

CRANFIELD UNIVERSITY

Britta Søgaard

**Towards a Contingent Approach to Procurement Maturity:
How Procurement Maturity Models Could Support
Procurement Strategic Alignment**

Cranfield School of Management

PhD in Management

Academic Year: 2015 - 2021

Supervisor: Dr Heather Skipworth

Associate Supervisor: Professor Michael Bourlakis

April 2021

CRANFIELD UNIVERSITY
Cranfield School of Management

PhD in Management

Academic Year: 2015 - 2021

Britta Søgaaard

**Towards a Contingent Approach to Procurement Maturity:
How Procurement Maturity Models Could Support
Procurement Strategic Alignment**

Supervisor: Dr Heather Skipworth
Associate Supervisor: Professor Michael Bourlakis

April 2021

Submitted in partial fulfilment of the requirement for the degree of
Doctor of Philosophy

©Cranfield University, 2021. All rights reserved. No part of this publication may be
reproduced without the written permission of the copyright holder.

Abstract

Purpose – Using a contingency lens, this research aims to understand how procurement maturity models can support procurement strategic alignment, by exploring the two concepts of procurement maturity and procurement strategic alignment in academia and practice.

Design/methodology/approach – Based on the initial findings from a systematic literature review on procurement maturity and procurement strategic alignment, as well as exploratory mini-cases to explore practitioners' understanding of procurement maturity, this study employs three in-depth case studies of a major aerospace & defence manufacturer, a water services provider and a bank. This study employs both inductive and deductive approaches. Inductive elements encompass the exploration of how contextual contingencies influence procurement maturity. Deductive elements include the testing of hypotheses regarding the structure and application of maturity models.

Findings – This research demonstrates that target maturity profiles (i.e. the desired maturity level per topic) strongly resemble procurement category strategies in that they define a forward plan for the category, covering multiple procurement topics and tactics. Target maturity profiles are dependent on a number of contextual factors, including product-, supplier-, category-, company- and industry-level contingencies. The research shows that procurement maturity should be measured at a category level instead of a functional level and using profiles with individual scores per topic instead of aggregate measures for the function as a whole.

Research limitations/implications – This study makes a novel contribution by questioning the premise that higher maturity levels are generally desirable, asserting instead that procurement maturity targets are contingent upon the procurement categories' context. It provides a new contingency-maturity model that can be used by category managers to assess their procurement maturity and define category strategies. This also provides directions for further research, which should investigate how the 'maturity gap' between current and target maturity profiles is related to performance.

Originality/value – This is the first research to challenge the general desirability of higher maturity levels. Using a contingency lens, this research adds to the procurement maturity literature by providing a new perspective on procurement maturity, focusing on contextual contingencies. This research demonstrates that desirable procurement maturity levels are dependent on contextual contingencies at different units of analysis (i.e. industry, company, category, product, supplier and situational level).

Keywords Purchasing, procurement, maturity, strategic alignment, contingency theory

Acknowledgements

This thesis has been six years in the making – and I can honestly say I would not have got to this point without the support of many people.

First and foremost I want to thank my supervisors Dr Heather Skipworth and Professor Michael Bourlakis for their support and advice. I know I have taken up a lot of your time, but it has made all the difference for me: You have not only provided the necessary guidance, but also encouraged me to take the hard road, when it was the right thing to do – and helped me in seeking academic experience. Your experience and guidance has helped me navigate the academic system, both helping with the submission of this thesis, but also with the submission of conference and journal papers.

I also want to thank the rest of my panel: Professor Richard Wilding OBE, Michael Bernon, Dr Hendrik Reefke as well as my two informal panel members Alan Braithwaite and Dr Carlos Mena. Your feedback has been invaluable and I hope you can all see the impact you've had at different points in time. I especially want to thank Alan for his support and for providing a practical point of view with his wealth of industry experience.

I want to thank Cranfield University in general for providing me with the opportunity to do this research as well as BearingPoint and Novo Nordisk for allowing the freedom to conduct it. A special thanks here goes to Dr Julian Mosquera for fighting for me and challenging me to complete this as well as I can.

I also need to thank my three cases and all of my interviewees for their time and honesty. It has been a pleasure learning from you!

Last but not least, I want to thank my family and friends for supporting me – even when they could not always understand my desire to do this. I especially need to thank my husband, who supported me throughout life's challenges: Two jobs with long hours, five moves (including one to another country) and the biggest challenge of all: Our lovely baby boy. You knew I had to do this and pushed me when things got rough and the doubts crept in!

I really appreciate all of your help: I could not have done this on my own.

Contents

1 Introduction	13
1.1 Research motivation	13
1.2 Introduction to the research topic	14
1.3 Research aims and objectives.....	16
1.3.1 Overall objectives and research question	16
1.3.2 Scope exclusions: Firm or procurement performance	17
1.3.3 Definitions	17
1.4 Thesis outline.....	18
2 Literature review	21
2.1 Method: The systematic literature review	21
2.1.1 Review question development.....	21
2.1.2 Keyword development and systematic search	22
2.1.3 Screening process.....	24
2.1.4 Search string results	25
2.1.5 Consultancies.....	26
2.2 Theoretical background.....	28
2.3 Results.....	30
2.3.1 Descriptive and theoretical analysis.....	30
2.3.2 Conceptualisation of procurement strategic alignment	37
2.3.3 Conceptualisation of procurement maturity models.....	43
2.4 Discussion and conceptual model development.....	52
2.4.1 How should procurement strategic alignment be conceptualised in procurement maturity models?	52
2.4.2 What is the 'right' measurement type for procurement maturity?	53
2.4.3 What is the 'right' unit of analysis for procurement maturity?	54
2.4.4 Conceptual model for a strategy-contingent procurement maturity.....	54
3 Methodology	56
3.1 Aims and objectives.....	56
3.2 Exploratory mini-cases	58
3.2.1 Aims and objectives.....	58
3.2.2 Research design	58
3.2.3 Methodological implications of the exploratory mini-cases.....	60
3.3 Research strategy	60
3.4 Research design: Case studies	62
3.4.1 Case study definition and design.....	62
3.4.2 Case study data collection and analysis	67
3.4.3 Quality criteria	74

3.4.4 Data collection detail.....	76
3.5 Ethical considerations.....	78
3.6 Research background: Case company comparison.....	79
3.7 Methodology adjustments after the pilot case.....	82
3.7.1 Research focus adjustment	82
3.7.2 Case study design adjustments	83
3.7.3 Data analysis.....	84
3.8 Methodological limitations.....	84
3.8.1 Case study methodology and generalisability.....	84
3.8.2 Subjective self-assessments for maturity.....	85
4 Results: Mini-cases	86
4.1 Exploratory mini-cases findings.....	86
4.1.1 Perceptions of procurement strategy and strategic alignment.....	86
4.1.2 Mini-case findings: Perceptions of procurement practices	87
4.2 Implications for the conceptual model	88
5 Results Case 1: A&D.....	90
5.1 A&D Case study background	90
5.1.1 Aerospace and defence industry.....	90
5.1.2 Case company profiles: A&D	91
5.2 A&D Case study findings.....	93
5.2.1 RQ1: How do procurement managers achieve strategic alignment?	93
5.2.2 RQ2: How is procurement maturity conceptualised by procurement managers?	111
5.2.3 Mapping of contingencies' influence on the maturity topics	117
5.3 A&D Case Study discussion.....	123
5.3.1 RQ1: How do procurement managers achieve strategic alignment?	123
5.3.2 RQ2: How is procurement maturity conceptualised by procurement managers?	124
5.3.3 Impact on the conceptual model	126
5.3.4 A&D access limitations	127
5.4 Implications for case 2 (WATER) and case 3 (BANK)	127
6 Results Case 2: WATER	129
6.1 WATER Case study background.....	129
6.1.1 Water utilities industry.....	129
6.1.2 Case company profiles: WATER.....	130
6.2 WATER Case study findings	131
6.2.1 RQ1: How do category managers achieve strategic alignment?	131
6.2.2 RQ2: How is procurement maturity conceptualised by procurement managers?	137
6.2.3 Mapping of contingencies' influence on the maturity topics	143

6.3 WATER Case Study discussion	148
6.3.1 RQ1: How do procurement managers achieve strategic alignment?	148
6.3.2 RQ2: How is procurement maturity conceptualised by procurement managers?	149
6.3.3 Impact on the conceptual model	151
6.3.4 WATER access limitations.....	151
7 Results Case 3: BANK	153
7.1 BANK Case study background.....	153
7.1.1 Banking industry	153
7.1.2 Case company profiles: BANK	154
7.2 BANK Case study findings	155
7.2.1 RQ1: How do category managers achieve strategic alignment?	155
7.2.2 RQ2: How is procurement maturity conceptualised by procurement managers?	162
7.2.3 Mapping of contingencies' influence on the maturity topics	168
7.3 BANK Case Study discussion	173
7.3.1 RQ1: How do procurement managers achieve strategic alignment?	173
7.3.2 RQ2: How is procurement maturity conceptualised by procurement managers?	174
7.3.3 Impact on the conceptual model	176
7.3.4 BANK Access limitations	176
8 Cross-case analysis	177
8.1 RQ1: Procurement maturity contingencies.....	177
8.1.1 Procurement maturity contingencies identified	177
8.1.2 Cross-case and unique contingencies	178
8.1.3 Summary: A high level of commonality across cases.....	186
8.2 Procurement maturity advancement.....	188
8.2.1 Considerations on units of analysis	188
8.2.2 Procurement maturity model enhancement	192
8.2.3 Summary: Differences across topics and categories indicate that maturity should be measured as a profile, primarily at category level	207
9 Discussion	209
9.1 RQ1: How to achieve strategic alignment?	209
9.1.1 H1: Procurement category strategies should be aligned with the firm and procurement strategy and determine the target maturity profile	209
9.1.2 P1: Procurement and category strategies are dependent on contextual contingencies.....	210
9.1.3 P2: The target maturity profile is dependent on contextual contingencies.....	213
9.2 RQ2: How is procurement maturity conceptualised?	216

9.2.1 H2: The most appropriate measurement type for procurement maturity is the maturity profile, not an aggregate maturity measure	216
9.2.2 H3: The most appropriate unit of analysis for procurement maturity is the procurement category	217
9.3 Development of the conceptual model.....	219
9.3.1 Initial conceptual model after the literature review.....	219
9.3.2 Impact of exploratory mini-cases on the conceptual model	220
9.3.3 Impact of case studies on the conceptual model.....	221
10 Conclusion	226
10.1 Conclusion on research and contribution	226
10.1.1 Contribution to theory	226
10.1.2 Contribution to practice	231
10.1.3 Generalisability	233
10.2 Research limitations	234
10.2.1 Limitations due to case diversity.....	234
10.2.2 Limitations due to maturity self-assessments.....	234
10.2.3 Access limitations	235
10.2.4 Limitations related to contingencies identified	235
10.2.5 Limitations related to the maturity model developed.....	235
10.3 Considerations on further research	235
10.3.1 Further research on contingencies.....	235
10.3.2 Further development of the maturity model.....	236
10.3.3 Further development of the maturity archetypes	236
10.3.4 Maturity-performance link.....	236
11 References	238
Appendix.....	253

