelligence is related to income responsible operational units. They cover strategic, technical and financial responsibility with regard to a certain product portfolio and, thus, have a market intelligence approach that is focused in terms of portfolio, customers and competitors. Their scope is therefore narrower than that of central intelligence, but the time horizon employed in their considerations ranges from short-term to long-term. Operational divisions are not primarily market intelligence departments, but benefit from the outputs of intelligence processes. Decentralized intelligence is produced from information or knowledge that is pushed into the organization or deliberately pulled. Methods used are:

- Information pushed into the organization, partly directly gathered from secondary sources,
- Information or knowledge additionally pulled e.g. in the course of meetings,
- Information consolidated with the help of software tools,
- Formal analytical methods or common-sense or pragmatic techniques, depending on the formality required,
- Group discussions as interpretative method,
- Dissemination to the decision maker(s), integration of formal and informal dissemination modes,
- Escalation of prominent intelligence topics for inclusion into central market intelligence via formal planning routines.

Analysis and interpretation are conducted using more common-sense or pragmatic techniques such as thematic clustering or chronological ordering. The interpretation of information is often implemented as group evaluation in order to include opportunities for triangulation. A cross-departmental integration of intelligence is often limited to organizational sub-groupings. Dissemination happens formally and informally, which pushes intelligence throughout the organization. Management may assume an amplifying role, that allows for an integration of both modes of dissemination. In addition, decentralized intelligence will secure escalating prominent topics, that may influence the

entire organization's competitiveness, into a central unit, via e.g. regular and formal planning routines.

The third pillar of market intelligence is an informal one and is implemented in the form of networks and network-based intelligence communities. Participants often focus on specific aspects of the business including particular clients or market regions, projects, or products and technologies. Informal structures are applied to remain up-to-date with regard to latest developments from the external operational environment, make sense of them and apply newly constructed intelligence for more reflective and thoughtful actions and decisions. Although networks are not new in market intelligence theory (Lichtenthaler, 2004), plant building introduces a new aspect. Long-term relationships favour the development of communities of practice, which emerge from networks based on such criteria as expert knowledge, trust, sympathy and geographic proximity. In inter-departmental communities, process steps, such as information gathering, analysis and interpretation or intelligence dissemination, may be substituted by terms such as information and knowledge exchange, evaluation and intelligence communication. Such steps are often integrated with each other, allowing for immediate progression of intelligence findings to utilization in managerial tasks. The process is described as multidimensional and iterative. Main methods of informal market intelligence are:

- Information, intelligence and knowledge exchanges among participants, including synthesis and triangulation aspects, as personal and community processes,
- Common-sense or pragmatic methods in analysing information,
- Discussion, storytelling and joint evaluation,
- Producing conclusions and implementing findings in personal work,
- Communication of findings throughout networks,
- And in part, transfer of informal intelligence for use in formal intelligence contexts by participants themselves.

The framework established here, allows for an integration of different outputs of different intelligence approaches. Whereas a formal and cross-departmental integration happens mostly on a central market intelligence level, informal intelligence approaches enable an organization to expand intelligence integration. This is advanced by the conclusion that the three pillars work as communicating vessels. Participants, becoming aware of the variety of

intelligence outputs available to them, may integrate and refine their views in the course of intellectual and group processes. Networks and communities are used in such processes of integration and dissemination as well, and so imply their own routine of integration. They serve their members as to increase their overall stock of knowledge, and to refine the understanding as to the operating environment.

The integration of intelligence dissemination modes, formal and informal is a management task mainly. Upper managers make available central market intelligence that is available to them on grounds of their hierarchy to lower-ranking employees. Their amplifier position allows to further enhance the diffusion of intelligence throughout the organization.

Apart from tangible outputs of market intelligence, which are related to individual pillars, a number of *results* are established in this study. Intelligence may stimulate learning processes, especially if a need for change is detected by the participant. Reflective processes resulting from intelligence produced and discussed, may lead to identifying the need for change. Best practice transfers may also be facilitated in the course of intelligence operations, possibly leveraging synergies. The latter are related to knowledge sharing, which happen in the course of information evaluation, especially, when storytelling is used as a method. Stories can base on personal successes of participants, and display effective techniques applied in similar contexts. It has furthermore been revealed that market intelligence may result in the creation of new knowledge that is guided by market needs.

#### 6.2.2 Differentiating plant building market intelligence from models of literature

Although other concepts of market intelligence exist and have been discussed in the literature review (see section 2.5.1), the concept constructed in the course of this study differs from the ones proposed so far. Differences among concepts may in part be explained as relating to the idiosyncrasies of the industry. The three most important existing models are re-visited below, in chronological order, as to present the differences to the concept established here.

Quinn (1985) differentiates between four fundamental types of market intelligence: the dedicated central unit, inclusion within a central group function, decentralization to operational divisions and diffusion throughout the company. As already discussed, the first two types are, from a practical perspective, mutually exclusive. Companies either have a

dedicated central function (for market intelligence) or attach the central intelligence function to a central department (e.g. the strategy department). Furthermore, Lichtenthaler (2004) explains that few dedicated intelligence units exist in practice. Therefore, the framework established in this study, with its three pillars, appears to reflect current industry's practice more accurately. In addition, diffusion throughout the company is characterized by an overreliance on personal networks. Personal networks, as has been argued in this thesis, are primarily appropriate in the exchange of information and intelligence. The complexity of plant building, forces to focus on the *construction* of intelligence, whereby the latter is implemented using inter-departmental communities. Communities are better suited for the active construction of intelligence, due to the prolonged engagement of members with particular topics of plant building. Participants, therefore, become experts in specific topics and so valuable partners in discussing and evaluating new topic information.

In Lichtenthaler's (2004) model on technology intelligence, the inclusion of an informal intelligence approach is established, which is also the case in this study. However, in his study the differentiation between structural and hybrid intelligence, is considered to be a distraction. Rather than continuous (structural) and project-based intelligence (hybrid), central and decentralized intelligence, have been identified in this study. The latter is, from a practical perspective, consistent with the organizational set-up of many plant building companies today, as they implement central departments for overall corporate processes, as well as, operational divisions (business units) for particular product portfolios. Therefore, the concept established in this study, prefers central and decentralized intelligence to structural and hybrid intelligence.

Lichtenthaler's (2004) informal intelligence approach focuses on the coordination of informal intelligence. It has not been determined yet, whether such informal approaches can be *managed* or *coordinated*. Rather, this research has shown that informal market intelligence approaches can be nourished or indirectly promoted. Examples given by participants were allowing for time resources at the discretion of people employed, providing locations for open communication, and training in order to instruct participants on intelligence theory and practice. Furthermore, and as already criticized in Quinn's model, Lichtenthaler (2004) supports the implementation of networks in informal intelligence. The concept presented here, focuses on the creation of intelligence which includes communities of practice. This differentiation, reflects more rightfully current industry practices.

Kerr et al. (2006) in their conceptual model on market intelligence, put great emphasis on information gathering, which they explain in their system level. Apart from this overreliance on information and information searching modes (Kerr et al., 2006, p. 80; Mortara et al., 2009, p. 118), rather than on the construction of intelligence, their intelligence framework relates largely to the intelligence cycle. It has been found here that the intelligence cycle is of limited use in approaches other than central market intelligence. The reason for this may be, that Kerr et al. (2006) focus on technology intelligence, which may be seen as forming part of a wider market intelligence concept (Jenster and Soilen, 2009), and is often used to provide evidence for strategic decisions.

### **6.3 Justifying Communities of Practice**

The case study identified communities of practice, as being a central component of informal market intelligence approaches. Some participants identified these structures by referring to them as communities of practice (Participants 3 and 4), other participants referred to them as informal groupings. This difference in terminology does not mean that the latter participants did not identify them as communities, but rather signals that they are not acquainted in a theoretic way with this particular phenomenon.

A community of practice (CoP) is, according to Jean Lave and Etienne Wenger (1991), a group of people who share a craft and/or a profession. The common interest in a specific field is the reason for the creation of a community of practice. Most often these communities will evolve naturally. It is through the process of sharing information and experiences with the group, that the members learn from each other, and have an opportunity to develop themselves personally and professionally (Lave and Wenger, 1991).

Although communities of practice originate from the field of knowledge management, they are applicable and useful in market intelligence operations too. Drott (2001), among other researchers, notes that conventional models for market intelligence do not adequately integrate personal information, often mixed with personal knowledge, as a factor that stimulates market intelligence processes. Competitive information, when acquired by individuals in social events is often mixed with personal knowledge. This is then subject to further evaluation and determination of action. Organic strategies, such as communities of practice, allow for active sharing, evaluation and development of newly received information and knowledge, as they are not bound by the database paradigm. In addition,



they support in the evaluation when storytelling is implemented, thereby, possibly promoting knowledge sharing.

The reason why such structures may be referred to communities instead of, for example teams or communities of interest, lies in the definition of communities of practice (Lave and Wenger, 1991). The following characteristics have been described:

- Often organically created, with as many objectives as members,
- Existing, as long as, the members believe they have something to contribute to it, or gain from it,
- Members are active practitioners,
- Membership depends on expertise,
- The purpose is to provide a way for practitioners to share, ask questions and provide support for each other.

An additional characteristic particular to intelligence communities, that surfaced from the data collected, is that of relationship. The latter may be connected to the sensitivity of parts of the information involved in market intelligence affairs. In addition, relationship supports community members as it allows for a pre-assessment of the kind of contribution and the quality that can be expected from other (potential) members. Although April and Bessa (2006) introduce an example of communities of practice (see section 2.3.7.8), they relate them to learning *from intelligence already produced*. In this study, it surfaced that intelligence communities are suited to engage in the *construction* of intelligence, and benefit from it in form of learning, reflection and action.

#### **6.4 Re-integrating the Findings with the Literature**

Re-integrating the findings obtained from the case study with the theoretical knowledge base was a delicate and difficult task. The reason is, that both concepts, the initial and the refined framework, are substantially different. The technique applied is described as iterative and pragmatic, alternating between the initial and the refined conceptual framework. Therefore, primarily individual aspects of market intelligence are addressed here, as the initial framework refers primarily to formal, and therein especially to central intelligence.

The definition of intelligence needs was found to be comprehensively covered by the literature. The suggestions from the literature are clearly tuned into the needs of formal intelligence modes. For informal intelligence approaches, the case study clearly establishes the need for a more iterative, less process-based approach. It is related to an ongoing critique and learning process in terms of priorities and intelligence needs used to redefine and sharpen developed understandings. In addition, and essential for all three intelligence approaches, is the integration of the project as a key constituent of plant building market intelligence, which has to be reflected in the course of developing and refining plant building intelligence needs.

The sources of environmental or competitive information are also comprehensively covered by literature. Internal sources are confirmed by the case study, as being the most valuable ones in terms of input factors to an intelligence system. However, the statement by Le Bon and Merunka (2006), who identify sales people as a primary source of competitive information can only in part be affirmed. In plant building, additional people are seen as useful sources of competitive information, due to the direct sales set-up and the complexity inherent to the business. Murphy's (2005) statement, that every member of an organization should be on alert for useful information gains additional importance in this context. This promotes approaches implementing inter-departmental coordination.

The collection strategy was found to be widely studied in literature. The main downside of theory is, that it gives a plethora of (questionable) recommendations for information gathering, lacking reasoning for how to implement them. Direct gathering strategies were found to be comprehensively studied. Indirect strategies are capable of improvement. Calof and Skinner (1998) also agree, that internally available information is the most valuable, and Vuori (2006) found that these resources are underutilized. The most valuable methods of indirect personal strategies were found to be:

- Meetings in order to push information or pull additional information,
- Written information such as trip reports or memos to push information,
- Oral information in personal or telephone conversations for clarification, and
- Software applications aggregating competitive information.

Other suggestions such as multi-departmental meetings, as suggested by literature, are mainly used in central or informal intelligence modes. Recommendations such as indexed lists of knowledgeable employees were declined by the participants of the study with the hint that such items are useless in corporate reality. Interviewing is mostly used in central intelligence modes and less frequently in other intelligence approaches, where interviews tend to be replaced by meetings implementing discussions and conversations. The general conclusion is, that the strategies of information gathering depend upon the intelligence approach employed. These may differ as the general characteristics between centralized, decentralized and informal intelligence approaches differ (see section 6.2).

Analysis and interpretation provide a framework that converts information into intelligence. These terms were found to be tuned into the needs of formal intelligence, and especially towards the use in central intelligence approaches. The findings from the case study suggest, that meetings hold a prominent position in the analysis and interpretation of information. Especially, information from the micro environment of an organization needs to be analysed by experienced managers and employees, favouring the inclusion of several persons to such analysis meeting. Formal techniques such as SWOT or PESTLE are used in formal, strategic fields, where intelligence is produced for use by top-management. In less formal modes, group discussions and pragmatic methods may replace these aforementioned techniques. Again multi-departmental approaches were related to a greater extent with informal intelligence approaches. This congruency was not perceived in the literature to the same extent, as literature mostly follows the intelligence cycle, thereby missing on opportunities to develop sophisticated methods in line with the preferences of particular approaches.

An interesting insight is, that managers who take part in informal, inter-departmental communities, may use the insights gained in such informal structures as input, in order to balance formal analysis and interpretation processes with additional (background) information. Participants preferred the term evaluation in more informal intelligence approaches, which is related to the informality in terms of analytical techniques, and the higher importance of more pragmatic techniques. Informal approaches instead use storytelling, among other ways, to support and compare new information with existing knowledge. Expert analyzers or indexed list were again refused by participants. Summarizing, analysis and interpretation resembles the state of information gathering, and

different methods may be applied in line with the market intelligence approach adopted (see section 6.2).

Products and services from market intelligence operations were found to be well-studied in literature. The term products and services was, however, found to be inadequate, and the term results of intelligence has been preferred here. This relates to the many intangible results that intelligence activities may produce, such as developing a reflective stance as a result from constructing intelligence with other managers, or learning processes triggered by intelligence and reflection on intelligence. Even knowledge may be created on the basis of intelligence activities, which is seen as highly useful, as considerations from the market place guide this activity.

Dissemination of intelligence is another area where different terminologies may balance the concept developed. Intelligence reporting is related to top-management receiving topical intelligence, dissemination was preferred in more formal contexts, such as sending reports and presenting intelligence findings in the course of meeting. Informal dissemination of intelligence was often referred to as communicating intelligence, thereby allowing a two-way conversation. In two-way conversations, findings may be challenged, additional information needs identified and new views developed. Integrating formal and informal dissemination modes has been mentioned in literature as being a topic for improvement. Participants argued for management assuming an amplifying role. The latter role may additionally push market intelligence into the organization, and allow a manager to formally and informally spread important findings to employees in need of such information. The amplifying role of management is supported through their access to central and strategic intelligence, that may not be accessible to other employees.

## **6.5 Mapping the Contributions to Knowledge**

### **6.5.1 Assessing the effectiveness of this research**

In determining the effectiveness of this research, reference is made to table 1 already presented in the introduction. This table holds the main objectives and related sub-objectives and is the basis of an assessment. The individual objectives and sub-objectives have been linked with references to individual sections throughout this thesis, where particular objectives have been arrived at and presented.

Table 17: Overview on the achievement of individual objectives and sub-objectives

| No. | Objectives and sub-objectives   | Reference to section |
|-----|---|----------------------|
| 1   | Elaborating an initial conceptual framework on industrial market intelligence as a starting point for investigation | 2.4                  |
| 1.1 | Integration of the fragmented state of research   | 2.3.7                |
| 1.2 | Highlighting weaknesses and contradictions in existing knowledge  | 3.2.2                |
| 2   | Proposing a valuable definition for market intelligence   | 6.6.5.2              |
| 3   | Refined conceptual framework on plant building market intelligence  | 6.2                  |
| 3.1 | Addressing weaknesses and contradictions in existing knowledge  | 6.5.3, 6.5.4         |
| 3.2 | Conceptual framework for plant building   | 6.2                  |
| 4   | Contribution to knowledge   | 6.5                  |

The main objective of this thesis was to develop and establish a refined conceptual framework for plant building market intelligence. This was related to two sub-objectives, firstly, addressing the weaknesses and contradictions found in literature, and, secondly, developing a concept that is designed to fit the industry's peculiarities.

#### 6.5.2 Reviewing the initial conceptual framework and addressing the weaknesses of literature

The suggestion by Drott (2001), that a new view on market intelligence is necessary, as the intelligence cycle cannot comprehensively address a complex phenomenon as market intelligence, is supported by this research. This insight is confirmed when comparing initial and refined concepts (see figures 13 and 22).

The weaknesses of literature comprise primarily those aspects of market intelligence where the general body of managers is required to participate. This was confirmed upon construction of the refined conceptual framework. Section 6.2 establishes the three pillars concept of plant building market intelligence, and includes a limited number of methods and techniques of how to implement them. This limited amount is related to a statement by Vuori (2006) who maintains that the plethora of, partly contradictory, recommendations may hinder managers from implementing a market intelligence process within their organization.

### 6.5.3 Answering the research questions

Table 18 presents the detailed research questions, that originated from the initial framework. They related to aspects considered contradicting or in need of improvement. Each question is discussed separately below and answers are given based on the findings of the case study.

Table 18: Detailed research questions initially posed

| No. | Description of question   |
|-----|---|
| 1   | How do plant building managers gather and share competitive information?  |
| 2   | How do plant building managers analyse and interpret competitive information?   |
| 3   | How is market intelligence disseminated informally?   |
| 4   | How can a market intelligence framework for the plant building industry be re-conceptualized in order to add value to the knowledge base of the organization? |

With regard to question one, the central intelligence approach implements formal methods mainly, such as interviews, surveys, commissioned research. These represent a blend of indirect and direct gathering strategies, and are often supported through data originating from internal software applications. An array of different sources of data is preferred. *Indirect gathering*, which formed the core interest when formulating the question, is often integrated when using the interview method.

In decentralized intelligence a combination of direct and indirect gathering strategies is also used, although in terms of direct gathering, secondary material is often preferred. *Indirect gathering* methods tend to be less formal than in central intelligence and are often implemented during meetings. The latter also represent a method to additionally pull information from employees and managers. Commissioned market research is used to a lesser extent, and may provide for additional data in areas, where there is a (perceived) lack of internal information present.

In informal intelligence, the focus is mainly on *indirect gathering strategies*. Due to the expert status participants, gathering is replaced by information and knowledge exchanges. Exchanging, rather than gathering, relates to a situation where all of the participating members possess a thorough knowledge on the situation to be investigated. The latter may not always be the case in other approaches, especially in central intelligence.

Question two addressed the topic of analysis and interpretation. Again, the three different approaches have preferences for particular methods and techniques. Central departments analyse and interpret data employing formal methods such as PESTLE or SWOT. In decentralized intelligence approaches, formal methods are implemented especially in cases where the intelligence produced is to be transmitted to a central department, on grounds of general importance. Such formal techniques are complimented or even replaced by pragmatic techniques especially if the intelligence produced is to remain within the operational division. Departmental meetings are often used to jointly analyse and interpret competitive information. Usually two or more managers or specialists are included, due to complexity prevailing in many topics of investigation. *Micro environment information* is especially complex, and multiple knowledge bases are used in the course of evaluation. Inter-departmental intelligence communities may rely solely or mostly on common-sense or pragmatic techniques, including storytelling. Communities often implement evaluation in the form of discussions, which are also used for *micro environment information*, and for particular topics.

The topic of dissemination was implemented as the third question, and includes formal and informal aspects. Central units usually apply formal modes, *reporting* of findings to the (top) management and *formal dissemination* of intelligence to (upper) management. In decentralized intelligence a combination of formal and informal dissemination may be observed, with the management often acting as an amplifier and so allowing for aspects of personal communication to be included. The latter is considered as a method to integrate formal and informal dissemination of intelligence. The informal pillar of market intelligence makes use of informal *communication*, thereby allowing intelligence to diffuse throughout the company.

The fourth question is answered in the narrative summary, as well as in the diagrammatic model (see section 6.2) and presents the re-conceptualization of the market intelligence framework for the plant building industry. Due to the idiosyncrasies related to the industry at hand, this concept is different to the originally constructed one. The three different approaches in market intelligence privilege the implementation of particular methods and activities. It is therefore an industry-specific advancement and contribution to knowledge, but also, due to concise and empirically grounded recommendations, for managerial practice.

#### 6.5.4 Integrating major criticism from the literature

Criticisms with regard to existing intelligence concepts have been discussed in section 2.5.2, they are reviewed here for their significance to the final concept. Wolter (2011, in Keuper et al., 2011) argues, that organizations need to form integrated analysis frameworks and agrees with Mortara et al. (2009), who suggest that organizations deploy social networks to maximize intelligence outreach. This claim can be supported as the analysis has shown that a combination of different integrated intelligence approaches, based on organizational structures and social networks (*organic strategies*) are designed to maximize the outreach of intelligence. Furthermore, the refined framework implies a notion of permeability among the three different approaches, to support the maximization of intelligence diffusion throughout a company.

Stauffer (2003) proposed, that effective market intelligence builds on the tenets of knowledge management, and adds to this, that market intelligence has to be connected at many different levels of the organization; this supports Bose (2008) who requests, that the market intelligence programme should not be distinct and isolated, but incorporated in the entire organization. The three pillars model integrates a knowledge management perspective, by implementing communities of practice and storytelling, and furthermore connects market intelligence to the entire organization through its deliberate inclusion of both formal and informal market intelligence approaches. This concept eliminates problems associated with the database paradigm (Drott, 2001) due to its adequate representation of personal information and knowledge as an input factor to market intelligence processes.

Drott (2001) sees the issue of market intelligence as a knowledge management issue too, and proposed that market intelligence is to stimulate the exchange of information and knowledge among organizational members, with a connection to learning processes. The incorporation of informal market intelligence activities is considered as an explicit way to include the exchange of knowledge and information exchange, again, not bound by any database paradigm. A connection to learning processes has been established and presented in the analysis. Drott (2001) states that a new view on market intelligence information is necessary. This refined framework (see section 6.2) implements a new view, by implementing empirically grounded data and reflection on existing models.



## 6.5.5 Detailing the contributions to knowledge

### 6.5.5.1 Summary of contributions

The following contributions to knowledge have been achieved in the course of this research work:

- (1) Proposing more comprehensive definition for market intelligence,
- (2) Integrating the fragmented state of research by using a systematic review strategy for the first time,
- (3) Undertaking the first case study on plant building market intelligence, leading to a refined conceptual framework on plant building market intelligence,
- (4) Introducing communities of practice and storytelling, as essential components of an informal market intelligence approach,
- (5) Relating effective market intelligence activities with additional results, such as reflection, respectively reflective processes, as well as, knowledge creation, and
- (6) Adding *project intelligence* as a fifth building block to the scope of plant building market intelligence.