List of Tables

Table 1: Keywords	22
Table 2: Search string element definition	23
Table 3: Actual search strings	23
Table 4: Selection criteria (adapted from Watson <i>et al.</i> , 2015)	24
Table 5: Search string results by process step	25
Table 6: Consultancies considered (Forbes, Inc. and Statista, Inc., 2016)	27
Table 7: Academic papers by topic area	30
Table 8: Academic papers by research method	32
Table 9: Academic papers by industry	33
Table 10: Academic papers by journal	34
Table 11: Academic papers by theory	35
Table 12: Consulting papers by topic	36
Table 13: Consulting papers by method	36
Table 14: Consulting papers by industry	36
Table 15: Academic papers by alignment conceptualisation	37
Table 16: Total number of papers considering different strategic procurement measures	39
Table 17: Academic papers by alignment measure	40
Table 18: Business strategy and procurement aspect to be aligned	41
Table 19: Academic papers by development	44
Table 20: Total number of papers by aspects	45
Table 21: Academic papers by maturity measurement	46
Table 22: Academic papers by unit of analysis	46
Table 23: Academic papers by alignment measures	47
Table 24: Summary of consulting research on procurement maturity	50
Table 25: Overview of different procurement managers interviewed	59
Table 26: Organisational levels considered in study	67
Table 27: Overview of proposed data collection and within-case analysis approach ...	68
Table 28: Topics included in maturity models (based on original SLR 2017)	70
Table 29: Number of papers by number of maturity levels (based on original SLR 2017)	71

Table 30: Sources used for maturity topics	72
Table 31: Quality criteria	74
Table 32: Data triangulation	75
Table 33: Data collection overview	76
Table 34: Case company comparison	80
Table 35: Procurement and category strategy contingencies	87
Table 36: Selected categories comparison (based on interviews)	93
Table 37: Procurement strategy scope and content for each of the procurement categories.....	94
Table 38: Elements included in category strategy document provided	97
Table 39: Key priorities by category provided in the first round of interviews	98
Table 40: Category priorities provided during the second round of interviews	100
Table 41: Overview of procurement tactics and procurement maturity comparison	103
Table 42: Overview of contingencies to procurement tactics	105
Table 43: Contingencies to strategic planning	108
Table 44: Mapping of contingencies' influence on the maturity topics based on A&D	119
Table 45: Selected categories comparison (based on interviews)	130
Table 46: Procurement strategy scope and content for each of the procurement categories.....	132
Table 47: Key priorities by category provided.....	133
Table 48: Contingencies to strategic planning	135
Table 49: Mapping of contingencies' influence on the maturity topics based on WATER	145
Table 50: Selected categories comparison (based on interviews)	155
Table 51: Procurement strategy scope and content for each of the procurement categories.....	156
Table 52: Elements included in the category strategy document provided	158
Table 53: Key priorities by category provided.....	159
Table 54: Contingencies to strategic planning	160
Table 55: Mapping of contingencies' influence on the maturity topics based on BANK	170
Table 56: Number of references to support contingencies to maturity topics	178

Table 57: Mapping of contingencies' influence on the maturity topics across all three cases.....	179
Table 58: Contingencies and source case characteristics	187
Table 59: Comparison of maturity results across units of analysis	189
Table 60: Number of topics influenced by different contingencies.....	195
Table 61: Product criticality archetype.....	196
Table 62: Regulatory requirement archetype	197
Table 63: Product complexity archetype.....	198
Table 64: Product standardisation archetype (inverse to product customisation)	199
Table 65: Cost pressure archetype	200
Table 66: Organisational complexity archetype.....	201
Table 67: Lacking supplier capability archetype.....	202
Table 68: Supplier criticality archetype	203
Table 69: Ability to forecast archetype	204
Table 70: Indirect categories archetype	205
Table 71: Size of supply base (large) archetype	206
Table 72: Comparison of 'strategies' across case studies	211
Table 73: Contingencies and source case characteristics	214
Table 74: Relationships between contingency unit of analysis and target levels for the maturity areas.....	223
Table 75: Mapping of contingencies' influence on the maturity topics across More BP three cases	225
Table 76: Number of references to support contingencies to maturity topics	253

List of Figures

Figure 1: Key research stages	19
Figure 2: Procurement strategic alignment conceptualisation (González-Benito, 2007)	28
Figure 3: Topics published by year (academic papers)	30
Figure 4: Cumulative papers by topic (academic papers)	31
Figure 5: Methods used by year (academic papers)	31
Figure 6: Cumulative papers by method (academic papers)	32
Figure 7: Cumulative number of papers by strategic procurement measures	38
Figure 8: A.T. Kearney procurement strategy concept (Easton <i>et al.</i> , 2014)	43
Figure 9: Cumulative papers by maturity content	44
Figure 10: Average maturity and average importance comparison (Houston <i>et al.</i> , 2012)	49
Figure 11: Conceptual model after the literature review	55
Figure 12: Updated conceptual model after exploratory mini-cases	60
Figure 13: The cycle of theory construction and testing (Wallace, 1971, cited in Blaikie, 2007, p. 81)	61
Figure 14: Definition of case selection strategy	63
Figure 15: Conceptual model after exploratory mini-cases	66
Figure 16: Interview process	68
Figure 17: Maturity model development process	69
Figure 18: Topics included in maturity models (based on original SLR 2017)	70
Figure 19: Study progress and case study data collection	78
Figure 20: Updated conceptual model after A&D	83
Figure 21: Data collection process update	84
Figure 22: Conceptual model after mini-cases (used for in-depth cases)	89
Figure 23: A&D_Radar maturity assessment	113
Figure 24: Impact of analysis findings on the conceptual model	126
Figure 25: Updated conceptual model	127
Figure 26: WATER_Chemicals maturity assessment	138
Figure 27: Impact of analysis findings on conceptual model (as updated after A&D case analysis)	151
Figure 28: BANK_HR maturity assessment	164

Figure 29: Impact of analysis findings on conceptual model (as updated after A&D case analysis)	176
Figure 30: Conceptual model after the literature review	220
Figure 31: Impact of mini-case findings on conceptual model	220
Figure 32: Conceptual model after mini-cases	221
Figure 33: Impact of case study findings on the initial conceptual model (after mini-cases)	222
Figure 34: Updated framework after case studies	223

1 Introduction

1.1 Research motivation

Procurement as a function has changed radically over the last decades and is becoming an increasingly important part of corporate success. Especially the challenges posed through the Covid-19 pandemic have required procurement professionals to accelerate response times and develop new suppliers under high time pressure: “The pandemic has created a radically new, and constantly changing, purchasing environment” (Bozzay and Magina, 2020, p. 1).

Especially medical procurement had to struggle with extreme supply shortages driven by a reliance on international suppliers, the increase in opportunities for corruption, complex processes and unforeseen demand increases (Sadiq and Kessa, 2020). Thus, procurement is becoming an increasingly important part of competitive advantage.

However, the tools we use to teach and research procurement as well as to improve procurement in practice are not changing alongside their environment. Whilst the ‘best practices’ and tactics included in procurement maturity models evolve over time, the underlying constructs and assumptions have remained largely the same since the 1990s (as will be demonstrated in the literature review in chapter 2).

What this means is that as academics, consultants or procurement specialists we convey a message to current and future professionals that it is necessary to chase ‘best practice’ – at all cost and irrespective of their individual context. Whilst most experts themselves might understand the importance of context and how this affects the use of procurement maturity models, this is not necessarily communicated to professionals.

This is a dangerous set-up, since procurement maturity models are a popular tool in industries. Typically, these models are used by consultancies, such as A.T. Kearney or KPMG (Blascovich *et al.*, 2011; Khushalani, 2013). Consultancies often use maturity models in an effort to identify improvement opportunities and to set up large-scale projects. However, many companies continue using the maturity model to track progress against the suggested projects, as done in BANK (BANK_Function 1).

This research therefore challenges existing procurement literature on the underlying assumption that generically higher procurement maturity is desirable as it leads to higher performance (Ellram *et al.*, 2002; Schiele, 2007). Instead, this research takes a

contingency view to explore the underlying concepts of procurement maturity and procurement strategic alignment, both in academic literature and in practice.

1.2 Introduction to the research topic

Existing literature proposes two separate approaches to improve procurement performance: Increasing procurement maturity or improving procurement strategic alignment.

Procurement strategic alignment refers to the consistency of procurement's strategy and activities with the firm's objectives (Baier *et al.*, 2008). It is widely agreed that strategic alignment is important to achieving superior performance. However, the concept is interpreted differently in existing literature, even though some authors have attempted to clarify the concept (Baier *et al.*, 2008; González-Benito, 2007; Søggaard *et al.*, 2019).

Procurement maturity models on the other hand measure the sophistication of the purchasing function, by classifying different procurement tactics into maturity stages (Rozemeijer *et al.*, 2003). Reflecting the historic evolution of procurement, they provide a tool to improve procurement, based on the assumption "that greater maturity is associated with better performance" (Schiele, 2007, p. 274).

Like strategic alignment, procurement maturity has been conceptualised and measured differently in the literature (as demonstrated in the publication of the literature review, to be found in Søggaard *et al.*, 2019). Examples include Paulraj *et al.*'s (2006) three stage maturity model, in which a procurement function falls into any of these three stages. A contrasting example can be found in Beukers *et al.*'s (2006) comparison of maturity profiles for different categories. In this conceptualisation different topics are scored at different maturity levels. Beukers *et al.*'s (2006) research demonstrates clear differences between categories as well as topics within the maturity model, indicating that additional information can be conveyed through profiles.

Whilst both procurement maturity and procurement strategic alignment have been linked to performance, the results are somewhat contradictory. For instance, when Ellram *et al.* (2002) do not find a maturity-performance relationship at firm level, they

raise questions about the detailed relationship between procurement 'best practices' included in maturity models and performance:

"More research is needed to determine the strength of the linkage between [purchasing and supply management] and corporate success. [...] Is there a set of "[purchasing and supply management] best practices" that is generalizable across industries, or does this vary by industry?" (Ellram *et al.*, 2002, p. 14)

Taking this consideration a step further, the question can be expanded to not only include variations in industry, but also by company or category. This research therefore adapts Ellram *et al.*'s question to analyse how procurement maturity with its inherent procurement best practices can support strategic alignment. Strategic alignment is here understood as procurement supporting the company strategy, but in alignment with the key notions of contingency theory and based on the findings of the exploratory mini-cases as well as the three in-depth cases, it also includes procurement contextual contingencies.

Contingency theory posits that performance depends on the fit of a firm's strategy, structure and processes (Miles and Snow, 1984). This idea is based on three core elements: First, contingency theory assumes a relationship between organisational characteristics, the proposed contingency and firm performance. Second, changes in this contingency factor will, over time, cause changes in the organisational characteristics. Finally, the fit between the contingency and organisational characteristics affects firm performance (Donaldson, 2001).

When applied to this research, contingency theory indicates that better firm performance is dependent on the relationship between contextual contingencies and procurement maturity. Specifically, contingency theory would require academic thinking to move away from the assumption that higher maturity has a generic relationship to better performance, but that contingency factors determine the requirement for higher maturity.

This research supports these key notions of contingency theory, by demonstrating that whilst category managers aspire to higher maturity levels, they rarely aim to increase maturity in all topics of the maturity model. Instead, the topics where they seek higher maturity levels are dependent on contextual contingencies.

Moreover, this research provides an improved understanding of procurement maturity. It demonstrates that not only should maturity models include contextual contingencies, but to enable the identification of improvements based on these

contingencies, maturity should be measured as a profile (i.e. allowing different scores for each topic in the maturity model) and at a category level, since many of the identified contingencies are below the functional level.

The findings are summarised in a contingency-maturity model, which is based on existing maturity models, but is updated based on the findings in the three in-depth cases, applying both inductive and deductive methods. The inductive elements primarily include the identified contingencies, but also additional detail required to accurately assess these contingencies.

Finally, this research also provides an improved understanding of procurement strategic alignment. It moves away from the procedural top-to-bottom approach and instead describes strategic alignment as a more tacit concept, in which category managers experience the same contingencies as top management. As part of this, it has also become apparent that what current literature as well as industry term a 'category strategy' is in reality a collection of procurement tactics. This means that a category strategy is very like a 'target maturity profile'.

For practitioners, this means that they should not unconditionally strive for better maturity, but identify those maturity topics that provide the most value to the organisation. The contingency-maturity model developed in this study also enables practitioners to self-assess their own categories and thus identify opportunities for improvements.

1.3 Research aims and objectives

1.3.1 Overall objectives and research question

To advance the understanding of procurement's role in supporting competitive advantage, this research takes a contingency perspective. This research follows Michael Porter (1985, pp. 36–41) in recognising procurement as an important support activity in the value chain. Procurement's strategic relevance therefore depends on its ability to support corporate objectives and the extent to which it is aligned with the firm's strategy. Applying this to maturity models, this research attempts to define the relationship between procurement maturity and procurement strategic alignment.

How can procurement maturity models support procurement strategic alignment?

This question is supported by two underpinning sub-questions:

RQ1. How do category managers achieve strategic alignment?

This question aims at understanding how category managers currently devise category strategies and what contingencies they consider important to their category strategies (for example, but not limited to, the business strategy)

RQ2. How is procurement maturity conceptualised by procurement managers?

This element of the research aims to further the understanding of maturity. It focuses on how maturity is perceived by procurement professionals, and therefore how it should be measured

These two research questions as well as their underpinning hypotheses (deduced in the Literature Review Chapter 2) are further detailed in the methodology section (see chapter 3 Methodology).

1.3.2 Scope exclusions: Firm or procurement performance

This research will not cover the relationship between the procurement maturity gap and firm or procurement performance, since this analysis would require the confirmation of hypotheses 1-3 and a different approach would be needed. Specifically, where hypotheses 1-3 require an exploratory, inductive research strategy, the research of performance requires a more deductive format. Further research may build on this research by examining the impact of the maturity gap on firm and procurement performance. But this would require a more deductive study, for example through survey research or a longitudinal study. The analysis of performance will therefore be excluded in this research.

1.3.3 Definitions

Following van Weele's (van Weele, 2018, p. 9) differentiation of procurement terminologies, this thesis uses 'procurement' as a term to encompass all procurement-related activities, in contrast to 'purchasing', which is often associated with a more operational connotation. This includes any strategic sourcing activities, the actual sourcing process as well as any customer or supplier management required. Procurement is defined as "the management of the company's external resources in such a way that the supply of all goods, services, capabilities and knowledge, which are necessary for running, maintaining and managing the company's primary and support

activities is secured under the most favourable conditions covering the materials, information and money flows up to the point of consumption” (van Weele, 2018, p. 7). This broad definition allows the inclusion of broad case studies, since procurement processes are set up differently across cases.

1.4 Thesis outline

The thesis structure will follow the key stages of the thesis, as indicated in Figure 1. It demonstrates the key objectives of each stage, how hypothesis 1 from the literature review changes after the exploratory mini-cases (proposition 1) and the pilot case (proposition 2).

Both the research question (How can procurement maturity models support procurement strategic alignment?) and the two sub-questions (RQ1. How do category managers achieve strategic alignment? and RQ2. How is procurement maturity conceptualised by procurement managers?) remain the same over the whole research.

However, Figure 1 shows that hypothesis 1 (Procurement category strategies should be aligned with the firm and procurement strategy and determine the target maturity profile) changes after the exploratory mini-cases to proposition 1 (Procurement and category strategies are dependent on contextual contingencies) and then proposition 2 after the pilot case A&D (The target maturity profile is dependent on contextual contingencies). However, proposition 2 remains the same after the pilot case, as cases 2 (WATER) and 3 (BANK) support proposition 2.

Hypothesis 2 (The most appropriate measurement type for procurement maturity is the maturity profile, not an aggregate maturity measure) and hypothesis 3 (The most appropriate unit of analysis for procurement maturity is the procurement category) remain the same throughout the whole research, as all three cases support the hypotheses deduced from the literature.

Figure 1 summarises these developments in research questions and hypotheses. Changes to hypotheses or propositions are highlighted in blue, whereas stable hypotheses or propositions are indicated by grey shading.

	Literature review	Exploratory mini-cases	Pilot case: A&D	Case 2: WATER	Case 3: BANK	Cross-case analysis
Section objective	Review existing literature and define that state of knowledge	Initial exploration of the research question	In-depth exploration of research question and testing of hypotheses	In-depth exploration of research question and testing of hypotheses	In-depth exploration of research question and testing of hypotheses	Comparison of results across cases
Research question	How can procurement maturity models support procurement strategic alignment?					
Sub-question 1	How do category managers achieve strategic alignment?					
H1	H1: Procurement category strategies should be aligned with the firm and procurement strategy and determine the target maturity profile.	P1: Procurement and category strategies are dependent on contextual contingencies.	P2: The target maturity profile is dependent on contextual contingencies.	The target maturity profile is dependent on contextual contingencies.	The target maturity profile is dependent on contextual contingencies.	The target maturity profile is dependent on contextual contingencies.
Sub-question 2	How is procurement maturity conceptualised by procurement managers?					
H2	The most appropriate measurement type for procurement maturity is the maturity profile, not an aggregate maturity measure.	The most appropriate measurement type for procurement maturity is the maturity profile, not an aggregate maturity measure.	The most appropriate measurement type for procurement maturity is the maturity profile, not an aggregate maturity measure.	The most appropriate measurement type for procurement maturity is the maturity profile, not an aggregate maturity measure.	The most appropriate measurement type for procurement maturity is the maturity profile, not an aggregate maturity measure.	The most appropriate measurement type for procurement maturity is the maturity profile, not an aggregate maturity measure.
H3	The most appropriate unit of analysis for procurement maturity is the procurement category.	The most appropriate unit of analysis for procurement maturity is the procurement category.	The most appropriate unit of analysis for procurement maturity is the procurement category.	The most appropriate unit of analysis for procurement maturity is the procurement category.	The most appropriate unit of analysis for procurement maturity is the procurement category.	The most appropriate unit of analysis for procurement maturity is the procurement category.
Corresp. chapter	2 (Literature review)	4 (Results: Mini-cases)	5 (Results Case 1: A&D)	6 (Results Case 2: WATER)	7 (Results Case 3: BANK)	8 (Cross-case analysis)

Figure 1: Key research stages

Chapter 2 (Literature review) will provide a systematic literature review (SLR) of the relevant literature, focusing on procurement maturity and procurement strategic alignment. This section includes both an overview of the SLR methodology as well as the key descriptive and thematic findings. The findings are discussed and developed into an initial conceptual model. The literature review is based on Søggaard *et al.* (2019).

Chapter 3 (Methodology) will discuss the research strategy and design both for the exploratory mini-cases and the in-depth cases followed for the empirical research. It will provide a rationale for the case studies chosen, discuss the implications of the exploratory mini-cases and the pilot case, and finally cover the methodological limitations.

Chapter 4 (Results: Mini-cases) will provide an overview of the exploratory mini-cases conducted before initiation of the main empirical research. These were conducted to better understand the concepts researched in practice and to ensure the research was relevant for practitioners and included a bank, a food and beverage company, an automotive aftermarket services provider and a soft drinks manufacturer. These exploratory mini-cases have previously been published in Søggaard *et al.* (2019), together with the literature review.

Chapters 5 (Results Case 1: A&D), 6 (Results Case 2: WATER) and 7 (Results Case 3: BANK) discuss the findings from the in-depth cases. They cover an introduction to the case company, the findings regarding each research question, as well as a mapping of key contingencies' influence on maturity topics. Each case study concludes with a discussion of the research questions, the impact on the conceptual model and the access limitations faced.

Chapter 8 (Cross-case analysis) provides an in-depth comparative analysis of the three cases. As the individual cases, this chapter is structured around the research questions, however, it focuses on the commonalities and differences between cases.

Chapter 9 (Discussion) discusses the findings in comparison to existing literature and highlights the extent to which the case study findings support the conceptual model developed from the literature.

Finally, Chapter 10 (Conclusion) summarises the key contributions to theory and practice and discusses research limitations and further research.

2 Literature review

This section will summarise the key literature around procurement maturity and procurement strategic alignment. It will conclude with the development of a conceptual model to guide the empirical work. The literature review presented here is an updated version of a previously published paper (Søgaard *et al.*, 2019).

2.1 Method: The systematic literature review

To answer the research questions, this research assesses existing literature, focusing on academic literature, but drawing on consultancy publications to compare the state of knowledge in academia and industry. This section will describe the detailed steps taken to collect and analyse the input material.

Systematic reviews aim to reach reasonable conclusions “about what is and is not known” (Denyer and Tranfield, 2009, p. 671) using a rigorous methodology to identify, select and analyse existing research. Adapting methodologies from medical sciences for management research, Tranfield *et al.* (2003) developed a three-stage process, describing the planning, conducting and reporting of the review. Their process has been followed for this research and will be outlined in this section.

2.1.1 Review question development

This research challenges existing procurement literature on its lack of consideration of contextual factors and the resulting generic recommendations of ‘best practices’ across categories, functions and firms. It uncovers limitations that run through the body of literature on both procurement maturity and procurement strategic alignment. Together with the reliance on positivist assumptions, this raises doubts concerning the identified relationships.

The research reviewed is firmly rooted in strategic procurement literature, which stresses the increasing recognition and bottom-line impact of procurement (Ramsay and Croom, 2008). This position is based on procurement’s historic evolution, which is replicated in procurement maturity models. These reflect “the level of professionalism in procurement at the business unit level” (Rozemeijer *et al.*, 2003, p. 5).

Both strategic procurement and procurement maturity models are generally assumed to be desirable, thus supporting the theorised bottom-line impact of the procurement function. However, conflicting results undermine the strength of the identified

relationships and drive the question as to how procurement can best support the firm (Ellram *et al.*, 2002). Moreover, the theoretical basis for procurement's strategic relevance is still debated (Mol, 2003; Ramsay, 2001).

The literature review aims to outline the relationship between procurement maturity and procurement strategic alignment. To answer this, the following review questions have been considered:

1. How is procurement strategic alignment conceptualised in academic literature?
2. How are procurement maturity models conceptualised in academic literature?