### 6.5.5.2 Proposing a new definition for market intelligence

The first contribution made in the course of this thesis was to propose a more comprehensive definition for market intelligence. Several definitions were screened in the course of scoping studies, with one of the most popular definitions in use, being the one by the Global Intelligence Alliance(2008; see page 22). The new definition allows to better understand the scope and reach of market intelligence, as well as, its purpose. It includes now the issue of dissemination, as well as, the micro environment. Market intelligence is defined now as follows:

*“Market intelligence is a distinct managerial discipline by which organizations systematically gather and process information to produce and disseminate intelligence about their external operating environment. This may include elements and items from the macro and micro environment in which the company operates. The purpose is to facilitate accurate and confident decision making, by challenging existing experiences and intuition, as well as to support planning activities.”*

#### 6.5.5.3 Integrating the fragmented state of research

Another contribution to knowledge is the integration of the fragmented state of research into an initial framework, conducted from systematically reviewing the literature. The reason for adding the integration of the fragmented state of research to the list of contributions was, that this integration was undertaken using a *systematic* review. This approach has apparently not been implemented in earlier theoretic frameworks. This contribution finds its expression in figure 13, which includes main contributions of individual studies. The fragmented state of research is a problem in the study of market intelligence, this thesis may therefore support future research, not only in the field of plant building, but also other in industrial contexts.

#### 6.5.5.4 A refined conceptual framework for plant building market intelligence

Providing industry-specific concepts in terms of market intelligence is an important activity according to Trim and Lee (2006) and Mortara et al. (2009). As it was not possible to locate any plant building-specific market intelligence concept in the literature, the refined conceptual framework is considered not only the overarching objective of this thesis, but logically, also its main contribution to knowledge. The framework concept is included in section 6.2

#### 6.5.5.5 Communities of practice and storytelling

Informal intelligence approaches have already been disseminated in the literature (Lichtenthaler, 2004). Quinn (1985) refers to this strategy as diffusion throughout the company, Lichtenthaler (2004, p. 124) prefers to “steer and stimulate autonomous intelligence behaviour”. This research provides answers by locating an informal market intelligence approach within the realm of the framework concept, and describing such behaviour, as network-based intelligence communities. This puts this specific pillar of market intelligence in close connection with knowledge sharing, reflective and learning processes and action. Lichtenthaler (2004) suggests the creation of informal networks through intranet platforms. In contrast, this research has shown the importance of communities in the *construction* of intelligence, and differentiated them from networks which support the exchange and diffusion of information, knowledge and intelligence. It is imperative to, firstly, identify the social analysis framework and parameters, that it requires (relationship, experience, participation) in order to design a technological strategy, that commensurates with it. Developing a critical stance to Lichtenthaler’s (2004) model,

includes criticizing his recommendation of implementing intranet platforms to steer informal intelligence activities. It remains questionable whether it is possible to stimulate or coordinate such behaviour, as mentioned (Lichtenthaler, 2004).

Although April and Bessa (2006), in their paper on MI and a global energy multinational organization, write about a community of practice used for *learning from intelligence* and implementing insights of market intelligence into R&D; thus, the idea of using communities of practice in the construction of intelligence is considered a contribution to knowledge. This contribution brought forth that, storytelling is considered a main method used in the construction of intelligence. This particular method provides a way to precisely describing intelligence approaches.

#### 6.5.5.6 Relating effective market intelligence with additional results and outputs

Market intelligence results, apart from intelligence products to be used in planning and decision making, are poorly portrayed in literature. By engaging in market intelligence, and through the use and exchange of knowledge in the evaluation of competitive information, best practices may be shared and synergies used. Market intelligence may not only result in learning processes (as described already in the literature), but specifically result in reflective processes, that may improve decisions and actions of managers. One example of knowledge creation has additionally been described, which indicates, the idea that market intelligence may favourably influence knowledge production and/or learning processes in a direction, that is appreciated by the market.

#### 6.5.5.7 Adding project intelligence as a fifth building block

The importance of the project is specific to plant building, which largely revolves around project business (see section 1.4.1). Since plant building market intelligence has not been discussed in the literature so far, it comes of no surprise that the *project* has not been included as a building block in the scope of market intelligence (see Figure 3). The inclusion of projects, along with markets, customers, competitors and products or technologies, is justified, as well as, that of becoming a part of the scope of market intelligence in plant building.

#### 6.5.6 Contribution to managerial practice

Apart from the contribution to knowledge, this study has produced contributions to managerial practice. These are related to individual methods, that can be used in the three approaches, referred to as pillars of market intelligence. The plethora of recommendations, given by the literature for specific processes within market intelligence, has been mentioned, as a major drawback in the implementation of this managerial concept in companies (Lichtenthaler, 2004; Vuori, 2006).

The summary of the refined conceptual framework focuses on limiting the number of recommendation in terms of quantity, and to disseminate such activities that are in line with the preferences of the respective approach employed (see section 6.2). This contribution, therefore, places emphasis on few, but concise recommendations, for managers interested in implementing market intelligence in their organization.

### **6.6 Providing a Justification for the Data**

Providing checks and balances throughout the research process is important in order to maintain acceptable standards of scientific enquiry (Bowen, 2005), consistent with quality (see section 3.6). In addition to trustworthiness, which is the main quality construct the study is assessed for, two other key aspects were addressed, rigour and quality (Golafshani, 2003; Bowen 2005). Rigour, followed throughout the research process, culminated in describing and arguing the assumptions governing this work, as well as, methods chosen and employed. Furthermore, rigour may also be related to disclosing and detailing coherent decisions and processes throughout the research. Yin's (2009) recommendations with regard to quality have additionally been implemented throughout this work. He recommends documentation of individual research steps, a storage concept and a study database, leading to a comprehensive and transparent chain of evidence.

#### 6.6.1 Establishing trustworthiness

In section 3.6.4 it has been argued that the basis for assessing trustworthiness, is related to operationalizing four concepts:

- Credibility (in preference to internal validity),
- Transferability (in preference to external validity/generalisability),
- Dependability (in preference to reliability) and

- Confirmability (in preference to objectivity).

In terms of credibility the following provisions have been implemented within this research: (1) a prolonged engagement of the author in the field supported by the employment status, (2) adoption of research methods established in qualitative investigation, (3) tactics to help ensure honesty of the informants (e.g. giving each person who is approached the opportunity to refuse participation), (4) peer debriefing, (5) iterative questioning. Furthermore, (6) the qualifications and experiences of the investigator (credibility of the person conducting the research) can be reviewed in the curriculum included in this thesis. (7) An examination of previous research findings have been incorporated in the theoretical part of this thesis.

Transferability is based on (1) detailed (rich) descriptions provided by the researcher. Furthermore, (2) additional contextual information was made available to the reader, especially the number of organizations taking part in the study, the number of participants involved, data collection methods employed, as well as, the number and length of collection sessions and the time period over which the data was collected. The latter information may be obtained from table 12 and 13. Transferability is furthermore supported through (3) the diversity of participants.

Dependability has been operationalized, using a (1) systematic and comprehensive research design, (2) providing details of data collection, analysis and interpretation, as well as, (3) including a reflective appraisal of the project – i.e. evaluating the effectiveness of the project (see section 6.5.1). The main technique for establishing dependability, as well as, confirmability is through (4) audits of the research process and the findings. One form of opening a research project to external audit is through implementing a peer debriefing. This has been undertaken together with detailed (5) documentation of the data handling process, and (6) explanations why certain methods were chosen or preferred, when others could have been selected.

#### 6.6.2 Reviewing implemented measures to establish trustworthiness

The criteria and the measures were designed to present a convincing case based on academically sound work (Shenton, 2004). The case study employed a total of fifteen measures to support trustworthiness (Bowen, 2005). The description of the individual operational measures is presented in table 19.

Table 19: Determining the trustworthiness of the research

| Tests  | Description of operational measures  | Reference to section             |
|--|--|----------------------------------|
| Credibility (in preference to internal validity)     | Well established research methods, used in previous similar projects                                 | 4.91 und 4.9.2                   |
|  | Development of an early familiarity with the community under investigation                           | Employment history of the author |
|  | Triangulation from using multiple sources of evidence  | 5.2.2 and 5.2.3                  |
|  | Peer debriefing  | 5.9                              |
|  | Examination of earlier research on the subject under investigation                                   | 2.3.7                            |
|  | Tactics to improve the honesty of participants   | 3.5 and 5.2.2                    |
|  | Include quotes from participants into the analysis in order to show <i>what has really been said</i> | 5.5                              |
| Transferability (in preference to external validity) | Providing rich descriptions  | 5.5, App. 4, 6 and 7             |
|  | Detailed contextual information about data collection  | 5.2                              |
|  | Diversity of participants is related to triangulation  | 5.2.2                            |
| Dependability (in preference to reliability)         | Comprehensive research design  | 4.2                              |
|  | Detailed data gathering operations   | 5.2.2                            |
|  | Reflective appraisals evaluating the effectiveness of inquiry processes                              | 6.5                              |
| Confirmability (in preference to objectivity)        | Methodological and methodical descriptions   | 3.3, 3.4 and 3.6                 |
|  | Admitting personal predispositions   | 2.5.3 and 3.2                    |
|  | Peer debriefing  | 5.9                              |

## 6.7 Limitations of the Research Findings

It is suggested, that the results of case study research are transferable beyond the immediate study itself. This question is furthermore related to the question of representativeness. Although the latter cannot be answered in the context of this study, as there is no way of how representativeness can be measured in this approach, provisions have been made in order to ensure transferability. One of the main measures was to include participants with diverse backgrounds. This diversity is expressed in terms of organizations, nationalities, age, managerial hierarchy and job families.

The fact, that a relatively small number of organizations and participants were used in this study does not mean that the findings are not transferable to the entire plant building industry. Asked with regard to transferability, most participants affirmed that the findings the interviews produced were transferable to the entire plant building industry. Some participants were not able to answer the question.

Limitations or potential limitations exist twofold: firstly, it was mentioned by one participant, that the findings could even be transferable to the entire capital goods industry. Although this statement is conceivable, because most of the plant building peculiarities are at the same time characteristics of the wider capital goods industry, it could not be verified in this research. Most participants were unable to judge such a statement, due to lacking expertise. Nevertheless, it might be possible to integrate this study with future studies on different sectors of the capital goods industry to form a larger conceptual framework on capital goods market intelligence.

The other limitation is that of culture. Participants thought that findings of such a study might not be transferable to cultural regions substantially different to the European plant building industry. This European perspective is nurtured through the fact, that even those participants originating from outside Europe, are, due to their prolonged employment in Europe, considered *cultural Europeans*. This was confirmed when individual interviews yielded similar overall pictures. This is a thought that is shared in principle by Mokhtar et al. (2009), who performed studies on cultural differences in market orientation (see section 1.3.4). As stated in section 5.5.1.6, this is reflected in the overall title of this work. Studies on market intelligence in different cultural or geographic areas of the world may become important with increasing globalization of the plant building industry.

## **6.8 Suggestions for further Research**

The above mentioned limitations lead to suggestions for further research. Validation or testing of this newly formed theory on plant building market intelligence is a central suggestion for subsequent research. It was not formulated as a research objective, and so, was not undertaken in the course of this research work. Testing the generalizability of the framework concept established here may include a more extensive and quantitative survey including additional organizations, and additional sectors of the plant building industry.

Further developing network-based communities by including a technological strategy is another suggestion for future research. This implies complementing the organic strategy established in this research, with a technological strategy. Latest developments and achievements in the IT sector make such strategies possible or possible in the near future, and could support inter-departmental coordination within organizations.

This would be in line with the trend of formalizing business processes as the more informal market intelligence operations that are performed throughout companies would become visible and traceable. Technology platforms would enable analysis of information and intelligence with growing opportunities as a result of software development. A prominent issue here is the development of intelligent algorithms by internet browsing firms. Such technological solutions would fit with the multinational corporate reality in plant building and, thus, allow including more regional-based intelligence that is produced locally in the respective market, for example, regional units or affiliated companies of plant builders. Participants spoke in favour of having networks and communities developed over the entire global organization, enabling additional pulling of information.

The suggestion to research further on technological strategies to generally complement organic approaches, as outlined in this research, is a position that has apparently already received some attention. Past (2012) presents web 2.0 applications that may favour the development of improved technological strategies through the implementation of platforms, that integrate social and computer networks. Microblogging technologies may allow for successful implementation of communication strategies where additional need for communication and inter-departmental coordination is necessary (Past, 2012). Although these recommendations originate from outside the plant building industry, they are considered to form an additional request for future research. This is in line with an integration of organic and technological strategies.

## **6.9 Concluding Remarks**

The world of business is becoming ever more complex and a successful level of operations is becoming harder to reach and defend. Alan Weber, a renowned US trend and innovation researcher, thinks that the most dangerous situation that a company may find itself in, is one where a certain level of successful operation has been reached (Sprenger, 2011). This can lead to inflexible patterns of thought and changes in the environment not being realized quickly enough. Möchel (2011) confirms in an article on decision making that managers are



faced with an increasing number of decisions to be taken. In a survey that she uses as the basis for her arguments, managers are not only worried about the quantity of decisions, but relate their concerns also to the reduced time available for making them, and lacking data and facts to support grounded decisions (Möchel, 2011). Using experience is, therefore, a delicate tool, as experience relates to using successful patterns of the past to be applied in newer situations. Guts' feeling is, so she argues, easily confused with experience and routine and may favour wrong decisions (Prazak, 2011).

Continuous and effective market intelligence may support reflection through purposefully including latest information from the external operating environment, by using several persons with their distinctive knowledge bases and backgrounds, for inclusion into evaluation and decision making processes. It challenges managers to think about issues in different ways and provides valuable insights, especially when the process implements open debate and discourse of current and future issues. An increasing number of companies are implementing market intelligence systems today, others are increasing their budgets with regard to market intelligence (Global Intelligence Alliance, 2008), also as a consequence to aforementioned trends.

Numerous studies have argued the effects of market intelligence: support in strategizing and general planning, product development, as well as, sales and exports, strengthening of customer relations, to name a few. But, market intelligence approaches differ significantly from each other. Organic strategies, that eventually culminate in using social networks resources and focus on information and knowledge exchanges, is an approach that enables managers to use market intelligence as *methodology of practice*. This approach together with central and decentralized market intelligence approaches, may increase the probability of managers taking reflective decisions and thoughtful actions. As already indicated in literature, a comprehensive system, spanning the entire organization enables

- The exchange of information and share knowledge,
- Connects to learning processes,
- Looks beyond computerized databases, and
- Employs integrated analysis frameworks basing on social networks.

Learning and creating new knowledge are additional outcomes that are connected to effective and successful market intelligence activities. Communities of practice, which organizational members buy into, are powerful structures to refine learning processes into a direction that is actually provided by the operating environment. Riss (2012) argues in her article about learning behaviours of school children, that learning processes are inseparably connected to issues, that are relevant and important to participants. Inter-departmental communities are therefore well suited to provide this connection between intelligence, reflection, action and learning, as their participation is related to experience and relationship.

“Success has many fathers, failure is an orphan” is a popular saying. It is believed, that market intelligence is not a *silver bullet*. It can lead to success in business management, if employed effectively and consequently. It does promote a more reflective and critical stance as to business decisions and implementation of actions, as it purposefully integrates views, ideas and information from the operating environment and fosters a comprehensive approach to actions and their consequences. It promotes reflective thinking and re-thinking of established approaches, which forms the basis for continuous learning and improving. This is considered the real benefit of market intelligence.

## Bibliography

- Alhakimi, W., Baharun, R. (2009). A synthesis model of market orientation constructs toward building customer value: A theoretical perspective. *African Journal of Marketing Management*, 1, 43-49.
- April, K., Bessa, J. (2006). A Critique of the strategic competitive intelligence process within a global energy multinational. *Problems and Perspectives in Management*, 4, (2), 86-99.
- Attaway, M. (1998). A review of issues related to gathering and assessing competitive intelligence. *American Business Review*, 16, 25-35.
- AWARE (2009). *Competitor Analysis – A Brief Guide The Basic Principles of Competitive Intelligence*. Retrieved November 4, 2009 from <http://www.marketing-intelligence.co.uk/resources/competitor-analysis.htm>
- Berry, L. (1995). Relationship Marketing of Services – Growing Interest, Emerging Perspectives. *Journal of the Academy of Marketing Science*, 23, (4), 236-245.
- Beverland, M., Lindgreen, A. (2007). Implementing market orientation in industrial firms: A multiple case study. *Industrial Marketing Management*, 36, 430-442. doi: 10.1016/j.indmarman.2005.12.003.
- Bose, R. (2008). Competitive intelligence process and tools for intelligence analysis. *Industrial Management and Data Systems*, 108, (4), 510-528. doi: 10.1108/02635570810868362.
- Bowen, G. (2005). Preparing a Qualitative Research-Based Dissertation: Lessons Learned. *The Qualitative Report*, 10, (2), 208-222.
- Brereton, P., Kitchenham, B., Budgen, D., Li, Z. (2008). Paper presented at the EASE 2008 conference in Bari, Italy “Using a Protocol Template for Case Study Planning”. Staffordshire, England: Keele University.

- Bryman, A., Bell, E. (2007). *Business Research Methods*. (2<sup>nd</sup> Ed.). New York, NY: Oxford University Press Inc.
- Callingham, M. (2004). *Market Intelligence. How and Why Organizations use Market Research*. London, England: Kogan Page Ltd.
- Calof, J., Skinner, W. (1998). Competitive intelligence for managers: a brave new world. *Optimum*, 28, 38-43.
- Chiu, S., Tavella, D. (2008). *Data Mining and Market Intelligence for optimal Marketing Returns*. Oxford, England: Elsevier Inc.
- Creswell, J. (2009). *Research Design. Qualitative, Quantitative and Mixed Methods Approaches*. (3<sup>rd</sup> Ed.). Thousands Oaks, CA: SAGE Publications Inc.
- Crowley, E. (2010). A Market Intelligence Primer. *Pragmatic Marketing*. Retrieved November 4, 2009 from <http://www.pragmaticmarketing.com/publications/magazine/2/2/0402ec>
- Crowley, E. (2004, December). *Market intelligence versus marketing research*. Quirk's Marketing Research Review, Retrieved 4 November, 2009 from <http://www.quirks.com/articles/a2004/20041209.aspx?searchID=40935096>
- Denis, J., Depelteau, D. (1985). Market Knowledge, Diversification and Export Expansion. *Journal of International Business Studies*, 16, 77-89.
- Denyer, D., Tranfield, D. (2008). Producing a Systematic Review. In D. A. Buchanan & A. Bryman (Eds.), *The SAGE Handbook of Organization Research Methods*, (pp. 671-689). London, England: SAGE Publications Ltd.
- Denzin, N., Lincoln, Y. (2000). The Discipline and Practice of Qualitative Research. In N. Denzin & Y. Lincoln (Eds.), *Handbook of qualitative research* (pp. 1-32). London, England: SAGE Publications Ltd.

Deshpande, R., Farley, J., Webster, F. (1993). Corporate culture, customer orientation, and innovativeness in Japanese firms: a quadrad analysis. *The journal of marketing*, 57, 23-27.

Ding, L. (2009). Analysis on the competitive intelligence in business management. *Second International Symposium on Information 2009, Science and Engineering, Institute of Electrical and Electronics Engineers* (pp. 327-330). Piscatway, NJ: IEEE.

Dixon-Woods, M., Agarwal, S., Jones, D., Young, B., Sutton, A., (2005). Synthesising qualitative and quantitative evidence: a review of possible methods. *Journal of Health Services Research & Policy*, 10, 45-53.

Drott, M. (2001). Personal knowledge, corporate information: the challenges for competitive intelligence. *Business Horizons*, 44, 31-37.

Easterby-Smith, M., Thorpe, R., Jackson P. (2008). *Management Research: Theory and Research*. (3<sup>rd</sup> ed.). London, England: Sage Publications Ltd.

Eberle, F. (2008). *Lecture handout at the Montanuniversität Leoben: Industrieanlagenbau*. Retrieved March 2, 2010 from [http://wbw.unileoben.ac.at/wbw/wbwskripten.nsf/887ec92cfa76a684c1256c5a00490b88/4787f5ddea775ceec12573ef002c35fd/\\$FILE/Eberle%20Vorlesung%20Leoben%20Handzettel.pdf](http://wbw.unileoben.ac.at/wbw/wbwskripten.nsf/887ec92cfa76a684c1256c5a00490b88/4787f5ddea775ceec12573ef002c35fd/$FILE/Eberle%20Vorlesung%20Leoben%20Handzettel.pdf)

Eisenhardt, K. (1989). Building Theories from Case Study Research. *The Academy of Management Review*, 14, 532-550.

Eisenhardt, K. (1991). Better stories and better constructs: the case for rigor and comparative logic. *The Academy of Management Review*, 16, 620-627.

Fletcher, K., Wheeler, C. (1989). Market Intelligence for International Markets. *Marketing Intelligence & Planning*, 7, 30-34.

Flick, U. (2009). *An Introduction to Qualitative Research*. (4<sup>th</sup> ed.). London, England: Sage Publications Ltd.

Flyvbjerg, B. (2011). 'Case Study'. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research*, (4<sup>th</sup> ed.) (pp. 301-316). Thousands Oaks, CA: SAGE Publications, Inc.

Freshwater, D., Horton-Deutsch, S., Sherwood, G., Taylor B. (2005). *Resource paper: The scholarship of reflective practice*. Indianapolis, IN: Sigma Theta Tau International.

Retrieved January 15, 2010 from

[http://www.nursingsociety.org/aboutus/PositionPapers/Documents/resource\\_reflective.doc](http://www.nursingsociety.org/aboutus/PositionPapers/Documents/resource_reflective.doc)

Geraldi, J. (2007). Paper „*X-ray of plant engineering sector*“. Siegen, Germany: University Siegen, Management Internationaler Projekte.

Gerring, J. (2004). What is a case study and what is it good for? *American Political Science Review*, 98, 341-354.

Ghoshal, S. (1985, August). Master thesis „*Managing the Corporate Intelligence Function*“. Cambridge, MA: Massachusetts Institute of Technology, Sloan School of Management.

Global Intelligence Alliance (2004). White Paper “*Introduction to Competitive Intelligence*”. Location: n.a.

Global Intelligence Alliance (2006). White Paper “*Intelligence needs analysis*”. Location: n.a.

Global Intelligence Alliance (2008). White Paper “*Global Market Intelligence Survey 2008*”. Location: n.a.

Global Intelligence Alliance (2009). White Paper “*Worldwide Market Intelligence – From Firefighters to Futurists*”. Location: n.a.

Golafshani, N. (2003). Understanding Reliability and Validity in Qualitative Research. *The Qualitative Report*, 8, 597-607.

Gottwald, K. (2011). Großanlagenbau: Neue Konkurrenz aus China und Südkorea setzt etablierte Anbieter unter Druck. *Verband deutscher Maschinen- und Anlagenbau –*

*Arbeitsgemeinschaft Großanlagenbau (June, 2011)*. Frankfurt/Main, Germany: Verband Deutscher Maschinen- und Anlagenbau e.V. Retrieved September 14, 2011 from <http://www.vdma.org>

Gottwald, K. (2012). Großanlagenbau packt neue Herausforderungen an. *Verband deutscher Maschinen- und Anlagenbau – Arbeitsgemeinschaft Großanlagenbau (March, 2012)*. Frankfurt/Main, Germany: Verband Deutscher Maschinen- und Anlagenbau e.V. Retrieved May 7, 2012 from <http://www.vdma.org>

Gray, D. (2009). *Doing Research in the Real World*. (2<sup>nd</sup> ed.). London, England: Sage Publications Ltd.