The remainder of this chapter details the approach, including a systematic literature review, which is compared to consulting views. Next, the theoretical background for this research is described, followed by the analysis and comparison of academia and consulting views. Finally, results are discussed in the context of contingency theory and the implications for theory and practice are considered.

2.1.2 Keyword development and systematic search

The review questions can be broken down into three major components: procurement, maturity and strategic alignment. As all three areas are complex concepts with different terminologies used by different authors, different synonyms have to be considered in the literature review. Table 1 defines the different terms for each of these, which will form the keywords for the search strings.

Table 1: Keywords

Review question component	Keywords
Procurement	Purchasing (Baier <i>et al.</i> , 2008; Bemelmans <i>et al.</i> , 2013; Cavinato, 1999; Cousins <i>et al.</i> , 2006; Ellram <i>et al.</i> , 2002; Freeman and Cavinato, 1990; Mikalef <i>et al.</i> , 2015; Narasimhan and Das, 2001; Paulraj <i>et al.</i> , 2006; Rebolledo and Jobin, 2013; Reck and Long, 1988; Rozemeijer and van Weele, 1998; Schiele, 2007)
	Procurement (Barry <i>et al.</i> , 1996; Paulraj <i>et al.</i> , 2006; Schiele, 2007)
	Supply (Cousins, 2005), supply management (Ellram <i>et al.</i> , 2002; Handfield <i>et al.</i> , 2015; Rebolledo and Jobin, 2013; Schiele, 2007)
	Buying (Freeman and Cavinato, 1990; Keough, 1993; Paulraj <i>et al.</i> , 2006)
Maturity	Maturity (Bemelmans <i>et al.</i> , 2013; Schiele, 2007)
	Development model (Barry <i>et al.</i> , 1996; Rozemeijer and van Weele, 1998)
	Configuration (Cousins <i>et al.</i> , 2006)
	Stages (Cavinato, 1999; Freeman and Cavinato, 1990; Keough, 1993; Reck and Long, 1988)
	Levels (Paulraj <i>et al.</i> , 2006)
Strategic alignment	Best practices (Ellram <i>et al.</i> , 2002)
	Alignment/Misalignment (Baier <i>et al.</i> , 2008; Cavinato, 1999; Cousins, 2005; Handfield <i>et al.</i> , 2015; Mikalef <i>et al.</i> , 2015; Rebolledo and Jobin, 2013)
	Integration (Narasimhan and Das, 2001; Paulraj <i>et al.</i> , 2006)
	Fit/fitting (Cavinato, 1999; Freeman and Cavinato, 1990; Rebolledo and Jobin, 2013)

Strategic procurement is included as an additional keyword, as the concept often includes aspects of strategic alignment. These resulting search string elements are described in Table 2.

Table 2: Search string element definition

Review question component	Search string element
Procurement	purchas* OR procur* OR "supply management" OR "supply-management" OR buy*
Maturity	maturity OR "development model" OR stages OR levels OR "best practices" OR configuration
Alignment	align* OR misalign* OR integrat* OR fit*
Strategic procurement	"strategic purchasing" OR "strategic sourcing" OR "strategic procurement"

These search strings were then combined in the following two ways to reflect the main research question (see Table 3):

- Procurement within three words of maturity
- Procurement within three words of (alignment or strategic procurement)

Table 3: Actual search strings

Search String	Purchasing w/3 maturity	Purchasing w/3 (alignment or strategic purchasing)
ABI	((purchas* OR procur* OR "supply management" OR "supply-management" OR buy*) NEAR/3 (maturity OR "development model" OR stages OR levels OR "best practices" OR configuration))	((purchas* OR procur* OR "supply management" OR "supply-management" OR buy*) NEAR/3 ((align* OR misalign* OR integrat* OR fit*) OR ("strategic purchasing" OR "strategic sourcing" OR "strategic procurement"))))
EBSCO	((purchas* OR procur* OR "supply management" OR "supply-management" OR buy*) N3 (maturity OR "development model" OR stages OR levels OR "best practices" OR configuration))	((purchas* OR procur* OR "supply management" OR "supply-management" OR buy*) N3 ((align* OR misalign* OR integrat* OR fit*) OR ("strategic purchasing" OR "strategic sourcing" OR "strategic procurement"))))

These were applied to title and abstract searches in ABI/Inform Complete (ProQuest) and EBSCO, reduced to peer-reviewed journals with no time restriction. These databases were selected, as they contain a large number of peer-reviewed articles in business and management. ABI provides access to 3,900 journals, covering a variety of business and management subjects since 1971. EBSCO contains over 3,700 publications with over 1,900 from peer-reviewed journals, covering all aspects of business and management (Cranfield University, 2017).

2.1.3 Screening process

The papers returned from the search strings were initially screened based on their title and abstract against the selection criteria provided in Table 4. This was followed by a full text screening, in which the same selection criteria were applied. The papers remaining after both screening steps were taken forward into the analysis.

Table 4: Selection criteria (adapted from Watson *et al.*, 2015)

Criteria	Inclusion	Exclusion	Rationale
Context	Articles in the context of procurement maturity and procurement alignment	Articles focusing on topics such as consumer buying, IT, mergers and acquisitions, engineering, governance, banking, innovation, project management, sociology, marketing, HR, health care etc.	To ensure articles support answering research question
Topical fit: Procurement maturity	Papers on procurement maturity models, including maturity models that focus on a single capability (e.g. global sourcing)	Supply chain management with focus other than procurement (e.g. planning or logistics), or focusing on a special aspect of procurement without reference to maturity models	To ensure articles support answering research question
		Maturity models that focus on supporting aspects that are not capabilities (e.g. IT systems for procurement)	
Topical fit: Alignment conceptualisation	Strategic (vertical) alignment between procurement strategy and firm strategy	Integration (horizontal alignment), network alignment (e.g. with suppliers)	To ensure articles support answering research question
		Strategic procurement papers conceptualising procurement without alignment (e.g. only planning/status/supplier collaboration)	
Publication type	Peer-reviewed, scholarly and academic papers	Non-scholarly articles, newspapers, trade publications, magazines and proceedings, working papers, theses, books	To ensure methodical rigour and comprehensiveness
Date of publication	All	None	To include development of core concepts over time
Language	English	All other languages	To avoid errors in translation
Sector / industry	All	None	To include differences between industries and avoid bias
Research method	All	None	To avoid bias

2.1.4 Search string results

Table 5 provides an overview of the papers taken forward at each step. It indicates that the initial searches resulted in 5,484 papers, which were reduced to 377 papers after the title and abstract screening. The full text screening excluded another 214 papers, resulting in 163 papers. Removing duplicates, this resulted in 100 papers taken forward to the analysis.

However, 18 papers that fully satisfied the selection criteria were included from references and panel recommendations, resulting in 118 papers included in the analysis.

Table 5: Search string results by process step

Search string	Procurement within 3 words of maturity		Procurement within 3 words of (alignment or strategic procurement)		Total
	EBSCO	ABI	EBSCO	ABI	
Initial results	1,987	1,344	1,265	888	5,484
Title and abstract screening	61	47	150	119	377
Full text screening	30	21	58	54	163
Remove duplicates (papers taken forward to analysis)					88
Conference papers					0
Additional papers through reference search/panel recommendations					18
Total papers considered					118

Although quality aspects were assessed, no papers were excluded due to quality criteria. Question one focuses on underlying assumptions that can be informed by all papers, independent of their quality, as all included papers are read by other academics and therefore constitute the body of knowledge. In contrast, the quality of the paper does impact on the reliability of identified relationships. Therefore, the quality of papers was taken into account during the content extraction and will be discussed in the thematic analysis of this section.

The data extraction included general paper information, data on the methodology chosen and (where applicable) details on maturity models, strategic procurement and strategic alignment.

2.1.5 Consultancies

To compare the state of knowledge in academia with industry, this review includes consultancy papers. Consultancies can be expected to do regular research and through their advisory role they shape the expectations of industry.

Consultancies were selected based on the Forbes 2016 ranking of America's Best Consultancies, which was compiled through both surveying management consultants and consulting clients for recommendations in different sectors and functional areas (Forbes, Inc. and Statista, Inc., 2016). The ranking was filtered for consultancies recommended in the functional area "Supply Chain Management", which resulted in 34 consultancies taken forward into the searching phase.

While this approach limited consultancy papers to U.S. consultancies, this was expected to yield sufficient results, as the U.S. is a large market for consulting. Additionally, a large number of the identified consultancies operate on a global level and would report major findings or developments in other countries on their websites.

The consultancies' websites were searched for publicly available consultancy reports. The reports were subject to the same selection criteria as academic and conference papers, except for the publication type. As the process of publishing in industry is different from academia, peer-reviewing could not be included as a selection criterion. However, to ensure a certain level of rigour in research, only evidence-based papers were included. Papers therefore had to explicitly describe a methodology or, at the very least, describe the data used.

Table 6 indicates the number of papers identified for each of the consultancies after the initial screening and a second full text screening. The majority of the papers in this second stage had to be excluded due to lack of any empirical evidence. The screening process resulted in eight papers from seven consultancies taken forward into the analysis.

Table 6: Consultancies considered (Forbes, Inc. and Statista, Inc., 2016)

Consultancy name	Number of papers found (title screening)	Number of papers included (full text screening)
A.T. Kearney	4	2
Accenture	2	1
Alexander Proudfoot	1	0
AlixPartners	0	0
Aon Hewitt	0	0
Avasant	0	0
Bain & Company	2	1
Booz Allen Hamilton	2	0
Capgemini	1	0
Censeo Consulting Group	0	0
Chainalytics	0	0
CSC (Computer Sciences Corporation)	0	0
Deloitte Consulting	1	0
EY Advisory Services	0	0
Gartner Consulting	n/a	n/a
Huron Consulting Group	0	0
Insight Sourcing Group	1	1
KPMG (Consulting Practice)	5	1
Kurt Salmon	1	0
L.E.K. Consulting	0	0
Logistics Consultants	0	0
McKinsey & Company	1	0
Navigant Consulting	0	0
Oliver Wight	0	0
Oracle Consulting	0	0
Point B	0	0
PricewaterhouseCoopers Advisory Services	3	0
Roland Berger Strategy Consultants	0	0
strategy&, part of the PwC network	2	1
The Boston Consulting Group	0	0
The Hackett Group	6	1
The Progress Group	0	0
Tompkins International	0	0
Vizient	0	0
Total	32	8

2.2 Theoretical background

This section will outline the core aspects of contingency theory and how these are related to existing research in the procurement domain.

Contingency theory moves beyond universalistic theories that propose one best way to organise in order to achieve maximum performance. Instead, it assumes that competitive advantage stems from the fit of organisational characteristics with contingencies, especially the environment, organisational size and strategy (Donaldson, 2001). Miles and Snow (1984, p. 10) propose that

“it is becoming increasingly evident that a simple though profound concept is at the heart of many organization and management research findings as well as many of the proposed remedies for industrial and organizational renewal. The concept is that of fit among an organization’s strategy, structure, and management processes.”

It has been proposed there is no single contingency theory, but a multitude of contingency theories based on a unifying paradigm formed of three core elements. The first element states a relationship between organisational characteristics and the proposed contingency. Second, changes in this contingency factor will, over time, cause changes in the organisational characteristics. Finally, the fit between the contingency and the organisational characteristics affects firm performance (Donaldson, 2001, pp. 7–11).

Sousa and Voss (2008) find that contingency theory is frequently used in organisations’ management research. While not directly referenced, the theory of production competence relies on these elements to develop a contingency theory for production strategy alignment (Hayes and Wheelwright, 1984; Vickery, 1991). Gonz  les-Benito (2007) and Baier *et al.* (2008) have further progressed this into the procurement domain, arguing that similar concepts hold true in this area (see Figure 2).

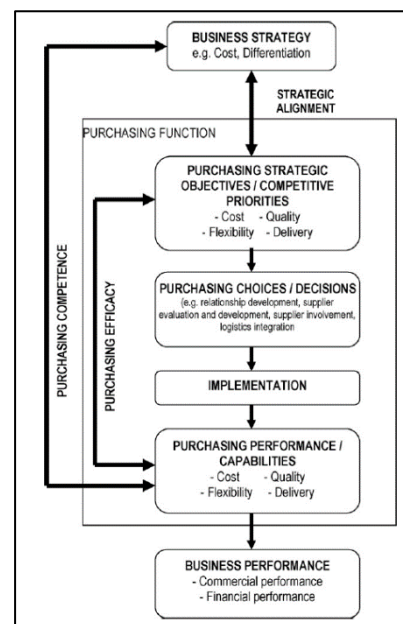


Figure 2: Procurement strategic alignment conceptualisation (Gonz  les-Benito, 2007)

Procurement strategic alignment can thus be defined as the consistency of procurement's strategy and activities with the firm's objectives (Baier *et al.*, 2008). This strategic or vertical alignment with corporate objectives has to be distinguished from horizontal alignment with peer functions (van Hoek and Mitchell, 2006).

While the importance of procurement strategic alignment is widely agreed upon, it is conceptualised differently. This is especially apparent in strategic procurement literature. Strategic procurement is grounded in procurement's historic development from an administrative towards a more strategic process. It is based on the consensus that procurement will only be more involved in the corporate planning processes, when it is recognised as strategic (Carr and Smeltzer, 1997) and has been defined as

“[the] process of planning, implementing, evaluating, and controlling strategic and operating purchasing decisions for directing all activities of the purchasing function toward opportunities consistent with the firm's capabilities to achieve its long-term goals” (Carr and Smeltzer, 1997, p. 200).

While the definition clearly relates to the concept of strategic alignment, Carr and Smeltzer's (1997) article highlights that strategic procurement focuses on the pursuit of increasing procurement status and recognition. They continue to link strategic procurement to higher status, higher skill levels, an increased willingness to take risks and resource availability. This contradicts purist conceptualisations of procurement strategic alignment focusing on the above definition around consistency of procurement activities and objectives with firm goals.

This demonstrates that the concept of procurement strategic alignment is not clearly understood – or at least not clearly agreed upon – in procurement literature. This is also demonstrated in procurement maturity models, which reflect procurement's evolution and provide a tool to improve organisational procurement (Schiele, 2007). Procurement maturity is said to reflect “the level of professionalism in procurement at the business unit level” (Rozemeijer *et al.*, 2003, p. 5). Similarly to strategic procurement, it is not entirely clear how procurement strategic alignment is conceptualised.

The following sections aim to clarify the different concepts of procurement strategic alignment and strategic procurement and procurement maturity.

2.3 Results

2.3.1 Descriptive and theoretical analysis

This section provides an overview of the papers included in the analysis, focusing on academic literature with an overview of consultancy papers.

2.3.1.1 Topics covered

Table 7 demonstrates that the majority of papers focus on procurement maturity and strategic procurement, with only 22 papers on procurement strategic alignment.

Table 7: Academic papers by topic area

**Note: Some papers cover more than one topic so both the total may appear higher*

Papers by topic area	Number of papers
Procurement maturity	39 (33%)
Procurement strategic alignment	22 (19%)
Strategic procurement	65 (55%)
Total*	118

Figure 3 and Figure 4 show how these topics have progressed over time. They demonstrate that apart from three early contributions (Adamson, 1980; Farmer, 1981; Spekman and Hill, 1980), little has been written on either topic throughout the 1980s. However, towards the late 1980s, all three topics picked up, with an increasing number of contributions since 2000.

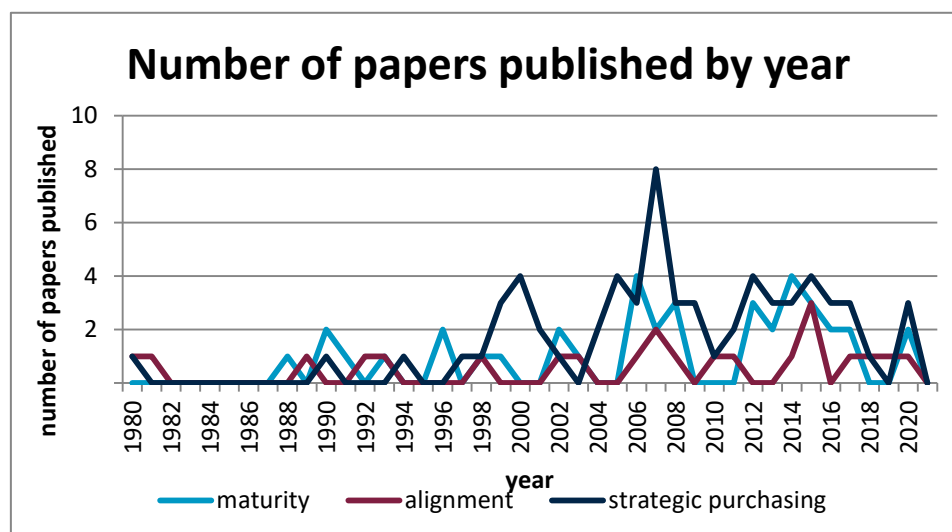


Figure 3: Topics published by year (academic papers)

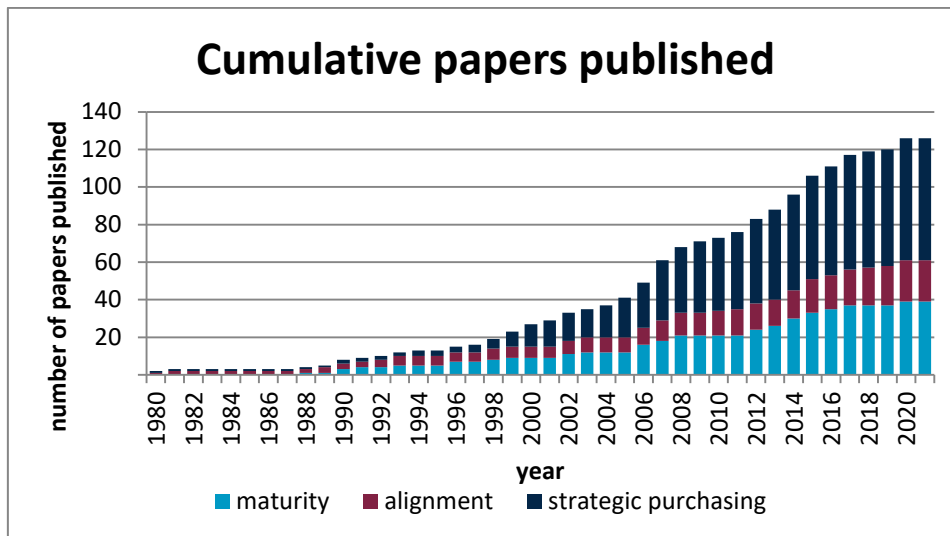


Figure 4: Cumulative papers by topic (academic papers)

2.3.1.2 Research methods

The research area has changed in methods used. In the 1980s and 1990s, most papers were conceptual, supported by some empirical research. This changed in the late 1990s when survey research became predominant, supported by an increasing number of case studies (see Figure 5 and Figure 6).

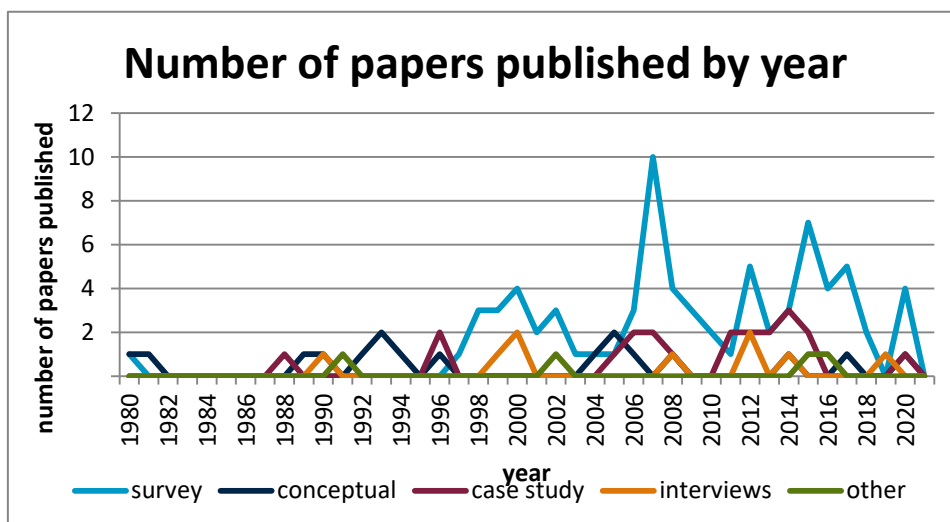


Figure 5: Methods used by year (academic papers)

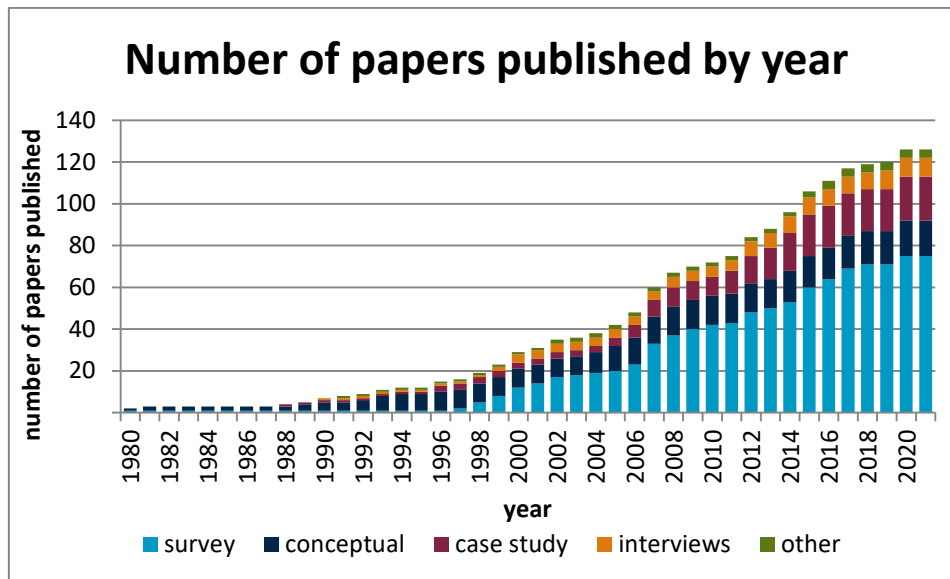


Figure 6: Cumulative papers by method (academic papers)

Table 8 provides further detail of papers reviewed by research method and topic. It demonstrates that while survey research is popular across all three topics, research on procurement maturity models favours case studies, and papers looking into strategic alignment are frequently conceptual.