Gross, M. (2000). Competitive Intelligence: A Librarian's Empirical Approach. *Searcher: The Magazine for Database Professionals*, 8, pp: n.a. Retrieved May 13, 2011 from <http://www.infotoday.com/searcher/sep00/gross.htm>

Guba, E., Lincoln, Y. (1994). Competing paradigms in qualitative research. In N. Denzin & Y. Lincoln (Eds.), *Handbook of qualitative research* (pp. 105-117). London, England: SAGE Publications Ltd.

Hare, K. (2008). Collaboration and Coordination of Competitive Intelligence Through Technology. *Competitive Intelligence eBulletin*, 1, (4), pp: n.a.

Hart, G. (1998). Knowledge management and competitive intelligence in Australia. *Journal of AGSI*, 7, 36-40.

Havenga, J., Botha, D. (2003). *Report "Developing competitive intelligence in the knowledge-based organization"*. Pretoria, South Africa: University of Pretoria. Retrieved April 15, 2011 from <http://archive.saoug.org.za/archive/2003/0312a.pdf>

Hedin, H. (2004). Introduction to Market Intelligence. *Global Intelligence Alliance*. Location: n.a.

Hendrix, J. (1996). Competitive Intelligence and Engineering Manager. *Competitive Intelligence Review*, 7, 69-74.

Hergert, S. (2010). Doktor der Wirtschaft. *Karriere.de, Das Portal von Handelsblatt und Wirtschaftswoche*. Düsseldorf, Germany: Handelsblatt GmbH. Retrieved October 8, 2010 from <http://www.karriere.de/mba/doktor-der-wirtschaft-10236>

Herring, J. (1999). Key Intelligence Topics: A Process to Identify and Define Intelligence Needs. *Competitive Intelligence Review*, 10, 4-14.

Hoepfl, M. (1997). Choosing Qualitative Research: A Primer for Technology Education Researchers. *Journal of Technology Education*, 9, 47-63.

Holstein, J., Gubrium, J. (2008). *Handbook of Constructionist Research*. New York, NY: The Guilford Press.

Hurley, R. , Hult, G. (1998). Innovation, Market Orientation, and Organizational Learning: An Integration and Empirical Examination. *Journal of Marketing*, 62, 42-54.

Jashapara, A. (2004). *Knowledge management: an integrated approach*. Essex, England: Pearson Education Ltd.

Jaworski, B., Kohli, A. (1992). *Report No. 92-104 "Market orientation: antecedents and consequences"*. Cambridge, MA: Marketing Science Institute.

Jaworski, B., Kohli, A. (1996). Market Orientation: Review, Refinement, and Roadmap. *Journal of Market Focused Management*, 1, 119-135.

Jenster, P., Soilen, K. (2009). *Market Intelligence Building Strategic Insight*. (1<sup>st</sup> ed.) Copenhagen, Denmark: Copenhagen Business School Press.

Jönsson, S., Lukka, K. (2005). *Report No. 2005:6 „Doing interventionist research in management accounting"*. Gothenburg, Sweden: Gothenburg Research Institute.



- Kasouf, C., Celuch, K., Strieter, J. (1995). Consumer Complaints as Market Intelligence: Orienting Context and Conceptual Framework. *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, 8, 59-68.
- Kelly, S. (2006). *Customer Intelligence: From Data to Dialogue*. West Sussex, England: John Wiley & Sons Ltd.
- Kerr, C., Mortara, L., Phaal, R., Probert, D. (2006). A conceptual model for technology intelligence. *International Journal for Technology Intelligence and Planning*, 2, (1), 73-93.
- Kohli, A. , Jaworski, B. (1990). Market Orientation: The Construct, Research Propositions, and Managerial Implications. *Journal of Marketing*, 54, 1-18.
- Kruijer, B. (2007). Introduction to Market Intelligence. *Global Intelligence Alliance*. Location: n.a.
- Kuada, J. (2002). *Lecture Notes "International Industrial Marketing"*. Aalborg, Denmark: Centre for International Studies Aalborg University. Retrieved May 13, 2010 from [http://www.morten-rask.dk/JK\\_INTERNATIONAL\\_INDUSTRIAL.pdf](http://www.morten-rask.dk/JK_INTERNATIONAL_INDUSTRIAL.pdf)
- Kuerbisch, F. (2007). *Lecture handout at Montanuniversität Leoben: Marketing und Verkauf im Industrieanlagenbau*. Retrieved March 2, 2010 from [http://wbw.unileoben.ac.at/wbw/wbwskripten.nsf/887ec92cfa76a684c1256c5a00490b88/7794a27aaebfcf09c12571240038abbb/\\$FILE/Vorlesung%20Kap2.pdf](http://wbw.unileoben.ac.at/wbw/wbwskripten.nsf/887ec92cfa76a684c1256c5a00490b88/7794a27aaebfcf09c12571240038abbb/$FILE/Vorlesung%20Kap2.pdf)
- Lackman, C., Saban, K., Lanasa, J. (2000). The Contribution of Market Intelligence to Tactical and Strategic Business Decisions. *Marketing Intelligence & Planning*, 18, 6-8.
- Lafferty, B., Hult, G. (2001). A Synthesis of Contemporary Market Orientation Perspectives. *European Journal of Marketing*, 35, 92-109.
- Lave, J., Wenger, E. (1991). *Situated Learning: Legitimate Peripheral Participation*. Cambridge, England: Cambridge University Press.

- Le Bon, J., Merunka, D. (1999). *Report No. 11-1999 „Understanding, Explaining and Enhancing Salespeople’s Efforts towards Marketing and Sales Intelligence”*. University Park, PA: Institute for the Study of Business Markets.
- Le Bon, J., Merunka, D. (2006). The impact of individual and managerial factors on salespeople’s contribution to marketing intelligence activities. *International Journal of Research in Marketing*, 23, 395-408.
- Le Bon, J., Rapp, A. (2006). Assessing the impact of salespeople’s field-based competitive intelligence on product competitiveness and brand preference. *American Marketing Association*, 21, 354-355.
- Lewin, K. (2004). Action Research and Minority Problems. *Journal of Social Issues*, 2, 34-46.
- Lichtenthaler, E. (2004). Technology intelligence processes in leading European and North American multinationals. *R&D Management*, 34, 121-135.
- Liebowitz, J. (2006). *Strategic Intelligence. Business Intelligence, Competitive Intelligence and Knowledge Management*. (1<sup>st</sup> ed). New York, NY: Auerbach Publications.
- Lincoln, S., Guba, E. (1985). *Naturalistic Inquiry*. Thousand Oaks, CA: Sage Publications Inc.
- Little, M., Fahey, L. (2006). The model for integrating strategy and intelligence: the executive intelligence officer. *Strategy and Leadership*, 34, 4-10.
- MacPherson, A. (2000). The role of international design orientation and market intelligence in the export performance of US machine tools companies. *R&D Management*, 30, 167-176.
- Majid, S., Khoo, C. (2009). Environment Intelligence: An innovative information service. *Singapore Journal of Library & Information Management*, 38, 13-26.

- Makadok, R., Barney, J. B. (2001, December). Strategic Factor Market Intelligence: An Application of Information Economics to Strategy Formulation and Competitor Intelligence. *Management Science*, 47, 1621-1638.
- Malinen, P. (2003). Paper “*Key Drivers of Innovation Management*”. Helsinki, Finland: Helsinki University of Technology.
- Maltz, E., Kohli, A. K. (1995). *Report No. 95-115 “Market Intelligence Dissemination Across Functional Boundaries”*. Cambridge, Massachusetts: Marketing Science Institute
- Marin, J., Poulter, A. (2003). Dissemination of competitive intelligence. *Journal of Information Science*, 30, 193-208.
- Maxwell, J. (2005). *Qualitative Research Design: A Interactive Approach*. (2<sup>nd</sup> ed.). Thousands Oaks, CA: SAGE Publications, Inc.
- Maxwell, T. (2003). *Report “From First to Second Generation Professional Doctorate”*. Armidale, Australia: University of New England.
- Mays, N., Pope, C. (1995). Qualitative research: rigour and qualitative research. *British Medical Journal*, 311, 109-112.
- McDermott, E., Graham, H., Hamilton, V. (2004). “*Experiences of Being a Teenage Mother in the UK: A Report of Systematic Review of Qualitative Studies*”. Glasgow, Scotland: MRC Social and Public Health Sciences Unit.
- McGonagle, J., Vella, C. (2002). A Case for Competitive Intelligence. *The Information Management Journal*, Vol: n.a., 35-40.
- McKibbin, K., (1998, July). Evidence-based practice. *Bulletin of the Medical Library Association*, 86, 396-401.
- Möchel, A. (2011). Richtig entscheiden: Kopf oder Bauch? *Wirtschaftsblatt.at*. Wien, Austria: WirtschaftsBlatt Verlag AG. Retrieved February 13, 2012 from

<http://www.wirtschaftsblatt.at/home/service/karriere/richtig-entscheiden-kopf-oder-bauch.htm>

Mokhtar, S., Yusoff, R., Arshad, R. (2009). Market Orientation Critical Success Factors of Malaysian Manufacturers and Its Impact on Financial Performance. *International Journal of Marketing Studies*, 1, 77-84.

Montgomery, D., Weinberg, C. (1979, Fall). Toward Strategic Intelligence Systems. *Journal of Marketing*, 43, 41-52.

Morris, M., Pitt, L., Honeycutt, E. (2001). *Business-to-Business Marketing: A Strategic Approach*. (3<sup>rd</sup> ed). California: Sage Publications Inc.

Mortara, L., Kerr, C., Phaal, R., Probert, D. (2009). Technology Intelligence practice in UK technology-based companies. *International Journal of Technology Management*, 48, (1), 115-135.

Moss, C. (1979). Industrial Salesman as a Source of Marketing Intelligence. *European Journal of Marketing*, 13, 94-102.

Muller, M. (2003). Key activities of competitive intelligence. *South African Journal of Information Management*, 5, pp: n.a.

Muller, M. (2006). Building blocks of competitive intelligence – sales and customer intelligence. *South African Journal of Information Management*, 8, pp: n.a.

Muller, M. (2007). Global competitive intelligence practice. *South African Journal of Information Management*, 9, pp: n.a.

Muller, M. (2003). How and what others are doing in competitive intelligence: various CI models. *South African Journal of Information Management*, 11, pp: n.a.

Murphy, C. (2005). *Competitive intelligence. Gathering, analysing and putting it to work*. Burlington, VT: Gower Publishing Company.

Myburgh, S. (2004). Competitive Intelligence: Bridging Organizational Boundaries. *The Information Management Journal*, Vol. n.a., 46-55.

Narver, J., Slater, S. (1990). The effect of a market orientation on business profitability. *Journal of Marketing*, 54, 20-35.

NHS: The Centre for Reviews and Dissemination (2008). *Systematic Reviews. CRD's guidance for undertaking reviews in health care*. London, England: National Health System. Retrieved March 8, 2010 from [www.york.ac.uk/inst/crd/pdf/Systematic\\_Reviews.pdf](http://www.york.ac.uk/inst/crd/pdf/Systematic_Reviews.pdf)

NHS: South Central Literature Search Protocols (2007). *The Literature Search Process: Protocols for Researchers*. London, England: National Health System. Retrieved March 9, 2010 from <http://www.sath.nhs.uk/Library/Documents/Library/Guides/researchguidance.pdf>

Nonaka, I., Takeuchi, H. (1995). *The knowledge-creating company: how Japanese companies create the dynamics of innovation*. New York, NY: Oxford University Press Inc.

Oder, N. (2001). The competitive Intelligence Opportunity. *Library Journal*, 126, 42-44.

Olsson, J., Sandell, J. (2008). *Strategic business intelligence at Toyota material handling Europe*. Uppsala, Sweden: Uppsala University. Retrieved January 15, 2010 from <http://www.teknat.uu.se>

Papadima-Sophocleous, S. (2006). Paper "Learning through reflection as part of a DPS programme". Cyprus: Intercollege. Retrieved July 12, 2011 from <http://www.wblearning-ejournal.com/salomipapadima.pdf>

Past, E. (2012). Yammer ist das Facebook für Unternehmen. *Wirtschaftsblatt.at*. Wien, Austria: WirtschaftsBlatt Verlag AG. Retrieved 13 March, 2012 from <http://www.wirtschaftsblatt.at/home/schwerpunkt/itnews/TechNews/yammer-ist-das-facebook-fuer-unternehmen.htm>

- Pease, D. H. (1991). Master thesis "*Competitor Intelligence*". Cambridge, Massachusetts: Massachusetts Institute of Technology, Sloan School of Management. Retrieved January 15, 2010 from <http://dspace.mit.edu/bitstream/handle/1721.1/17279/25362914.pdf?sequence=1>
- Potter, J. A., Minutolo, M., Lipinski, J. (2010). Paper "*Key Factors for Shortening Response Time in the Strategic Issues Diagnosis Process*". Pennsylvania: Robert Morris University, Institute of Behavioral and Applied Management. Retrieved March 23, 2010 from <http://www.ibam.com/pubs/jbam/articles/vol12/5%20Potter%209-2010.pdf>
- Powell, J., Bradford, J. (2000). Targeting Intelligence Gathering in a Dynamic Competitive Environment. *International Journal of Information Management*, 20, 181-195.
- Prazak, R. (2011). Manager. Gefangen in ihrer Scheinwelt. *Wirtschaftsblatt.at*. Wien, Austria: WirtschaftsBlatt Verlag AG. Retrieved 21 January, 2011 from <http://www.wirtschaftsblatt.at/home/service/karriere/455641/index.do>
- Prescott, J. (1999). The Evolution of Competitive Intelligence. *Journal of the Association of Proposal Management Professionals*, Vol: N.a., 37-52.
- Punch, M. (1994). Politics and Ethics in Qualitative Research In M. Katz (Ed.), *Handbook of qualitative research* (pp. 83-104). Boston, MA: South End.
- Porter, M. (1980). *Competitive Strategy*. New York, NY: The Free Press.
- Quinn, J. J. (1985). How companies keep abreast of technological change. *Long range planning*, 18, 69-76.
- Raelin, J. (2002). „I Don't Have Time to Think! “ versus the Art of Reflective Practice. *Society for Organizational Learning and the Massachusetts Institute of Technology*, 4, 66-79.
- Rigg, C., Trehan, K. (2008). Critical reflection in the workplace: is it just too difficult. *Journal of European Industrial Training*, 32, 374-384.

Riss, K. (2012). Schule produziert lustlose Pflichterfüller. *derstandard.at*. Wien, Austria: Der Standard. Retrieved April 18, 2012 from <http://derstandard.at/1334368981969/Hirnforscher-Schule-produziert-lustlose-Pflichterfueller.htm>

Rothberg, H., Erickson, G. (2005). *From Knowledge to Intelligence: Creating Competitive Advantage in the Next Economy*. Oxford, England: Elsevier Inc.

Roworth-Stokes, S. (2006). Paper of the Design Research Society at the International Conference in London “*Research Design in Design Research: a practical framework to develop theory from case studies*”. Surrey, England: University for the Creative Arts.

Ruekert, R. (1992). Developing a market orientation: an organisational strategy perspective. *International Journal of Research in Marketing*, 9, 225-245.

Sambrook, S., Stewart, J, Roberts, C. (2008). Developing critical reflection in professional focused doctorates: a facilitator’s perspective. *Journal of European Industrial Training*, 32, 359-373.

Saunders, M., Lewis, P., Thornhill, A. (2007). *Research Methods for Business Students*. (4<sup>th</sup> ed.). Essex, England: Pearson Education Ltd.

Steel Business Briefing (2011). German plantbuilders face more competition from newcomers. *SBB Daily Briefing Global Edition (28 June, 2011)*. Retrieved 29 June, 2011 from <http://www.steelbb.com/de>

Schön, D., (1983). *The reflective practitioner: how professionals think in action*. United States of America: Basic Books Inc.

Society of Competitive Intelligence Professionals, SCIP (2009). *Competitive Intelligence*. Retrieved January 3, 2010 from <http://www.scip.org/Publications/?navItemNumber=498>

Shapiro, B. (1988). What the hell is market oriented. *Harvard Business Review*, 66, 119-125.

Shenton, A. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, 22, 63-75.

Slater, S., Narver, J. (1994). Does Competitive Environment Moderate the Market Orientation-Performance Relationship? *Journal of Marketing*, 58, 46-55.

Slater, S., Narver, J. (1995). Market Orientation and the Learning Organization. *Journal of Marketing*, 59, 63-74.

Slater, S., Narver, J. (2000). Intelligence Generation and Superior Customer Value. *Journal of the Academy of Marketing Science*, 28, 120-127.

Snyder, W. and Wenger, E. (2004). Our world as a learning system: a communities-or-practice approach. In Clawson, J. & Conner, M. (Eds.) *Creating a Learning Culture: Strategy, Practice, and Technology*. New York, NY: Cambridge University Press.

Sparrow, J. (2010). Paper at the International Conference of Professional Doctorates "Doctoral level feedback and reflection for academic writing in mode 2 knowledge contexts: A study of candidate development within a DBA professional doctorate programme". Birmingham, England: Birmingham City University.

Sprenger, R. (2011). Ich halte CEOs für überbewertet. *Wirtschaftsblatt.at*. Wien, Austria: WirtschaftsBlatt Verlag AG. Retrieved June 18, 2011 from <http://m.wirtschaftsblatt.at/wbh/service/karriere/468228/xmlyoca.do>

Stauffer, D. (2003). The Power of Competitive Intelligence. Your competitors' data is there for taking. The bigger challenge: How to make use of it. *Harvard Management Update*, Vol: n.a., 3-4.

Thomas, J., Harden, A. (2008) Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology*, 8, pp: n.a.

Thomas, R., Linstead, A. (2002). Loosing the Plot? Middle Managers and Identity. *Organization*, 9, 71-93.



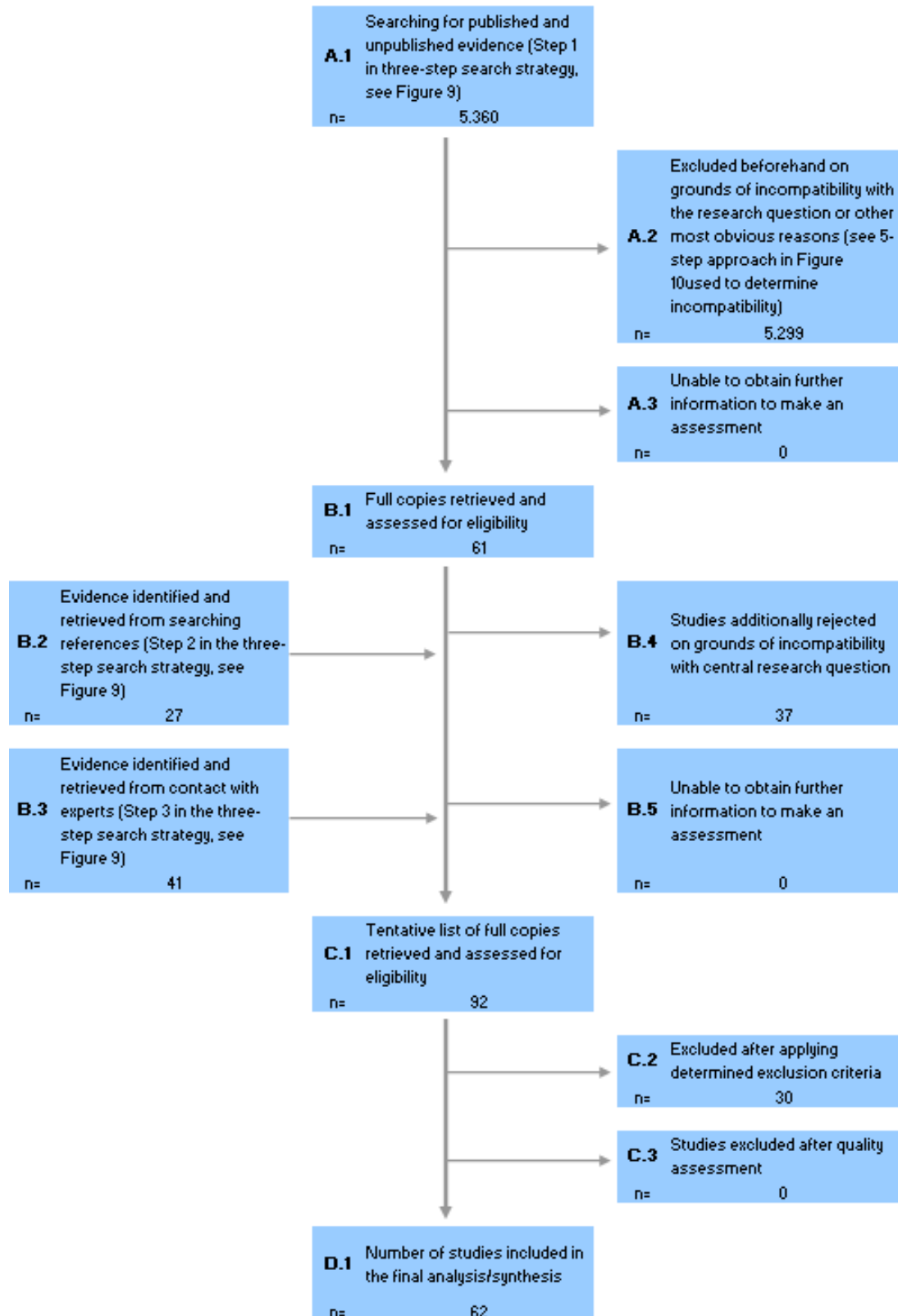
- Tranfield, D., Denyer, D., Smart, P. (2003). Towards a Methodology for Developing Evidence-Informed Management Knowledge by Means of Systematic Review. *British Journal of Management*, 14, 207-222.
- Trim, P., Lee, Y. (2008). A strategic marketing intelligence and multi-resilience framework. *European Journal of Marketing*, 42, 731-745.
- Trim, P., Lee, Y. (2006). An internationally focused synthesised marketing strategy underpinned by qualitative research. *Qualitative Market Research*, 9, 203-224.
- Vázquez, R., Santos, M. L., Álvarez, L. I. (2001). Market Orientation, Innovation and Competitive Strategies in Industrial Firms. *Journal of Strategic Marketing*, 9, 69-90.
- VDMA, (2008). Weltmarktposition des deutschen Großanlagenbaus. *Verband deutscher Maschinen- und Anlagenbau – Arbeitsgemeinschaft Großanlagenbau (April, 2008)*. Frankfurt/Main, Germany: Verband Deutscher Maschinen- und Anlagenbau e.V. Retrieved April 14, 2011 from <http://www.vdma.org>
- Verschuren, P. (2003). Case Study as a Research Strategy: Some Ambiguities and Opportunities. *International Journal Social Research Methodology*, 6, 121- 139.
- von Krogh, G., Ichijo, K., Nonaka, I. (2000). *Enabling knowledge creation: how to unlock the mystery of tacit knowledge and release the power of innovation*. New York, NY: Oxford University Press Inc.
- Vuori, V. (2006). The employees as a source of external business intelligence information. In Lönnqvist, A and Markova, M. (Eds.). *Emergent Themes in Intellectual Capital Research*. Tampere, Finland: Tampere University of Technology.
- Waters, T. (2000). Competitive Intelligence. *Executive Excellence*, Vol: n.a., 7.
- Wee, T. (2001). The use of marketing research and intelligence in strategic planning: key issues and future trends. *Marketing Intelligence & Planning*, 19, 245-253.