Table 8: Academic papers by research method

**Note: Some papers cover more than one topic and/or use more than one method so the totals may appear higher*

Method	Number of papers			
	maturity	alignment	strategic procurement	Total*
Survey	17 (44%)	10 (45%)	53 (82%)	75 (64%)
Case study	15 (38%)	2 (9%)	6 (9%)	21 (18%)
Conceptual	4 (10%)	8 (36%)	6 (9%)	17 (14%)
Interviews	5 (13%)	1 (5%)	3 (5%)	9 (8%)
Other	1 (3%)	1 (5%)	2 (3%)	4 (3%)
Total*	39	22	65	118

This reliance on deductive research (surveys and conceptual papers make up 80% of all papers) indicates a predominance of positivist epistemologies, especially since case studies are often used to test or develop an existing maturity model, not to explore underlying concepts or assumptions (e.g. Versendaal *et al.*, 2013). Positivism relies on the premise that science is value free and implies that relationships can be measured (Bryman and Bell, 2006).

This is related to the low number of research papers using interviews, which are useful to understand practitioners' views. For relatively unexplored fields such as procurement maturity and procurement strategic alignment, there seems to be little inductive and explorative research, indicating that existing research is driven by academic interests, rather than industry-driven issues.

2.3.1.3 Industries considered

Table 9 indicates the popularity of manufacturing as an industrial context – however, it also demonstrates a high number of papers reviewing other industries.

Table 9: Academic papers by industry

**Note: Some papers cover more than one topic and/or one industry so the totals may appear higher*

Industries considered	Number of papers			
	maturity	alignment	strategic procurement	Total*
Manufacturing	19 (49%)	9 (41%)	30 (46%)	54 (46%)
Various (incl. Retail)	10 (26%)	6 (27%)	17 (26%)	30 (25%)
Service	5 (13%)	2 (9%)	5 (8%)	12 (10%)
Service and Manufacturing	4 (10%)	2 (9%)	4 (6%)	10 (8%)
Public organisation	4 (10%)	1 (5%)	4 (6%)	9 (8%)
Not defined	5 (13%)	2 (9%)	6 (9%)	12 (10%)
Total*	39	22	65	118

2.3.1.4 Journals

Table 10 outlines the number of papers published in different journals. It demonstrates that the majority of papers are published in the Journal of Purchasing & Supply Management, followed by the International Journal of Operations & Production Management and the Journal of Supply Chain Management. The high concentration in a few journals indicates a focused debate (43% of papers are published in six journals).

Table 10: Academic papers by journal

Journal	Number of papers
Journal of Purchasing & Supply Management	13 (11%)
International Journal of Operations & Production Management	12 (10%)
Journal of Supply Chain Management	8 (7%)
Journal of Operations Management	7 (6%)
Journal of Purchasing & Materials Management	6 (5%)
International Journal of Purchasing & Materials Management	5 (4%)
Journal of Business & Industrial Marketing	3 (3%)
International Journal of Public Sector Management	3 (3%)
Industrial Management & Data Systems	3 (3%)
Strategic Change	3 (3%)
International Journal of Production Economics	3 (3%)
European Journal of Purchasing & Supply Management	3 (3%)
Benchmarking: An International Journal	2 (2%)
Journal of Public Procurement	2 (2%)
Supply Chain Forum	2 (2%)
International Journal of Physical Distribution & Logistics Management	2 (2%)
Academy of Management Executive	2 (2%)
Journal of Managerial Issues	2 (2%)
Supply Chain Management: An International Journal	2 (2%)
Other (1 paper published in these journals)	35 (30%)
Total	118

2.3.1.5 Underlying theories

Table 11 indicates that a large proportion of the papers reviewed (65%) do not clearly state a theoretical perspective for their research. As Colbert (2004, p. 341) argues, “without good theory, the field [...] could be characterized as a plethora of statements regarding empirical relationships and/or prescriptions for practice that fail to explain why these relationships exist or should exist”, indicating that a lack of theory is a serious obstacle to determining procurement’s impact on corporate success.

Table 11 also shows that procurement research is primarily driven by the resource-based view or its extension, the relational view. This indicates that procurement is generally seen as a strategic capability that can drive competitive advantage through strategic resources (Carr and Pearson, 2002). These could be obtained through information advantages stemming from knowledge of the supplier market (Carr and Smeltzer, 2000) or through superior supplier relationships (Castaldi et al., 2011; Dyer and Singh, 1998).

Papers looking at strategic alignment also use contingency theory, proposing that competitive advantage stems from the fit of procurement’s actions and objectives with

the firm strategy (Baier et al., 2008; David et al., 2002; Pohl and Förstl, 2011). Neither procurement maturity nor strategic procurement research uses this theory.

Table 11: Academic papers by theory

**Note: Some papers cover more than one topic and/or used more than one theory so the totals may appear higher*

Papers by theory used	Number of papers			
	maturity	alignment	strategic procurement	Total*
no theory	35 (90%)	9 (41%)	39 (60%)	77 (65%)
resource-based view	0 (0%)	2 (9%)	7 (11%)	9 (8%)
relational view	1 (3%)	0 (0%)	5 (8%)	6 (5%)
transaction cost theory	0 (0%)	2 (9%)	3 (5%)	5 (4%)
dynamic capabilities theory	0 (0%)	1 (5%)	4 (6%)	5 (4%)
contingency theory	0 (0%)	4 (18%)	0 (0%)	4 (3%)
agency theory	0 (0%)	2 (9%)	0 (0%)	2 (2%)
theory of production competence	0 (0%)	2 (9%)	0 (0%)	2 (2%)
knowledge-based view	0 (0%)	1 (5%)	1 (2%)	2 (2%)
expectancy theory	0 (0%)	1 (5%)	0 (0%)	1 (1%)
absorptive capacity concept	1 (3%)	0 (0%)	0 (0%)	1 (1%)
social comparison theory	0 (0%)	0 (0%)	1 (2%)	1 (1%)
strategic intent	0 (0%)	0 (0%)	1 (2%)	1 (1%)
information processing view	0 (0%)	1 (5%)	0 (0%)	1 (1%)
configuration theory	1 (3%)	1 (5%)	0 (0%)	1 (1%)
resource dependency theory	0 (0%)	0 (0%)	1 (2%)	1 (1%)
resource advantage	0 (0%)	0 (0%)	1 (2%)	1 (1%)
corporate coherence	1 (3%)	1 (5%)	0 (0%)	1 (1%)
corporate planning	0 (0%)	1 (5%)	0 (0%)	1 (1%)
institutional theory	0 (0%)	0 (0%)	1 (2%)	1 (1%)
diffusion of innovation theory	0 (0%)	0 (0%)	1 (2%)	1 (1%)
resource advantage theory	0 (0%)	0 (0%)	1 (2%)	1 (1%)
social network theory	0 (0%)	0 (0%)	1 (2%)	1 (1%)
Total*	39	22	65	118

2.3.1.6 Consultancies

Table 12 and Table 13 review the consulting papers identified, highlighting a focus on procurement maturity, as only one empirical paper focusing solely on procurement strategic alignment could be identified. They also highlight that very little has been published on both topics in recent years, due to an increasing focus on digitalisation and risk management (Covid-19) in recent years. Finally, they demonstrate that, similarly to academic papers, surveys are the most popular research method, supported by interviews and case studies. Finally, the majority of publications do not specify the industries considered in their research (Table 14).

Table 12: Consulting papers by topic

**Note: Some papers used more than one method so the total may appear higher*

Number of papers by year	maturity	alignment	Total	Cum. total
2007	1		1	1
2008				1
2009				1
2010	1		1	2
2011	1	1	1	3
2012	1		1	4
2013	2		2	6
2014		1	1	7
2015				7
2016				7
2017				7
2018				7
2019				7
2020				7
2021				7
n.d.	1		1	8
Total*	7	2	8	8

Table 13: Consulting papers by method

**Note: Some papers used more than one method so the total may appear higher*

Method used	Total
Survey	5 (63%)
Interviews	2 (25%)
Case study	2 (25%)
Total*	8 (100%)

Table 14: Consulting papers by industry

Industries considered	Total
Not provided	4 (50%)
Manufacturing and services	2 (25%)
Various	2 (25%)
Total	8

2.3.2 Conceptualisation of procurement strategic alignment

This section will review conceptualisations and measurements of procurement strategic alignment in order to understand underlying constructs and premises.

2.3.2.1 Procurement strategic alignment in academic research

Table 15 provides an overview of the different conceptualisations, indicating that the reviewed papers can be classified broadly into three sections:

1. Papers classified as strategic alignment are those that follow the definition used in this research, focusing on the consistency of procurement strategies and activities with corporate objectives. Table 15 highlights that only 26% of all papers reviewed use this conceptualisation, indicating a significant gap
2. Strategic procurement papers use a multi-measure construct covering different aspects
3. Congruence requires the alignment of levels of maturity across different categories or between procurement and the firm

Table 15: Academic papers by alignment conceptualisation

**Note: Some papers cover more than one topic and/or conceptualisation of procurement alignment so the totals may appear higher*

Conceptualisation of procurement alignment	Number of papers			
	maturity	alignment	strategic procurement	Total*
Strategic alignment	11 (28%)	21 (95%)	1 (2%)	31 (26%)
Strategic purchasing	1 (3%)		38 (58%)	38 (32%)
Congruence	4 (10%)	1 (5%)		4 (3%)
Alignment not considered	23 (59%)		26 (40%)	45 (38%)
Total*	39	22	65	118

The conceptualisation of strategic alignment as congruence differs significantly from the strategic alignment definition used in this research. Therefore, papers in this category are not considered as part of the strategic alignment literature for this research.

Strategic procurement papers use an aggregate measure, capturing different concepts including strategic alignment. This is demonstrated in Figure 7, which indicates the cumulative number of papers by concepts included in strategic procurement measures. In agreement with Carr and Smeltzer's (1997) definition, most papers

clearly focus on alignment and strategic planning measures. However, a large number of papers also includes procurement's status and involvement in organisational processes.

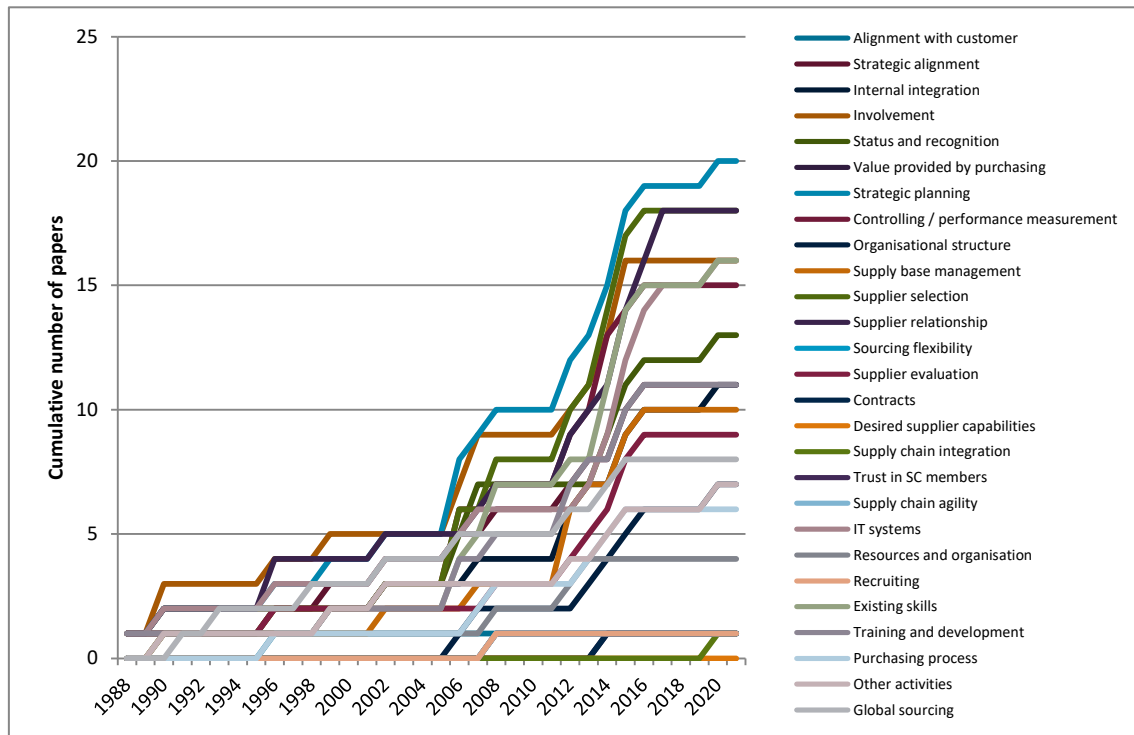


Figure 7: Cumulative number of papers by strategic procurement measures

However, the graph also shows some topics that are covered frequently (see also Table 15), especially strategic planning, which refers to the definition of long-term plans supporting the strategy, or the criteria for supplier selection. Other common topics are procurement's involvement in organisational activities, strategic supplier relationships or controlling and performance measurement. Table 15 also demonstrates that strategic alignment is not even included in a third of the models – and is therefore considered only as important as the status and recognition of procurement, supply base management or training.

Table 16: Total number of papers considering different strategic procurement measures

**Note: Some papers cover more than one conceptualisation of strategic procurement so the totals may appear higher*

Maturity model topic	Number of papers	% of papers that include topic
Strategic planning	20	51%
Supplier selection	18	46%
Supplier relationship	18	46%
Involvement	16	41%
Existing skills	16	41%
IT systems	16	41%
Controlling / Performance Measurement	15	38%
Status and Recognition	13	33%
Strategic alignment	11	28%
Training and development	11	28%
Supply base management	10	26%
Internal integration	11	28%
Supplier evaluation	9	23%
Global sourcing	8	21%
Other activities	7	18%
Organisational structure	7	18%
Purchasing process	6	15%
Resources and organisation	4	10%
Alignment with customer	1	3%
Value provided by purchasing	1	3%
Sourcing flexibility	1	3%
Contracts	1	3%
Trust in SC members	1	3%
Supply chain agility	1	3%
Recruiting	1	3%
Supply chain integration	1	3%
Total*	39	100%

2.3.2.2 Procurement strategic alignment measures

While strategic procurement literature provides an important background, the above discussion demonstrates that it is a different concept from procurement strategic alignment. This section will further unpick research focusing on procurement strategic alignment.

Table 17 compares the different conceptualisations with different types of measurements. It demonstrates that strategic alignment is measured in a number of different ways. A large number of papers (49%) do not define any measure for alignment. These tend to be the conceptual papers that do not use any empirical validation method.

Table 17: Academic papers by alignment measure

**Note: Some papers cover more than one topic and/or conceptualisation of procurement alignment so the totals may appear higher*

Conceptualisation and measurement of procurement alignment	Number of papers				
	Strategic alignment	Strategic procurement	Congruence	Alignment not considered	Total*
Likert scale	3 (10%)	37 (97%)			40 (34%)
As part of the maturity matrix	10 (32%)		1 (25%)		10 (8%)
Fit with deducted construct	4 (13%)				4 (3%)
Fit with inductive construct	1 (3%)				1 (1%)
Congruence between procurement and firm maturity			1 (25%)		1 (1%)
Congruence between maturity aspects			1 (25%)		1 (1%)
Not defined (not measured or not provided)	11 (35%)	1 (3%)	1 (25%)	45 (100%)	58 (49%)
Total*	31	38	4	45	118

A total of 50 papers (42%) measures strategic alignment either directly on a Likert scale or as part of a maturity matrix. Both of these rely on respondents' perceptions to determine the extent of strategic alignment, usually using measures such as:

- Procurement performance is measured in terms of its contributions to the firm's strategic objectives
- Training of procurement staff is oriented along the needs derived from the firm's strategic plan
- Procurement plans are continuously revised to adapt them to changes in business strategic planning
- The procurement function has a good knowledge of the firm's strategic goals (e.g. Handfield *et al.*, 2015; Kaufmann and Gaeckler, 2015)

What becomes evident is that these measures tend to focus on the process of alignment. All of the above measure actions to increase a firm's strategic alignment, while none of them measures the extent to which procurement objectives and activities fit with the firm strategy.

This issue is overcome by those papers measuring strategic alignment as a second order construct. Only five papers measure strategic alignment indirectly by predefining a construct in which elements are contingent upon the corporate strategy. They then continue to measure whether respondents' answers fit with the defined concept. Table 18 demonstrates how the alignment construct is defined, which business

strategies and procurement aspects are considered, as well as the measurement basis for fit. It highlights a lack of agreement on what firm or procurement strategies exist as well as which procurement strategies align with which firm strategies.

Table 18: Business strategy and procurement aspect to be aligned

Author	Definition of alignment	Business strategies considered	Procurement aspect to be aligned	Basis for fit
Narasimhan and Carter (1998)	Inductive	Total quality, differentiation/ customisation, traditional procurement, eco-organisation	Procurement strategies	Empirically based on correlation between factors
David <i>et al.</i> (2002)	Deductive	Cost leadership and differentiation	Level of centralisation, scope of activities	Deduced from literature
González-Benito (2007)	Inductive	Not defined	Quality, cost, delivery, flexibility	Consistency between weight assigned and performance in different aspects
Baier <i>et al.</i> (2008)	Deductive	Cost leadership and differentiation	Procurement priorities	Empirically based on best-performing companies
Kroes and Ghosh (2010)	Inductive	Cost, flexibility, innovation, quality and time	Outsourcing drivers	Deduced from literature

Narasimhan and Carter (1998) inductively research related business and procurement strategies. They survey procurement managers on the emphasis their business places on 36 different procurement activities and 12 competitive priorities. Through exploratory factor analysis they continue to identify four distinct business strategies and eight procurement strategies. They find that respondents tend to emphasise different procurement strategies depending on their business strategy cluster. Although they provide an interesting taxonomy of procurement strategies, their research is based on the assumption that all surveyed procurement functions are currently in alignment with their business strategy.

David *et al.* (2002) research the alignment of procurement's organisational design and scope of activities. They find support for their hypothesis that a differentiation strategy fits with a decentralised procurement structure and a broader scope of activities, while cost leadership fits with a centralised structure and a more narrow scope. While supporting the notion of strategic alignment and the applicability of contingency theory in a procurement context, their research does not explain how procurement can align its strategy and activities to the firm objectives.

González-Benito (2007) focuses on the impact of procurement strategic alignment on firm performance. He measures alignment as the fit between the emphasis placed on different procurement objectives and the actual performance achieved. He finds that alignment between the emphasis placed on and the performance in different procurement objectives is related to firm performance. However, like other survey-based research, his findings are limited by the fact that they are based on procurement managers' perceptions and therefore do not consider the perception of the rest of the business, including procurement's internal customers.

Following González-Benito's (2007) study, Baier *et al.* (2008) provide a different measure of fit. They use confirmatory factor analysis to develop aggregate concepts for business strategy and procurement competitive priorities. They continue to measure procurement strategy profiles based on the importance attached to different procurement priorities. They define ideal procurement strategy profiles per business strategy (i.e. cost leadership or differentiation) based on the average profile of the best-performing companies. They find that a profile closer to the optimum profile is linked to firm performance.

Finally, Kroes and Ghosh (2010) look into the alignment between firm strategy and outsourcing drivers. Based on previous literature, they deduce a set of competitive priorities and outsourcing drivers (i.e. cost, flexibility, innovation, quality and time). They find that the extent to which outsourcing drivers align with competitive priorities is related to firm performance. Similarly to David *et al.* (2002) they support the notions of strategic alignment in a procurement environment, but do not consider actual procurement strategies or activities.

2.3.2.3 Conceptualisation of procurement strategic alignment in consulting

Similarly to the limited academic research on procurement strategic alignment, only one of the seven consultancies reviewed published research on this subject. A.T. Kearney identify procurement strategic alignment both as one of the drivers of procurement maturity (Blascovich *et al.*, 2011), and as a core element of strategy definition, as demonstrated in Figure 8.

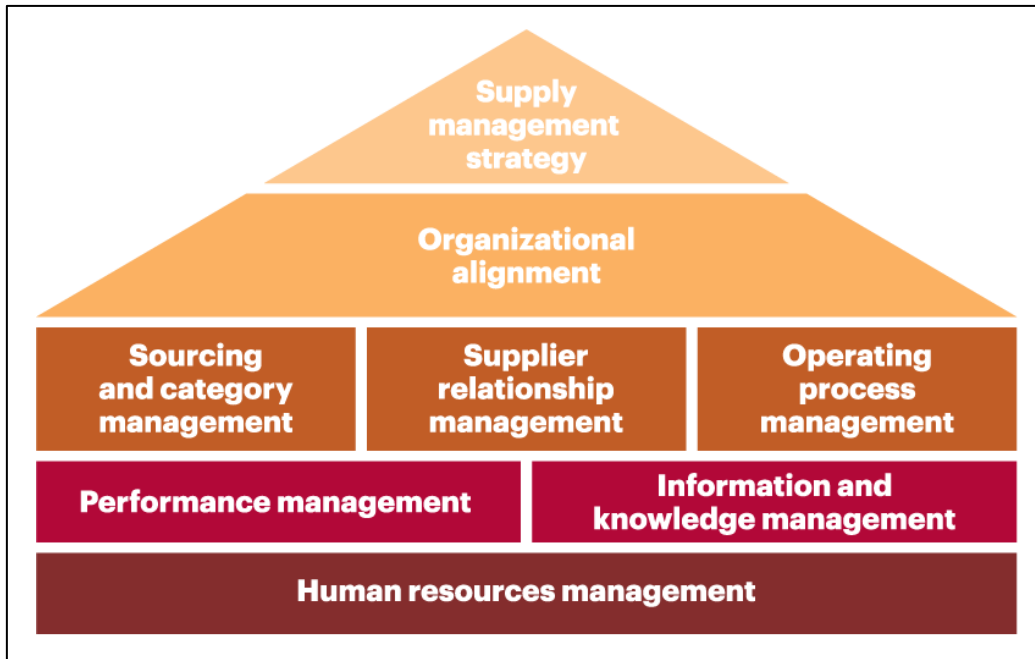


Figure 8: A.T. Kearney procurement strategy concept (Easton *et al.*, 2014)

Based on a global survey of 185 leading companies across 32 different industries, A.T. Kearney assert that “leaders understand that the procurement strategy must align with overall business goals” (Easton *et al.*, 2014).