- Wenger, E., McDermott, R., Snyder, W. (2002). *Cultivating Communities of Practice*. Boston, MA: Harvard Business School Press.
- Whitley, R. (1984). The Scientific Status of Management Research as a Practically-Oriented Social Science. *Journal of Management Studies*, 21, 369-390.
- Wolter, K. (2011). Competitive Intelligence. In Keuper, F., Oecking, C., Degenhardt, A. (Eds.), *Application Management. Challenges – Service Creation – Strategies* (pp. 185-215). Wiesbaden, Germany: Gabler Verlag.
- Wren, B., Souder, W., Berkowitz, D. (2000). Market Orientation and New Product Development in Global Industrial Firms. *Industrial Marketing Management*, 29, 601-611.
- Wright, S., Eid, E., Fleisher, C. (2009). Competitive Intelligence in Practice: Empirical Evidence from the UK Retail Banking Sector. *Journal of Marketing Management*, 25, (9/10), 941-964.
- Xu, X., Kaye, G. (1995). Building Market Intelligence Systems for Environment Scanning. *Logistics Information Management*, 8, 22-29.
- Yee, C. (2009). Conference Paper at the POMS 20<sup>th</sup> Annual “*Toolism: Generation of Mode 2 Knowledge in Research*”. Selangor, Malaysia: University Putra Malaysia.
- Yin, R. (2009). *Case Study Research: Design and Methods*. (4<sup>th</sup> ed.). Thousand Oaks, CA: SAGE Publications Inc.
- Yin, R. (1989). *Case Study Research: Design and Methods*. (2<sup>nd</sup> ed.). Thousand Oaks, CA: Sage Publications Inc.
- Young, D. (1998). Unpublished Paper “*Case Study Research Methodology*”. Baldwin City, KS: Baker University.
- Zhang, Y., Wildemuth, B. (2009). Paper “*Qualitative Analysis of Content*”. Austin, TX: The University of Texas.

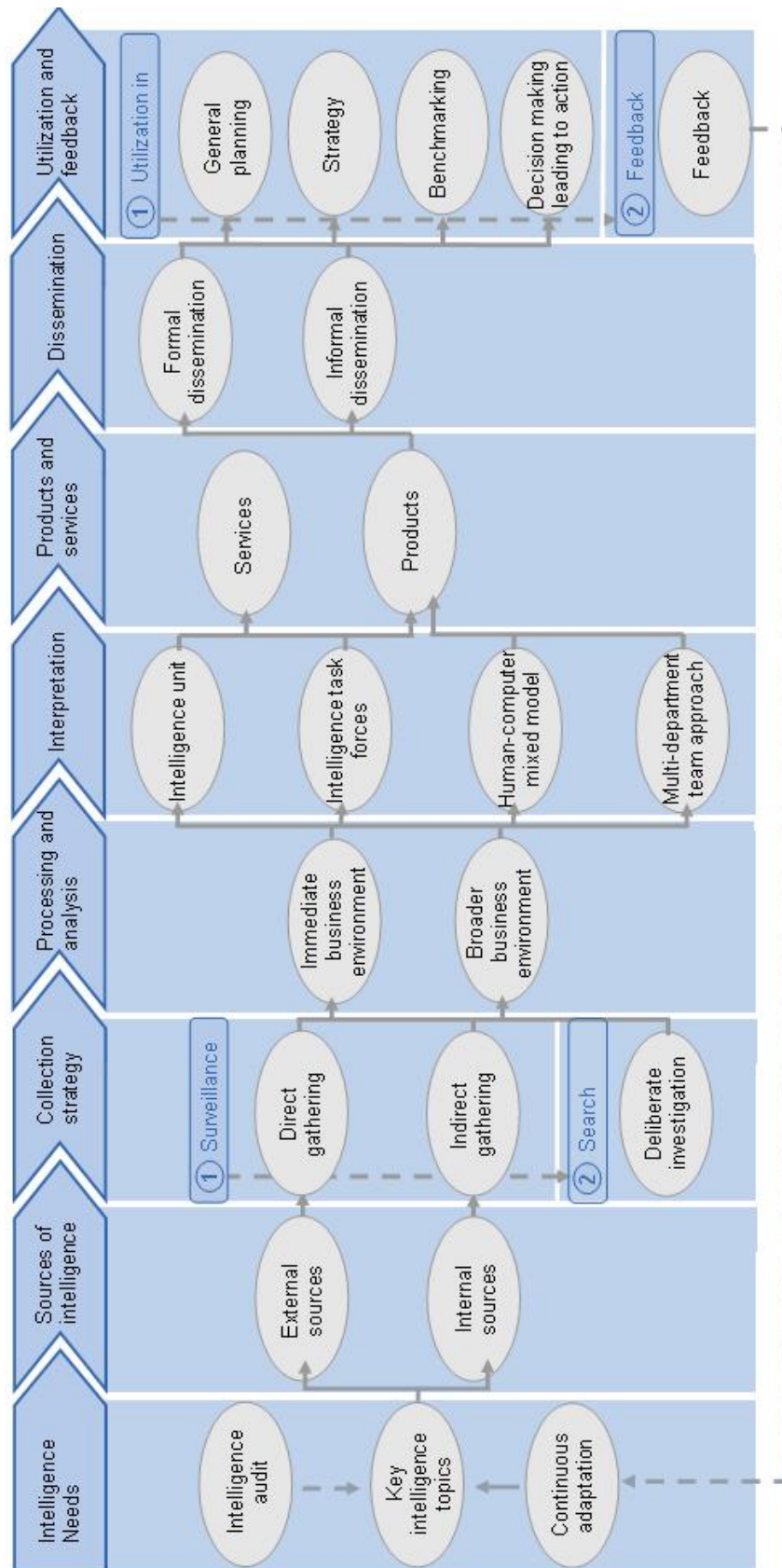
Zinkhan, G., Gelb, B. (1985). Competitive intelligence practices of industrial marketers. *Industrial Marketing Management*, 14, 269-275.

## Appendix

### Appendix No. 1: Flowchart of the review procedure



## Appendix No. 2: Initial conceptual framework on industrial market intelligence



### Appendix No. 3: Final interview agenda

---

#### Final Interview Agenda

---

|               |  |             |  |
|---------------|--|-------------|--|
| Date          |  | Location    |  |
| Starting time |  | Ending time |  |

#### Agenda

- Statistical data of the participant
- Conceptual briefing – Market Intelligence
- Design of the interview
- Instruction of research ethics

#### a) Statistical Data

|                 |  |                  |  |
|-----------------|--|------------------|--|
| Academic title  |  | Age              |  |
| Name            |  | Work experience  |  |
| Position        |  | Background (t/c) |  |
| Company         |  | Nationality      |  |
| Department/Area |  |                  |  |

#### b) Conceptual briefing

This study is looking into market intelligence in the plant building industry. Market intelligence is both, a process and a product. That means that data, information or knowledge are input factors to some gathering and analytical/interpretative processes which lead to an output – intelligence, that is communicated and used in decision making/planning. The purpose of this study is to fill blank spaces identified in the theory, as well as to investigate how the process unfolds in the plant building industry.

#### c) Design of the interview

The interview is composed of six parts, each one with several questions. You give answers according to your knowledge/experience. Based on the notes taken and the tape record, I will prepare a report. This report will be sent to you for confirmation before the analysis.

#### d) Instruction of research ethics

This interview is voluntary. No remuneration will be given for the knowledge obtained. The interview may be stopped at any time, for any reason. Your name will be anonymized. The use of a tape recorder is subject to your permission.

Do you have any questions?

### **Part 1 – Information gathering**

#### **a) Detail questions**

- 1.1 Which types of competitive information (with regard to markets, customers, competitors) do you need for your work, and where do you get it from?
- 1.2 Where is this competitive information available? Who has such information available?
- 1.3 How does gathering from external sources differ from internal sources?
- 1.4 Which settings or structures are used to collect information from internal sources? How can participants to such structures be characterized?
- 1.5 How formal or informal are such settings/structures? Why?
- 1.6 How important is inter-department coordination in such processes? Why?
- 1.7 Who is in charge of gathering information from internal sources?
- 1.8 How important is technological (IT) infrastructure in such a context?

#### **b) Time for reflection.**

- How do plant building managers/employees gather competitive information from internal sources?

### **Part 2 – Information synthesis**

#### **a) Detail questions**

- 2.1 How is information from internal and external sources synthesized?
- 2.2 Which structures/settings are used in order to synthesize this information with internally available information/knowledge?
- 2.3 Which means are used to support synthesis of information from different sources?
- 2.4 Is there a leadership role connected to such synthesis processes?

#### **b) Time for reflection.**

- How is information from internal and external sources synthesized?

### **Part 3 – Information analysis/interpretation**

- 3.1 How is macro/micro environment information analyzed/interpreted?
- 3.2 Which structures and settings are used to analyze/interpret information?
- 3.3 How important is technological (IT) infrastructure in such a context? To what extent can such processes be computerized?
- 3.4 Is there a leadership role connected to such processes and why?
- 3.5 How important is inter-department coordination in such processes and why?
- 3.6 How formal or informal are such processes and why?
- 3.7 Which techniques/methods are applied in order to analyze and interpret information from internal sources?

b) Time for reflection.

- How is information from internal sources analyzed and interpreted?

**Part 4 – Intelligence synthesis**

a) Detail questions

- 4.1 Who in the organizations produces intelligence?
- 4.2 Which different types of intelligence do these organizational units produce?
- 4.3 Is there a need to synthesize these different kinds of intelligence? Why?
- 4.4 If yes, how are these different types of intelligence synthesized?
- 4.5 Who is responsible for this process?

b) Time for reflection.

- How is intelligence from different sources synthesized?

**Part 5 – Intelligence communication**

a) Detail questions

- 5.1 Who communicates intelligence in the organization?
- 5.2 How is it communicated and which means are used to communicate intelligence?
- 5.3 Which supporting tools are used to spread intelligence? For which purpose?
- 5.4 Is there a way to integrate formal and informal means of communication?

b) Time for reflection.

- How is intelligence disseminated informally?



## **Part 6 – Plant building market intelligence**

### **a) Detail questions**

- 6.1 What are plant building peculiarities with regard to market intelligence (gathering, analysis, interpretation, dissemination)?
- 6.2 How and where is information shared and spread?
- 6.3 How and where is information stored/available?
- 6.4 Is analysis or interpretation part of such sharing processes? Why?
- 6.5 Is there a leadership function related to the management of the human intelligence function?
- 6.6 Is there a connection between market intelligence and knowledge management, and if yes, where?
- 6.7 Is there a connection between market intelligence and learning, and if yes, where?

### **b) Time for reflection. Feedback:**

- How is market intelligence in plant building undertaken?

Thank you very much for your time. You will receive a report in due time.

#### **Appendix No. 4: Example of an interview report**

Report on  
Interview No. 8 (JM)  
Date: January, 10, 2012  
Starting time: 16:00  
Ending time: 17:43  
Duration: 01:43  
Location: Linz

GK: Let me give an overview on the interview, I want to start with some statistical data, personal data on the participant. I give you a short conceptual briefing on the topic and the purpose of the study. The next step is the design of the interview, then a few words on the research ethics, after that we start right away with the interview. Ok?

JM: Yeah.

GK: [running through the preliminary stuff, participant data, conceptual briefing, and research ethics]. Anything else?

JM: No.

GK: I would like to start with some question with regard to information gathering. In order to get a first understanding, maybe you can summarize in a few words your own position in the company, what it is that you are doing, and where – in the course of your tasks – it is that you need competitive or market information.

JM: Well, as a Global Account Manager, I have the role of being the voice of the customer inside of our organization, transmitting the requirements and needs, aspirations and problems of the customer to the right people of our organization and at the end of it, solving the customer's problems and winning some business for us. So I have to get all necessary information to identify the business potential, identify what steps need to be taken, to get that business potential, to be a source of communication and information, intelligence for planning, identifying time frames, volumes, the organizations within Siemens that need to participate, and giving some structure to the business. Identifying that in the company's planning and strategy. So I am dedicated now as a Global Account Manager for the [blacked out for confidentiality reasons, company from the Steel and Power industry] since middle of last year.

GK: Would it be fair to say that market intelligence is of high relevance to your job?

JM: If it is too general then it becomes trends for the industry. You have to split up the intelligence into customer-specific intelligence, market-specific intelligence, global trends and regional trends. So each one has its importance, and it'll effectively be a part of the strategy. If you look at the individual project, if you look at the medium term or the long term. The intelligence will have different values. And you need quality information, if you don't have the quality in it, then it is speculation.

GK: Of course. Which of those that you just mentioned, customer intelligence, market intelligence, global and regional trends, which one would be the one you rely most on in the course of your work?

JM: Well, since I am an account manager, the first priority would then be to go for the customer intelligence. And then the backdrop is the environment in which he is working, and then the backdrop is the regions in which he is working, and then the backdrop is the global environment in which he is competing in. So customer first, and then everything cascades. For me!

GK: I want to know about you. Where do you get the information that is necessary to do what you described now, where do you get it from typically?

JM: From the customer itself, I have to understand what is the customer's strategy, where is he today, where does he want to be down the road, and we have to find a system, a roadmap, that we need in order to be successful. Try to become a trusted partner, to differentiate ourselves from being just a simple supplier, where he has a trust in us, in what we say, so that he hopefully takes our opinion into account. And really, with our portfolio, with our innovations, to support him, that he gets to be where he wants to be. So primarily you have to understand, in German it is the "ist" and the "soll" ["as is" and "objective", added by the author].

GK: I once read that a good sales man, a good sales person, and I think that an account manager is part of the sales organization, is thus so valuable to an organization, because his boundary position gives the organization the possibility to extend their domain onto customers, partner, maybe even suppliers and so on. Would you agree to such a statement?

JM: Yes, of course that is important. Selling itself has different aspects, there is the selling to the customer, there is the internal selling to get resources, attention and focus, to deliver what that customer needs, you need alignment within the organization to deliver something, and our company is complex...

GK: ... and so is the customer, mostly at least...

JM: ... and so is the customer! They are usually complex, and therefore you have to put a strategy together, you can call it a selling strategy, an external one, an internal one. To get the right alignment, the right understanding of what the customer wants, what we need to provide to meet that requirement, and then you have to make sure that you get the resources to deliver.

GK: If I understood you correctly the sources of competitive information are persons at the client. The literature also considers other possibilities, such as secondary sources or the internet or brochures or even internal sources when you exchange with other colleagues and so on. Would you rate these also as important, or would you rather say "No, for me it's the customer and the other sources are of lesser importance"? What would you say about that?

JM: No, I mean you have to look at the whole; the customer is the majority is most of the information, of course, but also we have trends that we can bring to the customer. To say "look, we think you should be doing this!". Because we're finding that this is happening in the outside world, your competitors are doing that...

GK: Where do you get the stuff on the competitors?

JM: The competitor information is what we usually have internally, from my experiences with other customers, also within our own customers, it's what is available from the public domain, it's information that you get from customers, from other customers, from our own people. There are a large number of sources. But it's bringing that information to a point. It's information and what do I do with it.

GK: So you mentioned now two different aspects. Internal sources of information and external sources. Within the external information, the customer being one of the most important aspects. If you look at gathering, collecting or getting across competitive information, where do you see the differences in gathering from external and internal sources? Or are there no differences?

JM: Not sure if I understood the question correctly.

GK: How does the gathering of competitive information differ in terms of gathering from external sources, for example clients, or gathering from internal sources, for example from other colleagues?

JM: With the customers, some are more open than others, as with regard to for example competitor equipment, most likely because they have exhausted the possibilities with that supplier, they can't fix it so you have to find out the full extent of the problems of the competitors, where it failed, and you have to come up with a solution. Other information, there is a lot of hear-say, feelings, not always backed-up 100% with collected facts, which you sometimes sort of have to filter...

GK: You mean bias, for example.

JM: Bias, of course there is always bias. You have to know, is it something they have heard, is it second-hand, third-hand, and then it starts to get twisted, and ahhh... internally we have the system, you have these lists of competitors, what they are doing, where they've got orders as well. We often say, "Look, we have the information what our competitors are doing, and what do we have to do that it doesn't land so nicely into their hands." That is how we can mould it, that it fits better to our technology, so how does it differ at the end of the day? It's different people, different sources ahmm... it's difficult to generalize. We probably don't have as much competitive information as we would like to have, and of course the most difficult one is the one about prices. And what we try to do about the prices, the price of a project, is to melt it down and try to use it for the next projects.

GK: Ok, so you learn from experiences as well.

JM: Yeah, you learn from the job itself, and try to improve at the next instance.

GK: Of course. When you think about gathering competitive information from internal sources, from colleagues, systems, tools, whatever, which structures or settings are used within the organization?

JM: Well, you've gotta know the company, you've gotta know whom to call. So obviously, if we're talking about a specific business field, you try to find out from the persons dealing with that respective customer. I wouldn't try to find out for a project in ironmaking from a person in hot rolling. Eventually you will talk to the business manager there, who's got that information. You've gotta know where to look.

GK: Ok. So it's mostly about personal contact, about direct communication. What kind of role do meetings have? More formal stuff... so what you've been talking about is more informal stuff, I'd say. So "I'd know who to call."

JM: Specifically for competitors now?

GK: Or market, or customers, everything that falls into this domain.

JM: I mean obviously, that falls into such a wide range these questions, because that information may need more than one head, one person – so you get it. Different disciplines, different people, different knowledge, someone may be picking up knowledge on electrical and automation, and on the process, another one on pricing, another one on how they performed on site. It's not always in one place or head, and we don't have a system where we can just say, competitor X, than just press a button, with questions or searches.

GK: Why is that so that we do not have a system for that? Or what would you say what is the reason for that?

JM: I guess because nobody has thought about it, and said "that's important for us", for the company, and we need to spend some money and do that. I mean there is competitor information, I can go to marketing, I can get reference lists, I can read their annual reports that stuff – I know where I can get that. When you come down to specific strategies against competitors, I think you have ... ahh... I mean we've done that, in our business we have had our business segments say "Let's benchmark ourselves", so there is a lot of information that our business segments have. Whether that's available to everybody – I doubt. [laughs] I am sure there is a lot of information tapped around the company, which sort of – you know, might be confidential, or whatever – you know.

GK: You just mentioned another thing, you said "different people are necessary to tap different sources of knowledge", to talk about it, how important do you think is inter-department coordination?... in this whole process of getting different information together?

JM: Well, at the end of the day, somebody's gotta be responsible for it. For a process. And that person's gotta coordinate all the different sources going into that process. And if it's specifically sales, you've got the commercial sales guy, you've got the technical sales guy, you've got the region, you've got the account management team. And it's not always easy to coordinate all of that. Usually we do the four-eyes principle, which is the project manager, and the commercial project manager, yeah, and they should be the CEO and the CFO of the project, whether it is a pre-project [sales or bid project], or a contract, yeah. And it should be their baby, it's very important to manage that information, because there is so many people involved, so many inputs and outputs, you gotta define the inputs and outputs, the time scales, who are the people you need involved, organizing the resources, the interfaces to the customer, and identifying who are the people you need at meetings, whether they be internal or external. If you don't coordinate – it's a mess, you waste resources and time.

GK: How important is an IT infrastructure, an automation solution, an IT tool if you wish in the course of gathering information together?

JM: It's the dream, isn't it? You know, give me a Google for the company, and I think that is what the management is driving to do. I think they have identified that we need to pull information now, and you've gotta have a system, a gateway, which makes it easier to access information.

GK: Who is actually internally gathering information about competitors, markets and customers?

JM: Well, about customers, I am gathering information about customers as a global account responsible, so we have a system called [blacked out for confidentiality reasons], you know about it, that is being declared as a tool, that we will use, and the better the quality of the information of the information that we put in there, the better the transparency, and clarity, that is about a customer – and how we deal with him or her and I think it's important to have tools like that. So that people can find information, to know is responsible for that information, hopefully to push the organization so we can get more business with that customer.

GK: Apart from the account manager, who else is responsible?

JM: Everybody. I mean, you know – everybody and anybody with contacts should have a sales man's hat on, and should be sensitive with regard to gathering information and feeding back into the system, it's feedback, it's knowledge and if you can help somebody's understanding, it's not always clear where people should put that information.

GK: But what happens in practice, according to their networks, and they discuss fresh news or trends, according to their relationships and whom they trust?

JM: Yes but that's the unofficial.

GK: Maybe not everything can be input into a tool, at least not so easily.

JM: Oh, not everything – never! You can aspire to it, the question is, you know, “need to know” – “want to know”. This is the thing about information. Everybody says “I need more information”, ok, but what information do you need? What are the key success factors? What are the must have's that will allow you to move forward? And it's not always 100% clear, that we know those things.

GK: Sometimes it is very hard to externalize or to reflect what it is that you really need. Because a lot of it you may not be aware of, or some of it you may have gotten it wrong, and this is where the whole problem starts. And there is more problems adding to it, as you go along the chain.

JM: Yeah, and then you got a piece of information, and in isolation it can be meaningless, if you get other bits of the puzzle together, there would have to be a place to concentrate that intelligence – and I think we do not concentrate that intelligence enough. Then, and this is

compared to being a detective, then you have the chance of seeing that bigger picture. And how do you concentrate, and where do you put that intelligence?

GK: So right now its mostly stored in people's brains, right?

JM: It is!

GK: And I think what companies are looking for, is to get more and more out from your brain and putting it maybe not even paper, but into a system and tool – to enable that synthesis of information.

JM: Yeah! And you need to filter it and take out what is relevant and what is not relevant. And I think it's gotta have an objective, a management objective, to say look: "we've looked at our business, and we have areas were we are lacking". What are we lacking? Why are we lacking it? Why is it important to our business? What kind of information do we want to have formalized? Because otherwise, you could spend all day downloading ... searching...

GK: ... and there is so much available. And maybe it's not all about quantity, but about quality? And getting the picture together.

JM: Of course, and getting a picture.

GK: And this is now even topic of the second part of the interview, information synthesis, compiling, structuring different kinds of information, which may be available in different parts of the organization. And it gets kind of hard when you consider internally and externally available information. And how do you put it together? What is your view? How do you think it works?

JM: And just one more thing, there is conflicting information.

GK: Of course there is always conflicting items.

JM: So there are several loops. Conflicting information, internally, and externally. So that last one again!

GK: How is information from internal and external sources synthesized? How can we put those different pieces together?

JM: I mean, we do have existing ... – you know these – you can make a visiting report, a note, pick up the phone to inform. How much does it have to be systemized somehow? That's a tough one... there has to be a minimum. If I go to a customer, there has to be a report at the end that says, "this is what we discussed, this is the way forward, this is what we agreed, this we haven't agreed, these are the actions", you know. And that applies to any meeting, with a customer or internally. If you hear that [blacked out for confidentiality reasons] is having a problem, you've heard that they have some delays, or something on some project, what do you do with that? You go to the business segment head, you go to the sub-segment guy, do you go to the account manager for that customer, there are at least two to three places where it might fit.

GK: Yes. Technology, marketing, account manager, but would you agree when I say, that most of this information synthesis really happens in the brains of people or in groups, rather than in any system or tool?

JM: The way we operate at the moment, yes. There are not so many systems.

GK: So that's reality, which is managerial practice, right now. Would you say that at our competitors the situation is very different? Or would you say that they operate similar? Based on your experience.

JM: When I've worked at other competing companies – not in this industry, though – generally, there is not so many differences. In fact, people always think that the competitors are always better in everything, you know [laughs], it's not always like that. It's just that the problems in one company is blue, it's green in another, it's different problems in different companies. Let's say I am not aware of any significant difference in that.

GK: So one of the questions is really, how much formalization is necessary in the whole process, because if you have no formalization at all, you may lose a lot of information on the way. A guy picks up something in India, at some customer, informs one more person – and then it gets lost. On the other hand, if you have it very formalized, you got all the people busy with filling in reports, and whatnot, and so...

JM: I think at the end of the day, the management has to say this is the information that we need. And wherever you are, if you get this, this or that ... and ultimately, nothing will happen, nothing will change, unless you put somebody responsible for that task. So identifying what information is important to our business, again, and how should go about getting better this information to one place, concentrating it, so we can do some analysis on that information. Data always has to be analysed, has to be looked at, from different angles, cross-checked, and then again, what's the result of it? What's the conclusion I draw? How can that information help me? We're not at all thinking in that. I am sure that people in other industries are far more ... I mean... competitor... I mean Apple those sorts of people, very, very sensitive, to what are the innovations going on and...

GK: Is that a question of corporate culture as well?

JM: I think we're not as dynamic on the innovation side. Just by the nature of our industry. It's slow, it's conservative, changes take time, our products take three to four years to go into operation, and another two to three years to see what the performance is. It can be round up to an optimum.

GK: But then in the best case, the plant operates some twenty to thirty years where the operator has time to profit from it. Isn't it? So everything is stretched.

JM: Yeah, everything is stretched. So the loops, the feedback loops are in our industry also slower. We don't turnover the projects within a year. We sell something now and don't know what the profit is, three years, four years down the road. You don't know how it's going to perform exactly, what the limits are. We don't change the designs so often. We try to standardize things and innovate. The innovations are always too slow and it takes too long to take it to market. I think it's just our culture...



GK: One more thing I am interested in this part. Do you see any leadership role connected to this issue of building the information picture? Would you say this is the task of a department head, or the task of a central function?

JM: You've got to ... from the top-management you've got to put that information strategy, where we say "look, this is the kind of information that we want, we've identified that as important for our future...", then we better formalize it. If it's information that we need to look at, like trends, follow the market – then you get people to follow that, and document it, so that you can do some analysis, it has to come from the top. Because otherwise, it'll always be ad-hoc, depending...

GK: But what's wrong with ad-hoc?

JM: Well ad-hoc, then it comes down to the individual... if you're happy to keep it all in the mind, and with small companies, what you find is in smaller companies, since there are fewer interactions, you can often keep that information much closer, and the information gets concentrated, with bigger and bigger companies as ours, you need to have systems, to make sure that on the end of that network, and at the end of this network somebody is putting it together. So I think with our size, you need that flow of information, the smaller the company is the easier it is. The less formal it can be. And you can get that information round more quickly onto the right people.

GK: Ok. Next part deals with analysis/interpretation, you've already said a bit about it. And with all this information and data available now, we need to do something with it to get the gist out of it, right? And what the literature basically says, is that there is a difference between analysing and interpreting information from the macro environment, so the more general stuff, and the micro environment, which is the more industry-related, account-related stuff. Would you agree to that, would you add anything to such a statement? Or would you say, "no, that is totally wrong!"

JM: No. You need both. The macro, the trends, is going to the top of the mountain, the horizon, and seeing maybe what could be a vision, perhaps where you would like to go to. And as soon as you come down the mountain and you're in middle of the woods, then you're in the micro world and then you gotta go to where you want, cross a river, and then a cliff. You need both, I think the two have to co-habit.

GK: Ok. But where is the difference in the analysis, when for instance looking at figures such as per-capita income, the steel consumption of India, and this sort of general, more macro-related stuff, and on the other hand you have information on you client. So where is the difference in terms of analysis?

JM: As I said, the macro stuff tends to give you more of a regional, global or product strategy, which applies let's say more globally. When I've got a customer in front of me, with certain information, that is very, very specific to a situation, and I might gear up my business to what my customer says, and it might look quite different to my macro view, which lead to "hold on a minute", with that I can say, I can not only serve him, but also him and him – and develop something to even serve him! You definitely need the two. We need to look at the macro environment, because you also have to have some kind of vision to say "look, long-term, this is the trend". This is the way things are going, this is the best that we can predict in a certain industry, going in a certain way, with certain parameters. The

individual customers, or companies or whatever, may or may not be along with that, but to shape a business you definitely also need a macro view. And the two have to live together, you have to... the business sort of has to live with the vision, the macro view, and you've got to deal with the day-to-day business, the on the route information that is coming, and I think that both are inter-linked. You can't separate one from the other. You can separate it and make your business, but you know, look at Kodak, chemical photography has gone down the drain now, and they weren't reacting to the trends, and looking, whereas other companies, Fuji or whatever, they had no problem, they went from chemical into electronic. And so yes, I think you definitely need both.

GK: Ok. Whose's job is it to look at the macro stuff, and whose's is it to look at micro and corporate stuff?

JM: Ahhmm... who's is it? Well, people like [blacked out for confidentiality, meant is the strategy department], generally at look at macro, strategic, success factors, market development, more global, and as they refine they bring it also to a more regional, you can't say there is a global solution to anything anymore. It's different regions have different rules to the game. So I would then expect them to look at different trends, saying "there will be a need for steel", "steel will be displaced by something else", energy is going up so we should be looking at energy efficiency technologies, you know, they should be looking at the horizon and say what is coming up.

GK: Like major disruptions, like with Kodak?

JM: Exactly.

GK: That's disruptive.

JM: Yeah, you need that, and people like strategy, but also the business segments themselves, have to look also long-term. From the trends which are also coming from ... ahh... a sum of inputs coming from all of their customers. And then you need the micro, you need the people, the engineers, the sales guys on the ground actually, saying "there is a problem here", this customer's got a problem, the problem is going to persist and worsen in the future, that future might only be one, or two or three years, that's also another input, and you have to look at all of those micro inputs to also get a picture. And then you can also decide your strategy.

GK: And how is it done, to get all together, because as you said there is different departments involved, engineers you mentioned, sales guys you mentioned.

JM: The regions brings, you got a customer...

GK: ... do they meet all personally, ...?

JM: Well we have a planning, we have a [blacked out for confidentiality, meant is the central strategy document], strategy meetings, and we have strategic meetings, where you lay down your plans for innovations for trends.

GK: But, that's all rather long-term, strategic...

JM: ... that's long-term, and then you do your annual planning, which comes down to [blacked out for confidentiality, meant is the annual revolving plan and target setting], central strategy and so on, where on the ground, with people from the ground say "hey guys, this is what we can see on the ground, for this year", and maybe we can see a little bit into the following year, but for this year – this is what we can see. This is how far we can see.

GK: How do you do the analysis for the [blacked out] [annual plan and target setting]?

JM: I've done the [blacked out] for four years now, and it's a combination of bottom-up and top-down, the bottom-up really need to gather that information from your customers from the market, to try and get a build-up, actual pieces of ... in our case we do project business, and present best case, worst case, realistic case, have a look at those, make a judgement and at the end of the day, you say, look this is what reality could be for the year. That gives a picture, then you go to top-down, which goes like "well, hold on a minute", "that can't be right", "there should be more", or it's too much – what is going on? And then you've got to sum all the regions together, all the different business segments, and come up with a business figure that says "ok, yes, market is there, there is an opportunity to get that business, to cover our costs, and to make a profit". Or you have to say "grow", because we are not achieving the market, or "sorry guys, the market isn't there", so we need to downsize our costs, so you're searching for the crystal ball. How well can you forecast, what is going to happen next year in your business, what are the opportunities going to be, what are the chances. Some people use probabilities, other take a view on typical market developments, market shares. In the [blacked out] for India there is a very, very simple tool, which I developed, which puts very transparently all of the business cases, which we believe will go ahead in a certain time frame, and that's what we think is our best guess. Based on the knowledge we have. That's what we think that could happen next year, and then you take your view on that, what do I go for? For 20%? 30%? 40%? If that project doesn't happen, what's my fallback position – you have to analyze all of that. And at the end of the day, it's a commitment, we promised to get that business in. The conflicts come, when you have the macro, which is like the whole business, and then you have the regional. Because I've got this opportunity, and this, and there may be six others in the whole world. And the business segments, I only need two of these six to survive, but I don't care which. But if you're in the region you say "hold on, mine's the important one" – I don't care about his. Sometimes there are mismatches...

GK: ... would you describe this as a negotiation process?

JM: Yeah. It's a discussion, it has several rounds, it's aligning people, it's people saying "yes, this makes sense", there is a kind of an alignment, and understanding what's behind it. It's not just something that you have thought about, you have to back it up, it's gotta be justified and explained, and it's gotta have a strategy in place with something like, "this is how I'm going to win this business". And it always identifies where to go, and it identifies what I should be doing next year. To improve my situation.

GK: We have been talking a lot about formal processes now, the [blacked out] [central strategy], the [blacked out] [regional strategy] and so on, what about more informal analytical processes in market intelligence? Could you think of any?

JM: Well there is always a lot of discussions there, you know, we discuss projects, we look at the way our cycles are going, are we on an up, on a down, are we stabilized, there is a lot

of informal discussions about that. Suddenly, a competitor is starting to get aggressive, with prices that you never expected, suddenly appear on the table. There is a mood, isn't there? You won't see it written down anywhere, but there is a mood.

GK: Of course, mhm. Again the question about the IT infrastructure, and the importance of it. Same story as before. We would like to see it all on paper, wouldn't we?

JM: Again, I don't know which information. It always comes down to which information. Information is fine, if it is relevant. If it has an influence in what you're doing. Otherwise, if you were to read things to increase your knowledge there is not enough time in the day to do your job.

GK: That's of course true.

JM: I could read all the papers. All the reports. And the day is gone. So what information do I need to do my job more effectively. That's something we really should become better in. We should be defining. And once we've defined it, where should it go? And where it goes, who is the gatekeeper? And who are the people who can then analyze it? And then who are the people who can then make a decision from it? I mean it's an intuitive thing, most of us have a feeling for what information is sensitive, important, whatever. We hear something, and because we know the business, we say "we better tell person XY" about this, and then he should tell the CEO. Or we tell directly, we kind of 90% of the time know where the information should go. So I would say we rely a lot on our intuition and experience to deliver information to where it should go. Sometimes it's better when there is too much information, although there is too many emails going around – and I don't know how to avoid that. It is additional information flow. I think we do have to be careful, as actions do get diluted... and is this a real action? Is it in the last paragraph, hidden away? So also how we communicate could be more efficient. What's the message? You know, presentations... and so on, how do you deliver information, how can you deliver information in the right way that you get your point across in an efficient way, so there is no misunderstanding. Information is... people see it, communication is a two-way thing, it's information is one way... it seems one way, but actually it's still two-way for me. Because it's a piece of paper for me, or a person telling me, you've still have got to understand it, have I interpreted it correctly, is that what is really meant there? So it still needs a loop. What's the difference between information and a conversation, what's the difference?

GK: So what is it?

JM: It's an exchange of ideas, whether it's written or spoken or visual, it's an exchange. I think we still have to get more efficient at receiving, understanding, confirming, acknowledging, filtering, not filtering...

GK: And then it gets even harder due to different interests of the parties. Isn't it? Even within the organization.

JM: You have a human filter, the brain has a filter. Anyway. It sees what it wants to see. It blocks what it doesn't like. It interprets things... you know, for a number of reasons, in different ways. You and I will see that glass in a different way. It'll have different meanings. So I think... ahmm... training, I think also communication training, I see it as part of .... ahhh... Information....

GK: One more question, with regard to analytical methods, you've said something about market shares before that you have used for example in the [redacted] [regional strategy], are there any other analytical methods that you could think of?

JM: Well, I think you can only analyze the data you've got, so ahh... give an example of what you mean by analytical methods?

GK: For example what is often used is the SWOT analysis. Things like these, techniques or methods.

JM: We use that in account management, we use SWOT. In the business segments, we do SWOT, so yes.

GK: Could you think of anything else?

JM: Best case, worst case, realistic case.

GK: Sort of scenarios.

JM: Scenarios. You can look at historical data, trends, plausibility analysis as well. Ahhmm... statistical, sigma, two sigma, confidence.

GK: Ok, coming to the next part. This is intelligence synthesis now. So we have gathered information, joined it together with other pieces of information, analyzed and interpreted it now, so what comes out of that process is intelligence. I would say intelligence gets produced at many parts of the organization, do you think it's important to have that intelligence together in one place now? Or would you say that this is not important – how do you think it gets done?

JM: You have to manage it, you know. You can't have access to everything, it's counterproductive. Again, decide who are the people that have that information, how it should be stored, how it should be taken, who should be looking at that making conclusions or analyzing it. You have to structure it. There's no one answer fits all. If someone in accounts has had a meeting and shows that the cash flow is not good in hot mills for example, should I know about that? If you multiply that by all business segments, probably it's not a critical thing for me, is it? But if there is a problem on one of the hot mills that my customer has, then I would expect somebody, who has that information, to let me know if there is something going on, if it's internal to let me know before the customer tells me. So I think you have to use your judgement to know who is interested in that. Want to know – oh, there is a lot of people who want to know something – but need to know, sometimes it gets lost.

GK: Who in the organization is actually producing intelligence?

JM: Gosh, the whole organization produces intelligence. We have the people interacting with the customer, they are producing information continually, that's fed into the organization, the project teams that are putting it into [redacted] [confidential, organizational feedback tool], everybody is generating intelligence, in one way or another.

GK: Is there a somebody, that's responsible to add it all up that's being produced in the organization – or is that impossible? Or is it possible to do it to some extent?

JM: To digest the elephant, you gotta slice it up. Some group it, customer intelligence, competitor intelligence, market intelligence, technical intelligence, technological intelligence and innovation, developments, people, processes, guideline, you know. Management tools – you gotta cluster, if, again, define the pieces you need to concentrate, try to manage communication, I couldn't see an organization where one person is head of all intelligence, could you envision it? I couldn't. It's impossible; there are just so many aspects, to our business.

GK: I could see people in charge of strategic intelligence. People in charge of customer intelligence, technology intelligence.

JM: Exactly.

GK: And at some point in time, there may be a need to aggregate it together. If it be the [redacted] [central strategy] or whatever. But isn't the latter also a form of intelligence synthesis?

JM: Of course.

GK: So everybody contributes to it. From all the organizational units. So I would see it as a form of how to do it. So the next part deals with communication of the intelligence, hopefully it gets communicated throughout the organization. So my question is, how does market intelligence – and by that I mean all the aspects such as customers, market, technology/products, competitor intelligence – how is it communicated, how is reported throughout the organization?

JM: Well, a pre-project [meant is a sales or bid project] will carry its file and usually the center point is the project leader, the commercial and technical project manager, they should know everything that there is about that, so you got like the pilot and the co-pilot that should be a focus of information. So there is no point me getting information from the customer, so there is no point me keeping this information, because if I don't disseminate that information, it's not gonna go anywhere, so you got to know who to concentrate, who you pass this information on to. So it's like a spider's web. Something lands on that spider's web, and the spider in charge of that web feels that this information will have to get somewhere, and it's always better if the spider knows that he is supposed to bring it somewhere. It needs both, pull and push in our organization.

GK: So you have to know from whom you could potentially get intelligence from, if you have a perceived lack of intelligence or even information?

JM: Yeah, yeah!

GK: So it's not one-way thing, to communicate it, but it's more actively, you know, drawing this information from somebody.

JM: It has to be two-way in an efficient organization.

GK: How is this supported or done, I mean, without considering that one has to be in the business for so-and-so-many years and knowing everybody. That apparently is one way of doing it. And possibly the way it's done for certain aspects, but are there other ways of how to do it?

JM: Well you can train people, say "look that's an important aspect of our business" showing, how to become more organized, be more structured. It's a mindset it's a cultural thing, if you don't have it in the culture, if you don't have it on the list of things that are important to your business, it won't get done. It will just get left to the people, who from their professional view or from their experience, act as they think is correct. Which 90% of the time is, but also this 10% can be the critical part. So I think it's a mindset, if you're identifying that communication is not going as well, that information and intelligence is not flowing, as it should, you've got to identify, you've got to monitor it, you gotta measure it somehow. But then how do you measure effectively intelligence? A manager may say, we've got to set some KPIs, and monitor it, then we got so set some targets, we gotta measure it, how are we doing against the target...

GK: What KPIs could you think of in terms of intelligence? Are there any?

JM: It's very difficult to do it. Do you say "our order intake went down this year", and therefore it's due to a lack of intelligence – but where's the link? It's five hundred million links... it's difficult, and that's why, the cultural, the soft issues, it's in the list of soft issues of companies.

GK: So market intelligence is a basis for successful actions, but as they say "success has many fathers, and failure is an orphan!". Isn't it something like this? And that is the reason that it is sort of hard to "grab" it sometimes? Commonly, "only what gets measured, gets done"?

JM: Yeah! And do you actively go seeking for it, for that intelligence? The mindset here again... or "I don't think it's important, I don't want to be bothered".

GK: "I know it all".

JM: Yeah, yeah! I heard it, I don't believe it. One of the technical guys says "oh, the customer's budget is a hundred million, no way, we're at a hundred and fifty million, and there is no way that we ever can meet that". And three months later, we get the order at a hundred and twelve.

GK: Is it a way of promoting a more reflective way of thinking in the organization?

JM: Yeah, if you don't listen, if you take it as a face value, the guy, the technical guy just said my calculation says this, customer said that – therefore immediately he thought we lost the business. We in sales say "hold on a minute, there is something not right here". It can't be that difference, there must be a reason for it, and so what is the reason. Let's dig a little bit more, let's push a bit more. And it's just that that is a good example for you as a person, your nature, what motivates you, that's all soft issues. And that's... that is one of the issues that we suffer from, in our technical, technological way of business is, I don't think we pay enough attention to the soft issues. In communication, intelligence gathering, it comes down to these soft issues, 'cause it's difficult to measure.

GK: Of course, yeah – correct. The literature speaks of formal ways to communicate intelligence, and informal ways. I think it is clear what each of this related to. Do you see any possibility to integrate those two ways? Or would you say there is no benefit in doing that?

JM: No, no. I mean, we do it all the time. And we don't realize it. Take the management meetings, two hundred guys from all the countries get together, we have the formal line of communication, and then we have the completely informal at a coffee, in the breaks or in the evening. And you can discuss issues.

GK: Would you see the formal part of it, as being the stimulus?

JM: Yeah. You need the formal.

GK: As a stimulus, and then you go into your networks...

JM: It's more than a stimulus, it's a clear direction. You have to see it like that: "that stimulus, we have to put it into practice". You receive an order, an information – and then you have to make up your mind and see how it could work.

GK: Ok, good. Coming to the last part of the interview. I want to know more about plant building peculiarities, but first one question. You said you were working for other companies, was that in the plant building arena as well, which companies were there?

JM: Hydroelectric power, I was in the hydroelectric power industry. So I was with companies like Kaverner Hydro, which became GE Hydro, they got taken over, I was with a company called Voith...

GK: I know this one. Very famous. Power plant building, turbines.

JM: I was with an engineering group called Biwater, in the UK. And of course when I was in VATECH Hydro, in our group, because I worked in VATECH four years, so that's four competitors in the hydro.

GK: And then metals.

JM: And then metals. I was with Davy, and then sixteen years ago I joined VAI UK.

GK: And in Davy, for which part?

JM: In sales.

GK: Blast furnaces?

JM: No I covered rolling mills and process lines.

GK: Ok, so one general question before we start, you have a lot of experience in metallurgical plant building and power plant building, what would you say, in principle



from what we were discussing so far, is that applicable at the power plant building area as well, or is it different there?

JM: No, no. That is very similar. Also when I was part of VATECH, I was responsible for regional set-up in Transmission and Distribution. The general, the plant building, the big plant building has quite similar cultures. And by the way, I wasn't a sales person, I started off as a design engineer. I am a turbine designer.

GK: Really? You are?

JM: Yeah, I designed turbines, went to site, commissioned. Technically I am much more qualified on the hydro.

GK: Great, good to know.

JM: So I have seen both, the technical and the commercial.

GK: I am interested to learn about plant building peculiarities with regard to market intelligence. We've been talking a lot about it now, about IT, about gathering information, analysing and distributing. If you think about this business, this culture, where is the plant building characteristic to market intelligence, where is the specialty. What is here different in market intelligence than in other businesses. Or maybe there is no difference?

JM: I think being in the project business, because the plant building is project business, you have far more personal interactions with the end user and the decision makers, yeah?, so it's not like selling PLCs or drives or whatever, in that you don't see the customer, so there is a personal relationship there to be made. And you might have good technology, maybe good prices, but if that customer doesn't like you, doesn't trust you, the relationship isn't right, and you can still lose the business. I've seen cases where we had the better technology, the better prices – lost it on relationship. So relationships, personal relationships, I would say is definitely a main differentiator to for example product business. How you handle people and situations is very, very important. You have to sell yourself first, you have to win the trust as an individual, and then you've got the chance to win the trust as a company. Another thing which I think differentiates is the high amount of aspects that go into plant building. It is complex, there are so many different fields of engineering, technology, expertise, industry, to go to finally produce the end result. So there is a lot of interfaces and interfaces mean you need a lot more communication. A lot more management, so again, if you're not good a managing people, situations, whatever, it's also tough. It's not enough to just bang at a table [bangs at the table] and shout at people "you idiots, just do it...!", they'll just say "yes, yes..." and do nothing about it.

GK: [laughs]

JM: There are so many components that go into that, that ... be careful... that one component that you didn't take care of, that didn't seem so important... could bite you in the ass. The last minute, that you least expected it. And with regard to communication, I would say... I have moved between competitors in the hydro ... Kaverner, VATECH...

GK: How many years have you been in the power plant area?

JM: That'll be fourteen. Because there was an overlap. In VATECH, I was also doing VAI [metallurgical plant building], so there is a four year overlap. So it's fourteen, overall twenty one, but with an overlap of four years.

GK: I understand.

JM: I was doing both, at the same time. Which is quite nice actually. [laughs] so I am twenty one, since Davy.

GK: I understand.

JM: So if you say, it's basically ten years in the hydro, and then I was doing four years also metallurgy. So that's why...

GK: That's great, really. Very interesting. The clients are very different in power plant building, I could imagine, you have many governmental clients...

JM: There is governmental, there is private. You need electrical, mechanical, hydraulics, civil, erection, it's not so different.

GK: Not so different. Great. Apart from plant building being a project business, and driven by relationships, the longer durations, schedules, and the complexity, is there anything else you would like to this complex field of plant building peculiarities?

JM: I think if you are not focused on technology, innovation, and the long-term, you won't make it. I think that applies to a lot of things actually. But in the plant building, if you haven't got technological and strategic goals, to give a strategic advantage, you ain't gonna stay among the top three. You'll be eaten. Your business is going to shrink. And eventually either you disappear, or the big guys will take you over. So long term.

GK: It's even reflected in the business itself, which is also long-term.

JM: Yes, and you really need people to stay longer with you. You can't pick up any of these business in three years. It does take... look at how complex this business is. You need minimum three years to start to understand what the hell all of this is about, and start to get a network. And then you need a couple of years, usually it's about ten years in the business, before you get a good feel of the people, the market, the customers, the company, the network, to add value.

GK: The literature speaks of human intelligence networks, which are used to share information, exchange, would you see a leadership role connected to managing this intelligence network? Or would you see them as autonomous behaviours.

JM: Both, actually. And the autonomous that why you need more professional people, yeah, the more complex the organization is, you need more intelligence locally, at that node, to know where to fire off. If I give you a list of all the people you have to contact, if something – for this and that, you'll never succeed. You've got to have “built-in intelligence” with that person, to be capable of saying “well, that's important”, I better speak to that person, you've gotta have... the intelligence has gotta be inside.

GK: So it's not only about intelligence, but about intelligent people.

JM: Yes. And you know, that's crucial to the business that we are in. We're handling so much intelligence, so much information...

GK: This business is actually an information machine.

JM: It's just about that. It's stimulus, input, and output.

GK: And it's really interesting to see so many people [meant are employees and managers of the organization] travelling all over the world, if you go to product business for example, than I doubt that they have so many people flying around the globe as we do. Look at the number of "hon circle" members here, I mean that's incredible. And all these people, flying all over the world, come across so many facts, and figures, and trends and feelings, and whatever it is, that this is really, really incredible. Wouldn't you say?

JM: It is. And we're very lucky in that respect, because we get a lot of stimuli, there is also danger in that, when you get a certain experience in one area or region and then you think that the rest of the world has to be the same. And it isn't. If you understand the rules of the game that apply here, then you go across the Atlantic or Pacific, and suddenly the rules of the game are different. If you can't adapt to that, and if you haven't the intelligence to do so, where things fit, how things work, then you may say, "well this worked in India, therefore it must work in the USA and it must work in Brazil." And that's why I think that you need a lot of savvy people to do the job. And analyze it, you can come to the wrong conclusion.

GK: You just said the right word, because I think the one aspect is to get the right information at the right point in time, but the other one is to have that experience and knowledge to be able to evaluate this piece of information, isn't it?

JM: You have to adapt, there is no one rule that fits all. And thank god, otherwise it would be a very boring planet. So again, information, information – but if you don't analyze it, you don't understand it, if you don't know what's behind it, you can actually make the wrong decisions.

GK: Of course. And even if you have the right intelligence at the right time, it still might not get used by the ultimate decision maker.

JM: ... might not get used. And timing is also ... you know... timing is also important. When you do things, at the right time. That's also intelligence.

GK: Two last items for the day. I am interesting in the connection – or the overlap between market intelligence on the one side, and knowledge management. Are you familiar with knowledge management as well?

JM: Well I am familiar that the management is putting together a team, that is nominated, and there is a lady that is in charge of this knowledge management. Yes, and we're trying to put in information in place, so that people can access it, in a structured way, yes I am familiar. Is that what you mean?

GK: Yes. Do you see interconnection between market intelligence and knowledge management?

JM: Yes. Of course.

GK: If yes, where?

JM: There has to be, we're doing it, we're creating in [redacted] [meant is an IT software] we got market information, one thing is to administer the system, the other one is who is the owner of that information. And who analyzes it. So again it's what we said before, you can have a system, to say right we've got this IT system, we can now put in this information, but who is now responsible for that information, making sure that all of that network knows where that information is, making sure that there are links with other information, which are relevant, so of course marketing should be a sub-set to that.

GK: And why a sub-set to that? Why not the other way round?

JM: Oh, what do you mean – the market being the most important thing? And everything else is secondary return?

GK: Well I am just thinking loud.

JM: We in sales tend to think like that, because we are so customer focused. That any innovation or anything should be market/customer driven. Other people will argue that there has to be other things, independent of that, company-specific items, that have nothing to do with. For me it's not important to think this is more important than that, they're all interconnected in one way or another and they have different weights, depending on what you're trying to do.

GK: Maybe if you look at smaller innovations for example, then maybe it's a good think if you are customer oriented, you may sell it easily, if you look at disruptive innovations, something really totally new, then it may be better to not look too much at the customer, because there may not be anything like it to look at.

JM: You're right. You need both.

GK: What you're trying to achieve at the end of the day. What would you say?

JM: Definitely. There noone that rules the other. They're interconnected. The weighting, which one rules the other, depends on the situation. That was a good example. So it's always about, how does this piece of information influence the rest of the organization, impact, and then has repercussions on something else.

GK: I read once about a guy that said, the problem with all these IT solutions in market intelligence is really that much of what comes into such a system is, into the organization, is a form of personalized knowledge, and it doesn't really fit the database paradigm – would you agree with a statement like this?

JM: Absolutely. Under what heading? In which box is that going? Is that a customer problem? Is that a market problem, the customer is just a – let's say – a symptom of? Is it a

personal problem with this guy? Is it at the end a technological? At the end it's classifying? That's the problem, how to classify information. If I wanted to find information I gotta give it a label....

GK: I think that is even a hard, maybe the hardest part of it. And that may be one of the reasons why people go to their networks, and spread the information that they get, or jointly analyze, or discuss it, to make sure it goes into the network. Or in their community. Because it may be easier in that way, than to write a report or something...

JM: That's the normal way, we're humans. That is human! I don't wanna communicate with a machine. What's the machine going to do? Just to put it into a machine, what's gonna happen at the end of the day. It is done when the information affects someone or somebody, in a perfect society, our brains could remember all that stuff, you could keep all the surveys in the brain [laughs].

GK: Of course. Would you say that market intelligence may act as a stimulus to learning behaviour?

JM: It's an example of. It's not the only thing. Innovation, psychology, [short pause] there is lots of things that can.... you know, depends on how you see the world. What affects you? But then there is also people who don't like to communicate.

GK: Yeah, of course.

JM: It's not in their nature.

GK: And you can't just force them. It's not possible.

JM: You can't do that.

GK: Either it's there or it's not there.

JM: So don't put them in sales, or anything like that. They may be excellent technicians, doing calculations and produce fantastic engineering or whatever.

GK: Ok, we've been talking a lot about market intelligence now, from my point of view there is not much to add, would you have anything else to add to this conversation?

JM: What's your conclusion from this? What do you get out of this?

GK: From this specific interview or from all the interviews?

JM: Well this one specific, and then from the total, the two things.

GK: What I did basically is, that I have built an initial framework from what the literature says, and then based on a reflective process, there are some questions coming out of that, where I think that the literature says little about it. So I am trying to get all this information together, from the interviews, some of it I got also from you, the difference between interviewing and doing a questionnaire is that I can go to depths while looking at a complex

topic. And you're really digging for gold, it comes in homeopathic doses, and you need a few interviews to do it. To put this whole picture together.

JM: Did you find any gold today?

GK: Yes, I did. If you talk to the right people, you always find something. Choosing the right people is important, so I am going for experienced people, no junior positions. Basically middle and senior management. People with a lot of background.

JM: But why not the young people?

GK: I have one participant in the study who is very young. But still with a lot of experience and many years of working in the industry. And having a slightly different attitude to the whole topic.

JM: But it's just as valuable. You are doing the same job as I am, you are 29, I am 51. And still we're doing the same job. So your view is just as important.

GK: That is what I am trying to do in this study. Putting the different pieces together, look if they are contradictory, if I had two totally opposing views, that would be a problem – I had to look into that more closely. From what I can see now, people tend to be sort of similar in their views.

JM: I would also add to your sample, put some young people in there. Because the younger generation, like you, your communication skills are even better. Much better than ours, you might not think it, but you've been born into a later, much more communication-orientated... and it gets more and more, so I would extend your sample size. To get their view on communication, because otherwise, if you talk to the old guys like us, the 50 pluses, then we're all from the same generation, a certain similar background, you know...

GK: No but it's not like that. I got people in their 20s, 30s, 40s and 50s. So I actually think it's quite diverse. They're with four different companies...

JM: And I'd get somebody, that's got no idea. Just to get their perception.

GK: That's a good hint. I'll think about that.

JM: If you get too many people thinking in the same way, you don't get new ideas.

GK: But I did get many different perceptions, because everybody sees it a bit different. And everybody has different interests towards information and intelligence. Think of senior management versus middle management.

JM: And you wanna hear what people feel, also the unofficial line.

GK: With rich descriptions.

JM: From the heart.

GK: Of course. I had some of the questions coming straight out of the literature. And then other ones coming from practice, and asking for additional things around the subject. So I tried to balance it a little bit. Did you think it was too biased?

JM: No, no. I just thought if you tend to interview the same kind of people, you tend to generally get not very differing opinions.

GM: But, no – I did.

JM: That's good.

GM: I did actually.

JM: And what motivated you to do the BA?

GM: Well, I thought I needed to do one more thing, to complete the academic career. I did my master's degree in Krems, and I wanted to do the doctor as well.

JM: Oh, it's a doctor?!

GM: I am actually doing it in Britain.

JM: Oh, really – where?

GM: The University of Gloucestershire.

[few more words on the curriculum, the motivation, continuous learning etc.]

JM: So, I think that's it.

GK: Yeah, thank you for your time.

## Appendix No. 5: Example of a feedback e-mail used to create the final reports

Dear Guntram,

I've put my answers in your mail below marked in RED.

With best regards,

[blacked out for confidentiality]

[blacked out for confidentiality]  
[blacked out for confidentiality]

Mobile: [blacked out for confidentiality]  
Phone: [blacked out for confidentiality]  
Fax: [blacked out for confidentiality]  
E-mail [blacked out for confidentiality]  
Webpage [blacked out for confidentiality]

This communication contains information which is confidential and may also be privileged. It is for the exclusive use of the addressee. If you are not a named addressee, please note that any distribution, reproduction, copying, publication or use of this communication or the information in it, is prohibited. If you have received this communication in error, please contact the sender immediately, and also delete the communication from your computer.

---

**From:** Kuebelboeck, Guntram  
**Sent:** 13 February 2012 17:31  
**To:** [blacked out for confidentiality]  
**Subject:** Interview Report - Market Intelligence (R8)

Dear [blacked out for confidentiality],

Thanks again for participating in the study on market intelligence in the plant building industry.

Attached to this e-mail you will find the report that I have typed from our interview. I kindly ask you to have a look at the report and tell me the following about it:

- Does it reflect what we have been talking about? YES
- May I use it for my dissertation? YES

Additionally I would like to ask for your opinion concerning the following:

- Did you think that the interview was conducted in a reflective way? y / n / n.a. Y
- Did you find the interview overly biased? y / n / n.a. N
- Did you find that I covered the topic comprehensively, or is there anything you would like to add? Topic covered well

I am looking forward to receiving your feedback.

With best regards



## Appendix No. 6: Example of a colour-coded report

Report on  
Interview No. 8 (JM)

I get most of the competitive information from the customer itself, I have to understand what is the customer's strategy, where is he today, where does he want to be down the road, and we have to find a system, a roadmap, that we need in order to be successful. A good sales man is thus so valuable to an organization, because his boundary position gives the organization the possibility to extend their domain onto customers, partner, maybe even suppliers and so on.

The customer is the majority is most of the information, of course. The competitor information is what we usually have internally, from my experiences with other customers, also within our own customers, it's what is available from the public domain, it's information that you get from customers, from our own people. There are a large number of sources.

You learn from experiences as well and try to improve at the next instance.

When gathering competitive information from internal sources, you've got to know the company, you've gotta know whom to call. So it's mostly about personal contact, about direct communication. Meetings are important, because that information may need more than one head, one person – so you get it. Different disciplines, different people, different knowledge,

IT solution for gathering information is the dream. You know, give me a Google for the company, and I think that is what the management is driving to do.

I am gathering information about customers as a global account responsible. Some of it is on tools to. I think it's important to have tools like that. So that people can find information, to know is responsible for that information.

Everybody. I mean, you know – everybody and anybody with contacts should have a sales man's hat on, and should be sensitive with regard to gathering information and feeding back into the system, it's feedback, it's knowledge and if you can help somebody's understanding, it's not always clear where people should put that information.

But what happens in practice is that people according to their networks, share and exchange information - but that's the unofficial.

Not everything can be input into a tool.

Yeah, and then you got a piece of information, and in isolation it can be meaningless, if you get other bits of the puzzle together, there would have to be a place to concentrate that intelligence – and I think we do not concentrate that intelligence enough. Then, and this is compared to being a detective, then you have the chance of seeing that bigger picture. And how do you concentrate, and where do you put that intelligence? So right now its mostly stored in people's brains.

Of course there is always conflicting items. So there are several loops. Conflicting information, internally, and externally.

Information from internal and external sources is synthesized by sending information, such as reports and e-mails to persons that are interested. That's proactive from the information gatherer. And there are meetings, with a customer or internally.

Report Nr. 8

GK/JM

Page 1 of 4

Most of this information synthesis really happens in the brains of people or in groups, rather than in any system or tool. The way we operate at the moment, yes. There are not so many systems.

When I've worked at other competing companies – not in this industry, though – generally, there is not so many differences. In fact, people always think that the competitors are always better in everything, you know [laughs], it's not always like that. It's just that the problems in one company is blue, it's green in another, it's different problems in different companies. Let's say I am not aware of any significant difference in that.

Plant builders are not as dynamic on the innovation side. Just by the nature of our industry. It's slow, it's conservative, changes take time, our products take three to four years to go into operation, and another two to three years to see what the performance is.

But where is the difference in the analysis, when for instance looking at figures such as per-capita income, the steel consumption of India, and this sort of general, more macro-related stuff, and on the other hand you have information on you client. To look at the macro stuff, that's people like business excellence [strategy department], generally at look at macro, strategic, success factors, market development, more global, and as they refine they bring it also to a more regional, you can't say there is a global solution to anything anymore. It's different regions have different rules to the game. So I would then expect them to look at different trends, saying "there will be a need for steel", "steel will be displaced by something else", energy is going up so we should be looking at energy efficiency technologies, you know, they should be looking at the horizon and say what is coming up.

But also the business segments themselves, have to look also long-term. Well we have a planning, we have a Planband [central strategy document], strategy meetings, and we have strategic meetings, where you lay down your plans for innovations for trends. That's long-term. It's a discussion, it has several rounds, it's aligning people, it's people saying "yes, this makes sense", there is a kind of an alignment, and understanding what's behind it.

We have been talking a lot about formal processes now, the Planband, the BTA and so on, what about more informal analytical processes in market intelligence? Well there is always a lot of discussions there, you know, we discuss projects, we look at the way our cycles are going, are we on an up, on a down, are we stabilized, there is a lot of informal discussions about that. It's an exchange of ideas, whether it's written or spoken or visual, it's an exchange. I think we still have to get more efficient at receiving, understanding, confirming, acknowledging, filtering, not filtering.

We use that in account management, we use SWOT. In the business segments, we do SWOT, so yes. Best case, worst case, realistic case - scenarios.

The responsibility of aggregating all the intelligence up is divided. To digest the elephant, you got to slice it up. Some group it, customer intelligence, competitor intelligence, market intelligence, technical intelligence, technological intelligence and innovation, developments, people, processes, guideline, you know. I couldn't see an organization where one person is head of all intelligence, could you envision it? I couldn't. It's impossible; there are just so many aspects, to our business.



And at some point in time, there may be a need to aggregate it together. If it be the Planband or whatever. But isn't the latter also a form of intelligence synthesis? Of course.

Disseminating intelligence is like a spider's web. Something lands on that spider's web, and the spider in charge of that web feels that this information will have to get somewhere, and it's always better if the spider knows that he is supposed to bring it somewhere. It needs both, pull and push in our organization. So you have to know from whom you could potentially get intelligence from, if you have a perceived lack of intelligence or even information. So it's not one-way thing, to communicate it, but it's more actively, you know, drawing this information from somebody.

Well you can train people, say "look that's an important aspect of our business" showing, how to become more organized, be more structured.

So market intelligence is a basis for successful actions, but as they say "success has many fathers, and failure is an orphan!". Isn't it something like this? And that is the reason that it is sort of hard to "grab" it sometimes? Commonly, "only what gets measured, gets done"? And do you actively go seeking for it, for that intelligence? The mindset here again... or "I don't think it's important, I don't want to be bothered". "I know it all".

But it still is a way of promoting a more reflective way of thinking in the organization.

Integrating informal and formal means of disseminating intelligence. I mean, we do it all the time. And we don't realize it. Take the management meetings, two hundred guys from all the countries get together, we have the formal line of communication, and then we have the completely informal at a coffee, in the breaks or in the evening. And you can discuss issues.

Hydroelectric power, I was in the hydroelectric power industry. So I was with companies like Kaverner Hydro, which became GE Hydro, they got taken over, I was with a company called Voith... I was with an engineering group called Biwater, in the UK. And of course when I was in VATECH Hydro, in our group, because I worked in VATECH four years, so that's four competitors in the hydro. I would you say, in principle from what we were discussing so far, that's applicable at the power plant building area as well. That is very similar. Also when I was part of VATECH, I was responsible for regional set-up in Transmission and Distribution. The general, the plant building, the big plant building has quite similar cultures.

I think being in the project business, because the plant building is project business, you have far more personal interactions with the end user and the decision makers. It is complex, there are so many different fields of engineering, technology, expertise, industry, to go to finally produce the end result. So there is a lot of interfaces and interfaces mean you need a lot more communication. I think if you are not focused on technology, innovation, and the long-term, you won't make it. I think that applies to a lot of things actually. Yes, and you really need people to stay longer with you. You can't pick up any of these business in three years. It does take... look at how complex this business is. You need minimum three years to start to understand what the hell all of this is about, and start to get a network. And then you need a couple of years, usually it's about ten years in the business, before you get a good feel of the people, the market, the customers, the company, the network, to add value.

The literature speaks of human intelligence networks, which are used to share information, exchange, would you see a leadership role connected to managing this intelligence network? Or would you see them as autonomous behaviours. Both, actually. And the autonomous that

why you need more professional people, yeah, the more complex the organization is, you need more intelligence locally, at that node, to know where to fire off. If I give you a list of all the people you have to contact, if something – for this and that, you’ll never succeed. You’ve got to have “built-in intelligence” with that person, to be capable of saying “well, that’s important”, I better speak to that person, you’ve gotta have... the intelligence has gotta be inside.

And it’s really interesting to see so many people [meant are employees and managers of the organization] travelling all over the world. And we’re very lucky in that respect, because we get a lot of stimuli, there is also danger in that, when you get a certain experience in one area or region and then you think that the rest of the world has to be the same. And it isn’t. If you understand the rules of the game that apply here, then you go across the Atlantic or Pacific, and suddenly the rules of the game are different. “well this worked in India, therefore it must work in the USA and it must work in Brazil.” And that’s why I think that you need a lot of savvy people to do the job. And analyze it, you can come to the wrong conclusion. You have to adapt, there is no one rule that fits all.

Do you see interconnection between market intelligence and knowledge management and learning? Yes. Of course. JM: Definitely. There noone that rules the other. They’re interconnected.

I read once about a guy that said, the problem with all these IT solutions in market intelligence is really that much of what comes into such a system is, into the organization, is a form of personalized knowledge, and it doesn’t really fit the database paradigm. Absolutely. Under what heading? In which box is that going? Is that a customer problem? And that may be one of the reasons why people go to their networks, and spread the information that they get, or jointly analyze, or discuss it, to make sure it goes into the network. Or in their community. Because it may be easier in that way, than to write a report or something. That’s the normal way, we’re humans. That is human! I don’t wanna communicate with a machine. What’s the machine going to do? Just to put it into a machine, what’s gonna happen at the end of the day.

GK: Of course. Would you say that market intelligence may act as a stimulus to learning behaviour? It’s an example of.

## **Appendix No. 7: Summary of reduced and structured interview reports**

### **Plant building specifics**

#### From Interview 1:

Complexity is a characteristic of the plant building business.

Working globally means to take into account cultural differences of employees as well as of customers. This increases complexity as you get very different views, different types of information and knowledge.

#### From Interview 2:

A feature of the plant building industry is that the customers of the customers are also relevant. At the end, there is only as much demand for steel as there is demand for cars, bridges, washing machines etc. The same is basically true for power, chemicals etc.

Sales activities are fundamentally different in plant building, than in other industries. The sales process is more detailed, diversified, a certain amount of engineering resources are put into it – that means resources, time and money. Therefore, market intelligence so vital in the plant building industry. It serves also to prioritize activities, to put your resources on promising projects – and not hunting “white elephants”.

It is necessary to include a relatively high number of specialists from different disciplines in order to examine a plant project from different angles – from financing, to technical feasibility and ecological aspects. This is a main characteristic of plant building. Especially topics connected to environmental requirements and emissions have spread from Central Europe to China

#### From Interview 3:

Plant building is a business that takes many responsibilities in terms of individual disciplines. If that was performed well, the reference value of a project is highest.

#### From Interview 4:

Plant building is thus unique, as we deal with longer time schedules. The political dimensions are more important. Plant building companies are truly knowledge organizations.

Complexity is another major issue in plant building.

From Interview 5:

Sales people do not like to write down minutes of meetings and things like that. The issue is that they do not like to write all their information in order to make themselves a bit more valuable.

Plant building is a more complex environment; on the other hand some people think that the plant building business is unique that there is nothing like it in the world, which is not true. Building a power plant is also a project. Building a 12 kilometre tunnel through the Alps is as complex as building a steelworks. So plant building is not any different than any other project-related thing, as long as it is a longer-term, complex activity. Plant building is complex because you have to consider internal factors, external factors, you have a time schedule, a budget. This turns the business different. Plan building and project-executing business is related to long-term business relationships.

Plant building and project-executing business is related to long-term business relationships, between different parties. In plant building personal relation are important.

Market intelligence in plant building is only slowly taking grip. This is due to the fact that the market is slow, reactions are slow, and it is even more difficult as you see no immediate effect. Another issue is how decision makers actually making their decisions. It is conservative, seniority-related. Often these people do not realize the need of market intelligence, because they think they know it all.

From Interview 6:

Formalizing organizational routines is largely due to increasing complexity of the organizations, in line with globalization and the resulting growth of corporations.

It is certainly possible to generalize in part the market intelligence process to the entire plant building industry.

In the capital goods industry, plant building and others, the decision making is more objective and criteria are different than in other industries. Decision making processes are more institutionalized, and a decision making unit is usually involved. This certainly has its effects on market intelligence, especially on the customer intelligence level.

From Interview 7:

Our projects are complex and demanding.

From Interview 8:

People always think that the competitors are always better in everything but it is not always like that. There are no significant differences with regard to market intelligence at different plant builders. Also in power plant building participant says that in principle the discussed is applicable as well. I know this because I have been working in power plant building for ten years. In general plant builders of all kinds are quite similar.

In plant building you have far more personal interactions with the end user and the decision makers. I have to understand the what is the customer's strategy, where is he today, where does he want to be down the road, and we have to find a system, a roadmap that we need in order to be successful.

Plant builders are not as dynamic the nature of our industry is slow, it's conservative and changes take time.

It is complex as there are so many different fields of engineering, technology, expertise, industry, to go to finally produce the end result. So there are a lot of interfaces and interfaces mean you need a lot more communication.

I think if you are not focused on the long-term it is difficult to stay in business.

You really need people to stay longer with you. A minimum of three years is needed to start to understand what this is about, and start to get a network. And then a couple of years are needed, usually about ten years in the business, before a good feel of the people, the market, the customers, the company etc. is developed in order to add value.

At the plant building company there are many employees and managers travelling all over the world. This results in getting a lot of stimuli from the external world.

The big differences are not between the individual plant building disciplines, but in the different nature of the market regions. There is the danger that a person gets experience in one area or region and then he thinks that the rest of the world has to be the same. There is a need to adapt to local peculiarities, as there is no one rule that fits all.

## **Gathering competitive information**

### From Interview 1:

The prerequisite to acquire competitive information – even critical information – is to have a relationship with somebody, who is knowledgeable about a topic.

Decentralized units drive internal information gathering by using personal discussions. They are used to „get additional information from people“. It is mostly done in the form of meetings. Most of what comes into the organization terms of competitive information is brought in by colleagues and is mostly not written anywhere. Regular meetings and other dedicated meetings have a more formal character.

From a decentralized intelligence perspective, interviews are used as a method for preparing some strategic piece of intelligence.

Additionally decentralized units undertake so called “employee’s round table“, these are dedicated informal type of meetings where personnel and colleagues come together at some external location, to foster communication and information exchange among people. With all the systems and tools, the informal gatherings sometimes work better than anything else.

Why does information exchange work so well at the lunch table?

The human interactions can be weighted more important than the tools. Information in tools may not always be up-to-date, whereas people tend to be more up-to-date.

Other items would be e-mail, the IT tools, writing reports; we do not have a person that is centrally responsible for collecting competitive information. They depend on the information receiver to be proactive or to follow the guidelines.

In practice, everybody is concerned with „where do I get this information from“.

Another possibility to gather information is by commissioning externals with market research, studies. It’s buying information on subjects where there is not enough information internally available.

Gathering, analyzing and interpreting information happens in different ways. Sometimes it happens all in one go, mostly when there is a need for this. Sometimes only the gathering happens and analysis and interpretation come at a later point in time.

### From Interview 2:

The most essential information you can only get from customers directly. This is information with regard to future project opportunities, feasibility of projects, time schedules, financing issues. This information depicts in more sincere way what is really



going on, than information that are obtainable from official channels such as brochures, shareholder information or from congresses. This is due to the fact, that it is the client who realizes such projects, so logically it means speaking to the representatives of the client, these are the most direct source of information, the origin of all information.

In order to get this information it is necessary to be directly at the geographic location of the client and to be proactive. Regular contact with the customer is key; together with the knowledge of who possesses the required information – which is related to knowing the right contact person.

Gathering information is mainly related to personal meetings, these are the main source of information transmission. For project information this cannot be expected from information containing brochures and other broadly distributed media.

Information gathering happens in both, formal and informal meetings with the client. Formal meetings are those where officially announced plans are discussed, investment plans, time schedules, priorities, problems of the customer. The problem is that sometime too much information is transmitted, so that it becomes tough to balance and prioritize these. For such instances more informal meetings then are necessary, be it a dinner, a joint coffee break, or the like. These are so important because they open the possibility to question part of the information formally received to get the gist out of it. The informal part is crucial.

Synthesizing information, analysing and interpreting it – these processes need to be undertaken in a continuous mode, meaning with the same participants who are capable of doing so. Integrated processes in terms of synthesizing, analyzing and interpreting are especially crucial in the short term. Here the need to act fast is most pertinent. In terms of tactical activities there is more time to counter-act; processes are not so much integrated. In terms of strategic plans and activities the time to adapt and react is available. There is more potential for corrections. Therefore gathering and synthesis are often separated from analysis and interpretation and these again are separated from the decision.

#### From Interview 3:

In terms of technical information, a lot of competitive information comes from screening the media, publication, lectures at conferences - secondary material.

Informal gatherings are a rich source of competitive information. They are related to experience and personal relationships. People are then willing to make available more information in connection with the technologies that we offer, that they would not reveal to someone that they do not know. It is important for getting honest, quality information.

Participants to meetings are people specifically involved with the project or technology in some respect. They have the task of preparing the communication and promoting this technology, holding lectures, preparing lecture documents things like this, specifications. It is the people that are involved with the start up of the plant who are on site and faced with the everyday reality of implementing complex metallurgical plants in a difficult geographical location where the logistics are all but certain.

I have been in the company for 30 years, I know many of the people in important positions of the company – particular, in the technology areas – and it is these good relationships and connections, which you have with these people, which is extremely important [...] I find that it is good relations which is extremely important for getting honest, quality information. So that I can evaluate shall we push this technology, or we do not have really any chance in that.

Inter-department coordination is related to mitigating the problems associated with excluding oneself from valuable information that are available to other departments and organizational structures. It means taking into account other people's facts and information into the whole picture. Staying in the box means getting a very one-sided picture of the reality of projects, technologies, future prospective products.

In terms of informal information exchange, most employees have a network of people within the company, that they have a shared past some sympathy for this person, or where they have trust that he provides factual information. Out of these networks there may emerge some sort of communities, because in these you share a common interest, be it a project, a new technology, be it a certain customer or market region, and then you start to approach these people from you network, where you think, more intensively. These communities that centre on a common interest, be it a product, a market region or a project. I think they are communities, yeah. Communities, or interacting communities that centre around specific interests. There are cases where people working with a company have to very specifically focus on key topics.

What would be needed is an internet platform, because our company is multinational, with research centres and engineering centres throughout the world. Also a web-based platform, where people ideas, would be useful. In order to not just utilize the knowledge in one location, but to combine the knowledge of different locations. The company has undertaken steps in that direction, it has established communication centres, where people get together, meet, have a coffee. These meetings are not moderated, but they could be developed more in a direction where discussions are moderated more, in a certain direction and have

discussions more focussed. To have an organic approach is indispensable; you cannot replace that by just information technology. When you have a technology platform, you're pulling people together, but they may not have a shared past, they may not know each other, and they do not know what they could expect from each other.

The allowance to attend meetings or conferences depends not only on capabilities, but on connections. Many top-specialists that do not get the information that they need – because they do not possess these connections. “The queen bee getting the royal jelee”. Regular international meetings to exchange topical information are based on restricted invitations, usually at a higher level. But the information that is discussed there is disseminated in a filtered way to the employees of the company. Without the possibility that there is a two-way conversation. People balance such a situation in a way that they foster their own informal networks, since they do not have the formal access, but through their contacts, and through the communities in which they participate, they can still gain a lot of knowledge.

When you look at the volume – internally and externally – it all comes down to time, how much time is spent in trying to access information, or processing the information. It is often a problem. External information published by competitors is important, or speaking with technologists who are aware of such published information to hear what they have to say. Sometimes in speaking with people and in having personal contacts you can get to the core of the matter much more quickly than trying to access pages and pages and pages of data. When you have the possibility to talk to people who are aware of what the competitors are doing, you can immediately ask specific questions.

Inter-department coordination happens more frequently in informal settings.

A leadership function to steer this human intelligence network, could only be preformed by someone that is gifted, skilled, or he sees the opportunity to coordinate these autonomous processes, I think the results could be better. That's why you have moderators at meetings. These people were trained to channel the discussion in a certain way. To encourage solutions, proposals, and to summarize the results of discussions.

Commissioned market research or studies are another method of gathering information.

#### From Interview 4:

Information from external, personal sources can only be received when there is a relationship, when trust has been established. If there is no relationship, you can only get information that may not be wrong but may not help you on. These are received mainly via informal means of communication, in such instances the most relevant items come up.

Yes there are differences in external and internal sources of information. Internal information are often sugar-coated, to make them look more interesting and drive a certain agenda. External information is often more reliable.

Information gathering is everybody's task. This is however, dependant on the corporate culture, and the identification of the individual employee with the company, to look for competitive information and pass it on. The latter may be looked at as a need of an employee. A central position in charge of it, in order to support on gathering critical information may be highly valuable.

There is a lot of personal information and knowledge however, that is not – for different reasons – stored anywhere, but in the minds of people. It does not get written down as information is a source of power, which makes the information holder a very important person.

They get distributed to a great extent by using informal means. Information is stored nowadays also to computer drives, or specific software solutions.

A lot of information is nowadays available on the internet. Secondly, there is personal information; partly we are talking about knowledge in this regard, knowledge based on experience. Both are necessary.

In formal structures, meetings are used. In such instances information and knowledge is also exchanged. Still on informal levels, other types of information may be obtained. In informal structures, information may as well be evaluated in order to check the validity. Communities of practice, yes, we have these in plant building. Although most methods and techniques from knowledge management appear to be useful in market intelligence. Storytelling for example.

What is important for coming up with conclusions and recommendations is to have all necessary and relevant information available, and to have a sense of what information is missing.

Inter-department coordination is absolutely important in terms of information gathering. In most companies opportunities thereof are missed due to lacking inter-department coordination. Inter-department coordination leads to leveraging synergies within the organization.

Information transfer, synthesis, analysis and interpretation are processes that often run in an integrated cycle. In other instances these processes are separated.

A central function to engage in central intelligence is definitely useful, though not existent in some organizations. The same is true, when talking about central positions in terms of decentralized intelligence. The reason for the establishment of such positions is to achieve maximum efficiency. Therefore it is related to the leadership position of the organizational unit.

Central departments may be in charge of competitive information that is on a „higher level“, more general aspects etc. Business units and so are in charge of information and intelligence that is destined for their respective business. They have to report this in their units, for that it is necessary to structure and select the information that is to be communicated further.

An indexlist with personnel that is knowledgeable about certain aspects of the competitive arena may be useful. However, it is often so that in larger organizations, the organization does not know what the organization already knows. In such instances it remains the task of the management to solve this issue.

#### From Interview 5:

There are many different sources for gathering information on competitors: these are mainly public information, the internet, conference proceedings and press-releases of competitors. Client-related information is mostly available with the sales force. It is necessary to go there, talk to them, and relations with them are needed. Another source of information is the feelings from the sales guys that are at the customer's frequently.

Gathering from internal sources differs from gathering of external sources. There is a big matter of concern as they usually come pre-processed. It means that looking at several different sources is advisable in order to be able to build an overall image.

Especially information coming from internal sources has a lot of emotion attached to them. That is a problem, as people tend to only hear what their filters let them hear. Some people will hear between lines, some will just hear the facts; some people will not get the information at all. Information directly from external sources tends to come with less emotion and may be seen as more reliable.

Information is internally gathered via minutes of meetings, to visit reports, etc.

Settings used to gather information are through discussions or meetings, that is what is mostly used. It is necessary to contact those guys that have been there.

The company forces to make things more formal. Only when there is an action required if it is only market monitoring then it is that they are not so formal.

More informal is related to an exchange, information sharing. If there is some action to be taken, specific action, then they will be formalized. Minutes of meeting, action plan.

What happens in this process is: you would meet these people because you have an objective of something, I have a reason, I want to gather information about something, a specific client, a specific project, I may have a specific market target – so we will meet personally, because these guys will not make this available on paper. And then there will be specific questions with opinions, ideas followed by what needs to be done. Integrated processes in terms of gathering, synthesis, analyzing and interpreting are especially crucial in the short term. Here the need to act fast is most pertinent.

#### From Interview 6:

In all organizations there are formal and informal structures. In informal structures people meet to work on certain subjects such as product development, a project or a market region. They form inter-disciplinary communities, with hierarchy being less important, with the subject being at the centre of interest.

Information gathering structures are getting more and more formal. Responsibilities are more and more concise assigned. With that the organization forces its member to gather information in a certain way. The responsible person of a project, a customer or else, is held responsible to undertake these activities as the organization deems it right.

Informal gathering activities are more and more taking the backseat. These are more relevant in terms of activities that are on lower layers such as on project level. Within the latter there are more of the personal contacts and meetings going on. Informal communities mostly centre geographic proximity of members, that promotes communication, personal sympathy, and a personal relationship based on common cooperation in the past. Additionally, a company may chose to foster such informal structures by establishing discussion centres, coffee zones, a canteen where people can lunch together – or a company may chose to not support such things.

IT tools in information gathering make possible to standardize the input – so that everybody is reporting about the same events in the same manner. Main duties with regard to IT systems are entering information, saving information and storing it. So IT makes possible to keep information once gained within the operating boundaries of the organization. Another task is to grant a circle of users' access to this information. There is a shift from information push to information pull. Tools have the downside that most of the information is historic.

The responsibility to gather information within the organization is dispersed on many members; there is not one central responsibility.

To steer the human intelligence network throughout the company is admittedly an important task but falls into the domain of the CEO. He can delegate parts of this.

From Interview 7:

Within project execution works, most of the competitive information is received by means of verbal communication.

This competitive information comes from the regional company that is organized in the specific country, from the site management, from commissioning people.

Another feature is the regular contact with other project managers, in order foster communication, sharing of best practices, exchanging on customer information. Sometimes there is the impression that there is less of this going on today, than formerly. This would be first of all in a more informal mode. It would be a project manager community.

It is important to gather information; however, it is imperative to not get lost. Too much information prevents from action, developing systems that hold huge amounts of – questionable – information is a threat.

On the project management level, all the personnel are responsible to gather information that they need. Overall it is the responsibility of the project manager to ensure that a sufficient amount of competitive information is available to project teams.

To engage in collection of competitive information can be fostered by the general management in form of special time allocation for people to actively engage in information gathering activities. Furthermore, awareness of project managers with regard to the importance of collecting competitive information, motivating them to contribute, and training of personnel with regard to how and what to collect and how to pass it on / where store it is useful.

Inter-project coordination is of high importance to foster exchange of project managers among each other, especially those that work in the same market region, informal meetings are seen as an adequate method. It happens too little in practice.

From Interview 8:

In terms of customer and project information the most important source is the customer itself. A good sales man is thus so valuable to an organization, because his boundary position gives the organization the possibility to extend their domain onto customers, partner, maybe even suppliers and so on.

The competitor information is partly available internally, from experiences – and what is available from the public domain. Partly this information also comes from customers.

When gathering competitive information from internal sources, you have to know the company and whom to call. So it's mostly about personal contact, about direct communication. Meetings are important, because that information may need more than one head, one person – so you get it. Different disciplines, different people, different knowledge. An IT solution for gathering information is the dream. It is in place only partially. It is important to have tools so that people can find information and know who is responsible for that information.

Everybody with contacts should have a sales man's hat on, and should be sensitive with regard to gathering information and feeding back into the system, however it's not always clear where people should put that information.

Training people is important especially with regard to key intelligence topics and showing personnel how to become more organized, be more structured.

Steering the human intelligence networks is related to a leadership function and to autonomous behaviours. With regard to autonomous behaviour, it is important to have professional people, especially with increasing complexity of the organization. More locally produced intelligence is necessary to understand the regional trends. Giving a list of personnel in order to contact them for specific issues is not seen as a successful behaviour.



## **Synthesis and triangulation of competitive information**

### From Interview 1:

To have an IT infrastructure that holds topical information – already collected – that would be useful, it would save a lot of time. I could grab the information I need, important would a filtering option – not everything is relevant for me. Still the human interface is indispensable. Merging external and internally available competitive information is mainly done in the course of regular or designated meetings. [...] It is not possible to cover this huge field entirely via computer systems. There is a human factor involved.

Inter-department coordination is important as there are other departments that have similar problems and tasks as we do. Inter-department coordination is also related to sharing of knowledge that would reduce mistakes.

Connecting different items of information, from external and internal sources, you can only distribute this information to potentially interested personnel, hold meetings, discuss issues in personal contacts. The project meetings are again more formal. Meetings with an official character are those where there are meeting reports afterwards, which are distributed afterwards to possibly interested personnel. More informal are the „round table“ meetings, or other informal venues, when colleagues meet and spontaneously discuss topical issues. Well a meeting is official, there is the head of the department, everybody is watching you, and nobody wants to be exposed. Sometimes, people do not want to give away information at such instances. Among friends it's easier to exchange, there is a relationship, and the information just flows. In informal meetings, people meet who have the same interests, who work in a particular area, for example in a certain project. They meet to discuss topical issues, exchange on recent contacts they had, speak about their recent business trip etc. they don't have to be from the same department. I don't really expect a piece of information in return; I expect a discussion to emerge. If a topic interests me, if I have a problem with something... but you do get something in return – you get a discussion. The discussion enables you to get more information than what you have put into it. You may get information in return.

We have a manager in the department, who regularly takes part in international fairs and conferences, he brings he information back in and distributes them to interested managers from all kinds of departments. There are possibly 90% of receivers that would say „there's nothing for me“, but 10% may say „that's interesting, great to receive this“. A central person within business units is to foster decentralized intelligence is important. People start to think

more about such things; start to develop ideas to a certain topic, to a development of a competitor or whatever. They start to investigate into new ways. Even more important, we stay on top of what the competitors are up to.

Gathering, analyzing and interpreting information happens in different ways. Sometimes it happens all in one go, mostly when there is a need for this. Sometimes only the gathering happens. Analysis and interpretation come at a later point in time.

From Interview 2:

The information that is so transmitted has to be selected and pre-processed to be transmitted to interested personnel. It comes in form of trip reports, minutes of meetings, specifications. The responsible departments have to collect all this information, have to sort them chronologically, keep the up-to-date. In the recent years there is a shift to have these in special databases. That is considered a know-how transfer. The head of the department is responsible that to organize regular updates.

The responsibility that information is gathered and a more complete picture is obtained is with the head of the respective department. It can be a central department, or a business unit, both are common.

Without IT support this is not manageable today. Informal information is relevant, but it needs to be mixed with other sources to become structured. Securing quality is an issue here. Another issue is granting access to these data or information is important, not everyone is admitted to all items.

Synthesizing information that is mixing information from different sources is a combination. It is an inter-personal process and also an IT process. The latter is important to have the information available, all the time.

Fostering such a process of joining different pieces of information together is optimized when someone specific responsible for this process, someone who moderates, questions and keeps people discussing. It should be a person who knows, the market, who knows the corporate goals. It is clearly a leadership function.

Synthesizing information, analysing and interpreting it – these processes need to be undertaken in a continuous mode, meaning with the same participants who are capable of doing so. Integrated processes in terms of synthesizing, analyzing and interpreting are especially crucial in the short term. Here the need to act fast is most pertinent. In terms of tactical activities there is more time to counter-act, processes are not so much integrated. In terms of strategic plans and activities there most time to adapt and react. There is more

potential for corrections. Therefore gathering and synthesis are often separated from analysis and interpretation and these again are separated from the decision.

From Interview 3:

Inter-department coordination is extremely important. The problem in any large company with a complex structure is that people increasingly become much more compartmentalized; they tend to think of little boxes. People are excluding themselves from valuable information that are available to other departments and organizational structures. That leads to a one-sided picture. Joining information from external and internal sources happens a lot on the personal level, on business trips together, a talk on the plane, in hotels, in restaurants, or wherever. The personal inter-relationships and contacts with other people, the exchange of information, that is extremely important. Communities and the networks of which they emerge are used as effective methods to achieve information synthesis.

An IT Infrastructure, a software tool is obviously extremely important. Data that is collected within a company has to be compiled, evaluated and filtered – so that you get the quint-essence of a particular topic.

What would be needed is an internet platform, because our company is multinational, with research centres and engineering centres throughout the world. We also need a web-based platform, where people can share ideas, using this tool. Where ideas are pasted and posted. In order to not just utilize the knowledge in one location, but to combine the knowledge of a lot of different locations. Sort of an international networking. Our company has undertaken steps in that direction, it has established communication centres, where people get together, meet, have a coffee, things like that. It's not moderated or anything, but I think that this could be developed more in a direction where discussion are moderated more, in a certain direction and have discussions more focussed.

Inter-department coordination happens more frequently in informal settings.

A leadership function to steer this human intelligence network, could only be preformed by someone that is gifted, skilled, or he sees the opportunity to coordinate these autonomous processes, I think the results could be better. That's why you have moderators at meetings. These people were trained to channel the discussion in a certain way. To encourage solutions, proposals, and to summarize the results of discussions.

From Interview 4:

Information synthesis is done on a daily basis. Usually a person hears or reads something, for example in a newspaper article, everybody has his personal knowledge on this topic, and you meet with other people who may be knowledgeable about this subject, for example for a coffee, in order to check the information against existing knowledge of participants. It is a mental process firstly; secondly it is an intra-group process. In such instances it is a closed process that already leads to results by evaluating and coming up with conclusions and recommendations.

In formal structures, meetings are used. In such instances information and knowledge is also exchanged. Still on informal levels, other types of information may be obtained. In informal structures, information may as well be evaluated in order to check the validity.

Information synthesis is definitely a task that is related to a leadership position.

To steer the human intelligence network is a leadership task. By having such a function, information and knowledge could be integrated more efficient, information deficits could be located more easily and the transfer could be optimized for improved decisions and actions.

Information transfer, synthesis, analysis and interpretation are processes that often run in an integrated cycle. In other instances these processes are separated.

A central function to engage in central intelligence is definitely useful, though not existent in some organizations. The same is true, when talking about central positions in terms of decentralized intelligence. The reasons for the establishment of such positions is to achieve maximum efficiency. Therefore it is related to the leadership position of the organizational unit.

Central departments may be in charge of competitive information that is on a „higher level“, more general aspects etc. Business units and so are in charge of information and intelligence that is destined for their respective business. They have to report this in their units, for that it is necessary to structure and select the information that is to be communicated further.

#### From Interview 5:

I think inter-department communication is always important. At the end of the day we are dealing with the same markets. There is a lack of inter-department coordination.

IT-infrastructure in information gathering should be very important but different needs and priorities makes it difficult to have a “one-size-fits-all”. Information from external sources, and information from internal sources come together because a person puts it together, not because there is well-designed tool for it. So a person with experience has to do it. It’s

usually done in groups, when different people come together to exchange information and by this increase their stock of relevant information.

A lot of information is just stored in the heads of organizational members. I would say gathering information is a puzzle, creating intelligence I see it very interactive, it's not so much one process step after the other. It may be one after the other, but it may well be that it goes in one step even.

From Interview 6:

Knowledge of individuals is dispersed; it is only relevant if it comes to the right place at the right time. That means systematic structuring of data and information and applying it to internal IT tools and systems so that it becomes possible to synthesize information.

It is an ambition to centralize the synthesis of information in software tools. Accessibility is regulated so that those who need to have access, these persons can look for information themselves. It is about self-responsibility, with the information pull principle gaining ground due to the complexity of the organization. This implies reducing individual actions such as sending e-mails, trip reports and minutes, as was done formerly.

Informal communities mostly centre geographic proximity of members, that promotes communication, personal sympathy, and a personal relationship based on common cooperation in the past. Additionally, a company may chose to foster such informal structures by establishing discussion centres, coffee zones, a canteen where people can lunch together – or a company may chose to not support such things.

The volume of information is so high, that individual pieces of information are useless. Information need to be synthesized, brought into relation with each other, etc. that is a problematic process, as personal, individual components are mixed which may end up presenting facts in a distorted way. Synthesizing information is thus a very important process. To keep quality high is very hard. Synthesizing information is compared to building a puzzle, in which more parts are missing than available. Still, you have to be able to come up with an image, therefore experience and knowledge is important not only in analysis and interpretation but in synthesis already. Synthesis is therefore a leadership task. To make sure that information that belongs together gets together and remains up-to-date, is in the responsibility of the head of the department that benefits of that information. If the information received was some long-terms trends for the industry to name an example, it would be the strategy department.

The starting point is with the market in general, the macro environment – all the general data. This influences the customers in that respective market region to rather invest, or rather not invest. Then the individual customer views have to be investigated, investment behaviour – all down to the individual projects, the priorities, preferences, time schedules. Then it is important to take into account the competitors, where they focus, why and how they do it. All the way down to the actual project level. There is no real system that can handle all that complexity in a reasonable way that means at the end humans have to interact, humans have to exchange information, evaluate situations and come up with conclusions.

That means fostering information synthesis, from internal and external sources, in order to build images over market, customers, competitors etc, is an inter-personal process mainly.

To steer the human intelligence network throughout the company is admittedly an important task but falls into the domain of the CEO. He can delegate parts of this. This is seen as positive.

#### From Interview 7:

To promote exchange and sharing of information among project managers which may result in sharing of best practices, informal meetings in the project manager community can be undertaken.

Information synthesis on project level is largely driven by the project manager. He is the one that knows what kind of competitive information is necessary and relevant. He works to create an overall image that contains secondary information, directly gathered information, and indirectly – personally gathered information. It is part of the leadership responsibility of the project manager. It is a mental process that depends largely on the capacities of the individual project manager, this is supported by a database.

Inter-department coordination is of high importance, and easily undertaken, as the project team consists of personnel from different departments.

#### From Interview 8:

What happens in practice is that people tap their informal networks to exchange information. This is due to the fact, that not everything can be input into a tool.

A piece of information in isolation is meaningless. Getting an overall image together is like creating a puzzle. It is compared to being a detective. Most of the information is stored in people's brains. Most of this information synthesis really happens in the brains of people or in groups, rather than in any system or tool.

Of course there is always conflicting items. So there are several loops. Conflicting information, internally, and externally.

Information from internal and external sources is synthesized by sending information, such as reports and e-mails to persons that are interested. That's proactive from the information gatherer. And there are meetings in order to exchange and foster information exchange.

Steering the human intelligence networks is related to a leadership function and to autonomous behaviours. With regard to autonomous behaviour, it is important to have professional people, especially with increasing complexity of the organization. More locally produced intelligence is necessary to understand the regional trends. If I give you a list of all the people you have to contact, if something – for this and that, you'll never succeed.

A big problem with regard to synthesizing information from different sources in a software tool is related to the database problem. That is one reason why people go to their networks, and spread the information that they get, or jointly analyze, or discuss it, to make sure it goes into the network or in their community. It is seen easier than to write a report or something. It is a human process, and humans sometimes do not want to communicate with a machine.

## **Analyzing and interpreting competitive information**

### From Interview 1:

In terms of decentralized intelligence, analysis and interpretation happens in small groups of people. Different kinds of knowledge is necessary to achieve a holistic view, different personnel bring in their respective expertise and knowledge. There are different tools in use, in such structures, there are different perceptions, there is a continuous flow of information, an exchange, and we discuss these issues, evaluate them and come to a conclusion. It's an open discussion, everyone is admitted his opinion. Plausibility is important; everybody brings in his personal expertise.

In more strategic situations, market research and studies are analyzed by using segmentation for example, than we add certain information to it such as energy prices, and match these with our own product portfolio. Then a strategy and an action plan is defined. A strategy is very structured, it means taking a longer-term perspective, based on facts. It will include an action plan. The approach is much more methodical.

Analysis and interpretation on customer level are more chaotic more unstructured, than for example on a market level. The latter are more strategic, are based more of facts and figures, the approach is more structured.

An IT tool supporting in analysis and interpretation would be appreciated, but is currently not available. Therefore analysis and interpretation happens in the brain of employees.

Gathering, analyzing and interpreting information happens in different ways. Sometimes it happens all in one go, mostly when there is a need for this. Sometimes only the gathering happens. Analysis and interpretation come at a later point in time.

Analysis and interpretation are crucial as they shape the strategy. Therefore it is related to a leadership function, however in group work.

### From Interview 2:

Analysis and interpretation of customer-related information or data is done in a more emotional way. It has its own specifics and characteristics. Only people with an in-depth knowledge of the specific situation can analyse and evaluate such information.

Analysing and interpreting more general, macro and micro environment information or data is based on more factual data, often from studies or market research. People tend to take these more for granted. Macro environment related data, partly also micro environment related data can be analysed also by generalists, such as professional analysts.



For analytical and interpretative processes – especially when moving into depths such as customers, projects, and competitors – a group analysis is recommendable. It is necessary to obtain a more balanced view. Different specialists are necessary to come up with reasonable conclusions and recommendations. That is due to the fact that the plant building business is very complex. If a single person undertakes an analysis based on competitive information and comes up with a conclusion that is always a risky thing. In order to have a balanced view, different disciplines are necessary. This also relates to complexity. There is a leadership function related to such processes, analysis and interpretation. It has to be the head that confirms the results.

Techniques that are used are for example scenario especially with regard to forecasting future market developments.

Synthesizing information, analysing and interpreting it – these processes need to be undertaken in a continuous mode, meaning with the same participants who are capable of doing so. Integrated processes in terms of synthesizing, analyzing and interpreting are especially crucial in the short term. Here the need to act fast is most pertinent. In terms of tactical activities there is more time to counter-act; processes are not so much integrated. In terms of strategic plans and activities the time to adapt and react is more generous. There is more potential for corrections. Therefore gathering and synthesis are often separated from analysis and interpretation and these again are separated from the decision.

#### From Interview 3:

Informal analytical processes happen for example in the course of community meetings. Inter-department coordination is extremely important. It is important to take into account information that is available to other departments and organizational structures to generate and evaluate the whole picture. I evaluation is already putting a certain emphasis, this is more important than this. So evaluation is more than analysis. Interpreting, you are already coming to some sort of conclusion, although there is of course some overlapping between those terms.

Analysis/interpretation is a bit further away from decision making, whereas, evaluation is closer to the decision. It seems more close to day-to-day operational issues, whereas, analysis/interpretation, since the decision maker seems to be a bit more away, relates from my point of view to more strategic, more formal things. That you prepare and then you hand them over, and then someone else looks at your interpretation.

Inter-department coordination happens more frequently in informal settings.

A leadership function to steer this human intelligence network, could only be preformed by someone that is gifted, skilled, or he sees the opportunity to coordinate these autonomous processes. Moderators could be trained to channel the discussion in a certain way in order to encourage solutions and to summarize results.

With the amount of information and data increasing, along with the need to take a factually based decision, and to reduce gut feeling, the future will see computer-aided analysis and evaluation of information or data.

From Interview 4:

In formal settings, information is analysed to feed the higher levels of management. The latter may not be interested in too much detail, more than that, it is necessary to give overviews, summaries and present intermediary results.

An IT solution is indispensable nowadays, however, there are still many things that cannot be automated, and where an organic strategy is necessary. IT has a supporting function that is what it is; still that is an important task.

Knowledge that is used to evaluate information gets passed on in form of storytelling. These stories base on personal experiences.

In terms of macro environment analysis – this is fact-based as the information or the data used for it come from reliable and credible sources.

Knowledge management and market intelligence go hand in hand. Knowledge management means creating knowledge as well as to be informed on what I have to know. Knowledge management may provide methods to improve market intelligence, one example is certainly storytelling. The latter should and could be used in market intelligence in order to support the know-how transfer. Storytelling is used to share tacit knowledge; the latter cannot be transferred in other ways. Knowledge management and market intelligence are like gear wheels. Communities of practice is another issue, we have these in plant building also. These can be used to make transparent and leverage knowledge that is held personally and shift on a higher, on a community level.

Information transfer, synthesis, analysis and interpretation are processes that often run in an integrated cycle. In other instances these processes are separated.

A central function to engage in central intelligence is definitely useful, though not existent in some organizations. The same is true, when talking about central positions in terms of decentralized intelligence. The reasons for the establishment of such positions is to achieve

maximum efficiency. Therefore it is related to the leadership position of the organizational unit.

An indexlist with personnel that is knowledgeable about certain aspects of the competitive arena may be useful. However, it is often so that in larger organizations, the organization does not know what the organization already knows. In such instances it remains the task of the management to solve this issue.

Central departments may be in charge of competitive information that is on a „higher level“, more general aspects etc. Business units and so are in charge of information and intelligence that is destined for their respective business. They have to report this in their units, for that it is necessary to structure and select the information that is to be communicated further.

#### From Interview 5:

There are definitely differences in analysing and interpreting information from macro and micro environment. The knowledge and experience from the marketplace is necessary to judge the information.

Generally it is advisable to have analysis and interpretation happening in group settings, however, too many participants is seen as counter-productive. The analysis itself is related to a human factor

Doing analyses on overall intelligence issues, such as benchmarking studies, is centralized. But more specific things are rather decentralized.

In critical situations, time-critical, analytical methods they will be more formal. It is required to show how the analysis was done, including written statements, calculations, creating an action plan. If it is only for understanding of a lot of people, they will be very informal, also with regard to methods and techniques applied.

Usually the strategic items tend to be more formal, and there will be more time to work it out. The strategic ones tend to be formal, because, simple reason, you have to report this to someone else. The formality is done when it is required by a higher authority, when the management asks for it. The top management will not accept an analysis based on guts feeling. Tactical would also be half-half, operational day-to-day business things, tend to be very informal.

Analytical methods in use are for example putting information in chronological order, or to use thematic clustering. SWOT is a useful tool, but on a strategic level.

#### From Interview 6:

There are differences in analyzing and interpreting information. Macro environment information or data will to a large extent be taken over from other organizations that are specialized in providing this kind of information. It will typically include all the macroeconomic factors, all relevant facts and figures to see whether and how attractive a specific market region is. Typically it may also involve commissioned research. The analysis and interpretation may be undertaken by specialists or analysts. Information and data for that is to a large extent commonly available, also from the public domain.

Analyse the investment behaviour of a certain customers will require talking to the specialists internally, key account managers, sales etc. It largely depends on the relationship and our access to information. This sort of analysis is internally, with people that have the skills and experience.

The tools to analyse and evaluate are related to comparing historic and current situations, comparing with experience, and to see whether with current information it is possible to construct a model for future behaviour.

Analysis and interpretation are largely driven by inter-personal group processes, not so much computerized. There is a leadership task connected to analysis and interpretation.

Central intelligence is connected to central functions such as strategy or R&D. The business units have their heads, basically it's their responsibility that analysis and interpretation of information is done timely, correct and continuously.

Although inter-department coordination is relevant in analysis and interpretation, there is no structured approach how to do it. Only in the central intelligence mode, which is mostly in charge of strategic intelligence, there is an inter-department coordination via regulated planning activities.

To steer the human intelligence network throughout the company is admittedly an important task but falls into the domain of the CEO. He can delegate parts of this.

#### From Interview 7:

Project managers are mostly concerned with analyzing and evaluating competitive information from the realm of the clients where they execute the respective project. That is the organization, decision making, relevant personnel and the like more.

A method to undertake analysis is for example the stakeholder analysis. It is designed to depict the relevant personnel at the client, to structure them according to their interest in the project, and their attitude towards. Then the conclusion of how to deal with them can be taken, for taking actions.

Formal analysis and interpretation is mostly done in group processes, with discussions in order to evaluate the situation. Decision making is done within the project and the ultimate decision maker is the project manager and is close to the intelligence process.

Informal analytical processes are related to inter-department coordination which is seen as of high importance. They have a feature of best practices sharing, as different project managers gather to discuss and evaluate.

From Interview 8:

To look at the macro environment, strategic issues and so forth that is related to central functions. They look at macro, strategic, success factors, market development, long-term developments, more global, and as they refine they bring it also to a more regional, you can't say there is a global solution to anything anymore. It's different regions have different rules to the game.

But also in decentralized intelligence the individual business units have to look at long-term developments as well. This is done in form of official planning routines. The strategic items of it will be forwarded to the central intelligence staff. There are strategic meetings. It's a discussion, it has several rounds, it is aligning people.

Informal analytical processes in market intelligence, is related to discussions, for example on a project level. It is an exchange of ideas, whether it's written or spoken or visual.

In terms of customer intelligence we use techniques such as the SWOT.

In decentralized intelligence activities also SWOT is used. Furthermore, best case, worst case, realistic case, so scenario building.

Steering the human intelligence networks is related to a leadership function and to autonomous behaviours. With regard to autonomous behaviour, it is important to have professional people, especially with increasing complexity of the organization. More locally produced intelligence is necessary to understand the regional trends. If I give you a list of all the people you have to contact, if something – for this and that, you'll never succeed.

## **Integrating intelligence products**

### From Interview 1:

In terms of decentralized intelligence activities, integration of different pieces of intelligence products is much related to storing these on the central network drive of the business unit.

### From Interview 2:

Integration of intelligence is related to a responsibility that the respective head of department has.

### From Interview 3:

--

### From Interview 4:

In terms of intelligence synthesis, software is of great use. However, it is so that much of the know-how that is also relevant in such processes is not verbalized, nor written down, therefore this will not – in the foreseeable future – be integrateable to a software solution. Formal and informal events are used in such instances instead, mostly in the form of direct communication in meetings.

To steer the human intelligence network is a leadership task. By having such a function, information and knowledge could be integrated more efficient, information deficits could be located more easily and the transfer could be optimized for improved decisions and actions. A central function to engage in central intelligence is definitely useful, though not existent in some organizations. The same is true, when talking about central positions in terms of decentralized intelligence. The reason for the establishment of such positions is to achieve maximum efficiency. Therefore it is related to the leadership position of the organizational unit.

Central departments may be in charge of competitive information that is on a „higher level“, more general aspects etc. Business units and so are in charge of information and intelligence that is destined for their respective business. They have to report this in their units, for that it is necessary to structure and select the information that is to be communicated further.

### From Interview 5:

In terms of decentralized intelligence, it is the ultimate decision maker of the unit that has the responsibility to culminate different kinds of intelligence together in one place. This is ultimately related mostly to storing the piece of intelligence in a central place.

From Interview 6:

In terms of central intelligence, the integration of different pieces of intelligence is done on a strategic level. All the available input is consolidated into one central document, which is then maintained and kept up-to-date.

At the business unit level, which is related to decentralized intelligence, the heads prepare their strategies and plans with that intelligence that is available to them and their members.

From Interview 7:

Full integration should mainly be done at a central department that oversees a large part of important information.

From Interview 8:

The responsibility of aggregating all the intelligence up is divided. To digest the elephant it has to be sliced up. It is grouped into customer intelligence, competitor intelligence, market intelligence, technical intelligence, technological intelligence. Participant cannot envision an organization where one person is head of all intelligence, as there are too many aspects.

A real intelligence integration happens at the strategic level, where routines provide that intelligence produced by all major organizational units can be aggregated to one document.

## **Disseminating market intelligence**

### From Interview 1:

Combining informal and formal dissemination methods is of course possible. Our Christmas event for example, it was designed as an informal event; still we held small presentations about our departments with formal information.

### From Interview 2:

Formal ways of distributing intelligence include meetings, in all areas of the organization. Integrating formal and informal means of dissemination is in the responsibility of the management. They have to pass on intelligence to their subordinates. They act as an amplifier. It is possible to support this by means of a centralized department. Integrating formal and informal dissemination is a requirement.

A manager receives intelligence, he then passes it on within his network, person who he is acquainted with, with whom he shares a relationship, these pieces of intelligence get discussed, passed on and implemented.

Passing on topical information or intelligence, but I think it is motivating for the employee and even for entire teams to receive topical intelligence.

### From Interview 3:

I think it's very hard to achieve this, but one possibility would be when one of the superiors or managers gets an official piece of intelligence through the hierarchy and uses it as a stimulus to pass it on in informal settings, because also he is most likely part of some networks – and passes it informally on.

### From Interview 4:

Informal ways of communicating intelligence are still the most efficient ones. They allow for information to go around quickly.

### From Interview 5:

Formal dissemination has to be done by the generator. Otherwise it loses a lot of credibility. It is the trust that the receiver has to have in the sender that the latter provides quality intelligence. Formal dissemination is done per e-mail or reports.

Integrating informal and formal dissemination is not easily done. One example a report was disseminated to the parties, followed by a presentation in front of the relevant people. These



were the formal aspects. Afterwards, the informal part started with talking to a lot of people personally.

From Interview 6:

All the larger units within the organization have their heads, they are responsible to disseminate the intelligence to their member as they see fit. It can be via formal meetings, informal meetings, and personal communication – and also via software tools.

Disseminating intelligence is thus a leadership function. From the overall strategy, which is to a large extent based on market intelligence, the unit-relevant items are to be extracted and communicated forward to the organizational member. This may be done in formal structures, such as convened meetings, but that is certainly not enough. There has to be personal communication on a more informal level as well – limited and structure. It is certainly possible to combine formal and informal methods of disseminating intelligence. The more formal ones are the ones where greater efficiency can be reached, that is easier informing more people – that is why it is popular. The other side of the coin is the personal side. It can also be formalized. In personal contact, information lacks can be identified, furthermore it is visible what of the messages an employee has understood or not. There is room for feedback, clarification.

From Interview 7:

On a project level, intelligence dissemination is mostly done in formal ways, within meetings. This is a proactive approach. Rather informal techniques are e-mail and telephone conversations between members.

Integration between formal and informal means is possible, and is done regularly. Intelligence gets disseminated officially, and then in a second step communication is sought, with particular participants, especially if a particular need is felt for such an action.

From Interview 8:

Informally disseminating intelligence is compared to a spider's web. Something lands on that spider's web, and the spider in charge of that web which feels that this intelligence will have to get somewhere, and it's always better if the spider knows that he is supposed to bring it somewhere. It needs both, pull and push in our organization. It is important to know from whom potentially intelligence can be sought, if there is a perceived lack of intelligence. So it's not one-way thing, to communicate it, but it's more actively, you know, drawing this information from somebody.

Integrating informal and formal means of disseminating intelligence is done all the time in managerial practice. At management meetings with numerous participants from different regions, there is usually a formal line of communication. And then there is also time for completely informal communication at a coffee, in the breaks or in the evening. There the issues get discussed.

## **Results of intelligence activities**

### From Interview 1:

A benchmarking study is a result from decentralized intelligence activities, and is used mostly on a strategic level. Preferred methods for information gathering appear to be a review of internet resources together with interviewing of knowledgeable personnel.

A strategy is structured, it means taking a longer-term perspective, based on facts. It will include an action plan. The approach is much more methodical.

Market intelligence and knowledge management are destined to be connected. When both are integrated, that's when an optimum can be reached.

### From Interview 2:

Production of intelligence starts at the bottom of the organization. The personnel engaged in a particular project already produces it.

It continues at the business unit level, with the sales responsible, the heads of business units up to the top of the organization, the top management. It is culminated into the market strategy, the portfolio strategy, the corporate strategy.

There is certainly a connection among market intelligence, knowledge management and learning. Market intelligence can be an impulse for learning processes which might lead to knowledge generation.

### From Interview 3:

Knowledge management, market intelligence and learning – they are all related. It's like three intersecting circles. Market intelligence serves as a stimulus for learning processes, if the intelligence you acquire, is highly relevant for your goals and objectives.

### From Interview 4:

Would it be right to say, that market intelligence is of high importance for your? Of course, that is definitely true.

Learning is also connected to market intelligence. It may be seen as an impulse for a learning activity into a direction that is commanded by the market environment.

### From Interview 5:

Market intelligence is not a self-contained function, so it is necessary to “start with an end in mind”. Market intelligence can definitely bring an input to knowledge creation and to learning processes. A learning process would mainly start if the intelligence enables the

person to learn something it is interested in. So there has to be some affinity. Market analyses and competitor benchmarking are products of market intelligence activities.

From Interview 6:

Key Account Management enables to produce a lot of project-specific intelligence.

There surely is a connection and overlap between market intelligence and knowledge management.

Also customer and market intelligence is in the realm of central intelligence. The central strategy documents, as well as central benchmarking activities are largely based on market intelligence.

From Interview 7:

Market intelligence and knowledge management as well as organizational learning are interconnecting. For example: competitive information is received and leads to the insight that a competitor is designing a piece of equipment in a lighter way, which makes this particular item cheaper. This piece of intelligence can then be used to investigate in detail if a similar or better solution can be designed in-house. The design engineers are instructed to search for a solution, this will imply a learning process and may even go to knowledge creation when a solution is found and detailed.

Intelligence communication may also foster a more reflective approach to taking action, especially in more informal, inter-personal approaches.

From Interview 8:

Market intelligence is one basis for taking successful actions, but as they say “success has many fathers, and failure is an orphan!” The reason is that it is sort of hard to “grab”. Commonly, “only what gets measured, gets done”. Often the mindset is “I know it all”.

But it is a way of promoting a more reflective way of thinking in the organization.

Market intelligence, knowledge management and learning are interconnected; intelligence is seen as a stimulus to learning behaviour.

Appendix No. 8: Refined conceptual framework on plant building market intelligence

Action – Reflection – Learning – Knowledge

Integration and Dissemination of Market Intelligence



Peculiarities of Plant Building Market Intelligence

Multiple-to-multiple      Relationships      Long lifecycles      Complexity      Experience