A.T. Kearney’s research relies on a deductively developed construct that measures alignment as the fit between 14 firm goals with 30 different procurement strategy elements. However, like the academic papers, A.T. Kearney’s research comes with some limitations, most notably the lack of clarity on the measurements used (the actual business and procurement strategy elements used are not clearly stated).

2.3.3 Conceptualisation of procurement maturity models

To explore underlying constructs and premises, this section will review procurement maturity models in more detail, focusing on their content and measurements.

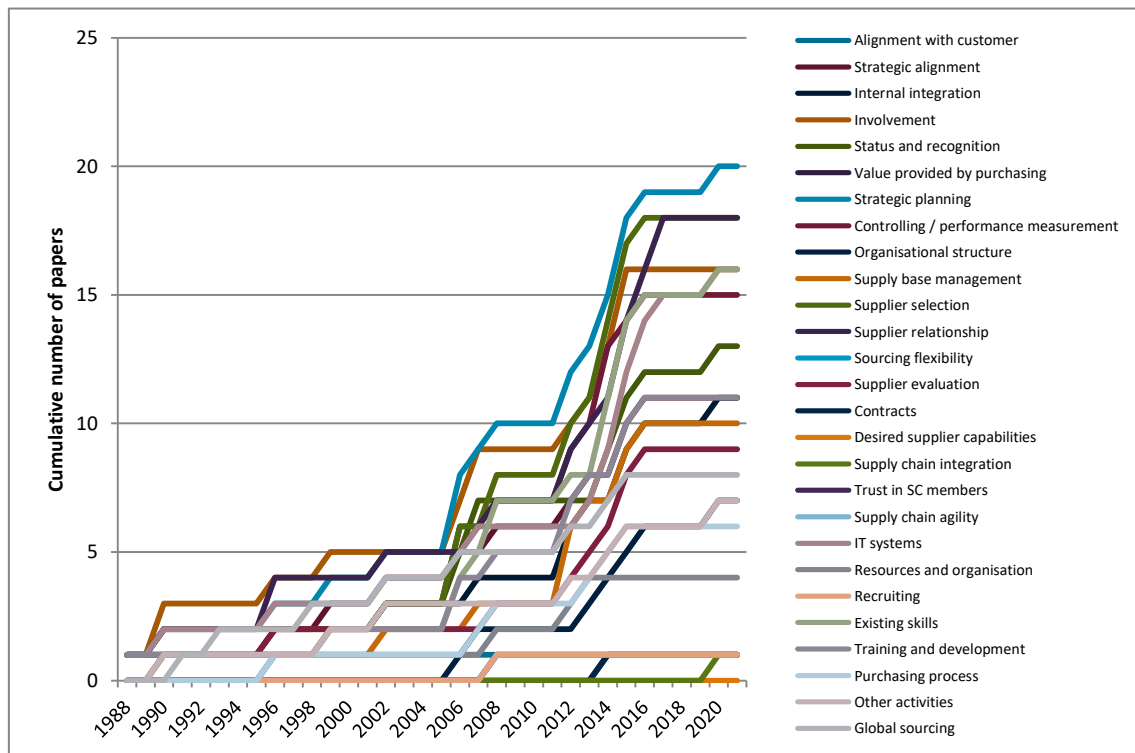
2.3.3.1 Content of procurement maturity models

Whilst most maturity models are developed deductively based on existing literature (Table 19), they cover vastly different topics. Figure 9 demonstrates these different aspects, indicating the level of disagreement in the literature with regard to which topics should be included in maturity models.

Table 19: Academic papers by development

**Note: Some papers include both deductive and inductive elements so the total column and row may appear higher*

Maturity model development	Number of papers
Deductive	28 (70%)
Inductive	5 (13%)
unclear or not provided	7 (18%)
Total*	39

**Figure 9: Cumulative papers by maturity content**

However, the graph also shows some topics that are covered frequently (see also Table 20), especially strategic planning, which refers to the definition of long-term plans supporting the strategy, or the criteria for supplier selection. Other common topics are procurement's involvement in organisational activities, strategic supplier relationships or controlling and performance measurement.

Table 20 also demonstrates that strategic alignment is not even included in about half of the models.

Table 20: Total number of papers by aspects

**Note: Some papers cover more than one topic so the total column and row may appear higher*

Maturity model topic	Number of papers	% of papers that include topic
Strategic planning	20	51%
Supplier selection	18	46%
Supplier relationship	18	46%
Involvement	16	41%
Existing skills	16	41%
IT systems	16	41%
Controlling / Performance Measurement	15	38%
Status and Recognition	13	33%
Strategic alignment	11	28%
Training and development	11	28%
Internal integration	11	28%
Supply base management	10	26%
Supplier evaluation	9	23%
Global sourcing	8	21%
Other activities	7	18%
Organisational structure	7	18%
Purchasing process	6	15%
Resources and organisation	4	10%
Alignment with customer	1	3%
Value provided by purchasing	1	3%
Sourcing flexibility	1	3%
Contracts	1	3%
Trust in SC members	1	3%
Supply chain agility	1	3%
Recruiting	1	3%
Supply chain integration	1	3%
Total*	39	100%

2.3.3.2 Measures of procurement maturity

Table 21 provides an overview of the different measurements of procurement maturity. While the majority of papers is based on average measures (i.e. an aggregate level of maturity is assigned to the function as a whole), some papers also measure maturity as a profile, where each topic of the maturity model is scored individually (e.g. supplier relationship management might achieve a higher score than global sourcing). It describes two very different approaches: One where the procurement function can only develop as a whole and one where different aspects of procurement can be compared. The data demonstrate that most academic papers apply an average measure, thus assuming that procurement maturity develops as a whole, instead of considering individual topics.

Table 21: Academic papers by maturity measurement

**Note: Some papers use both the average and the profile as a measure so the total column and row may appear higher*

Maturity measurement	Number of papers
Average	23 (58%)
Profile	14 (35%)
Unclear or not defined	3 (8%)
Total*	40

2.3.3.3 Unit of analysis for maturity measurement

Table 22 analyses papers by their unit of analysis, i.e. the corporate level at which procurement maturity is measured. This is particularly interesting as a large majority (78%) of papers are measured at the company or business unit level, while widely accepted procurement papers such as Kraljic (1983) clearly demand a segmented approach, depending on product characteristics. Even when assuming that all practices considered in maturity models indeed apply to all companies, it is still questionable whether they also apply to all product categories.

Table 22: Academic papers by unit of analysis

**Note: Some papers apply more than one unit of analysis so the total column and row may appear higher*

Unit of analysis	Number of papers
Company or function	31 (79%)
Business unit or plant	2 (5%)
Segment or category	2 (5%)
Procurement professional	1 (3%)
Other	3 (8%)
Total*	39

Only two papers use the procurement category or segment as their unit of analysis. Whereas Luzzini *et al.* (2014) use the category to develop IT purchasing configurations and do not further consider the differences between categories, Beukers *et al.* (2006) develop a “Procurement Alignment Framework”, which compares current and target maturity profiles of different segments to identify areas for improvement. However, their target profile is based on the highest maturity score per segment, thus calling for intra-segment congruence rather than strategic alignment. This inhibits the prioritisation of different procurement tactics per segments.

Deasy *et al.* (2014) adapt Beukers *et al.*'s (2006) framework to compare two emergency service departments. They find statistical differences between the two, which they deem “appropriate for the nature of the commodities that both departments purchase and the cost and operational risk that their supply presents” (Deasy *et al.*, 2014, p. 26). However, they then appear to contradict themselves when claiming that the “consistent implementation and execution of procurement strategy is of paramount importance” and that asymmetric procurement strategy and practice “may be a common problem” (Deasy *et al.*, 2014, p. 26).

It should also be mentioned that in spite of their interesting conceptualisations, both papers are limited through low quality ratings in theoretical basing, methodology and data analysis. Moreover, neither paper considers procurement strategic alignment in their maturity model.

2.3.3.4 Procurement strategic alignment in maturity models

Table 23 provides an overview of the different ways in which alignment is considered in maturity models. It demonstrates that the majority of papers (62%) do not consider alignment at all. If alignment is considered, it is conceptualised in two different ways:

1. Consistent with the definition used in this paper and referred to as procurement strategic alignment
2. As congruence, either between different maturity aspects (e.g. Mikalef *et al.*, 2015) or between procurement and the firm (e.g. Cavinato, 1999)

As argued for strategic alignment, those papers conceptualising alignment as congruence refer to a concept different from procurement strategic alignment.

Table 23: Academic papers by alignment measures

**Note: Some papers apply more than one alignment measure so the total column and row may appear higher*

Alignment conceptualisation	Alignment measures	Number of papers
Not considered	No alignment considered in model	24 (62%)
Strategic alignment (fit between procurement objectives and activities with firm strategy)	Alignment considered as a topic of the maturity model	11 (28%)
	Alignment considered as a level in the maturity model	5 (13%)
Congruence	Congruence between levels of different topics in maturity	3 (8%)
	Congruence between procurement maturity and company maturity level	2 (5%)
Not defined	Not defined	1 (3%)
Total*		39

When alignment is considered it is usually as either a topic or a stage in the maturity model. Either way, alignment is assessed by the respondents or researchers. Measures here are similar to strategic alignment measures, including:

- The procurement function has a good knowledge of the firm's strategic goals
- Procurement performance is measured in terms of its contributions to the firm
- Procurement professionals' development focuses on elements of the competitive strategy (Paulraj *et al.*, 2006)

They also have similar limitations as stated before, namely the reliance on procurement managers' perceptions and the measurement of processes instead of outcomes.

What becomes apparent is that all papers assume that procurement needs to achieve a generically higher stage of maturity, rather than selecting the best fitting practices. This appears to be in contrast to findings from the strategic alignment research. For example, a number of papers call for a more centralised procurement structure as one of the maturity aspects, which appears to directly contradict David *et al.*'s (2002) finding that the level of centralisation is contingent upon the firm strategy.

2.3.3.5 *Conceptualisation of procurement maturity in consulting*

Table 24 summarises the key consulting findings on procurement maturity, highlighting that similarly to academia, consultancies do not seem to agree on the topics in maturity models. Similarly, the majority of papers use the firm or procurement function as the unit of analysis, thus not distinguishing different product categories. Finally, procurement strategic alignment does not appear to play a significant role in these papers – with the already highlighted exception of A.T. Kearney (Blascovich *et al.*, 2011).

However, there are some differences between academia and consulting. Where academic research is largely deductive, consultancies tend to approach the question the other way around, asking how top performers differ from other companies.

Another interesting insight is provided in the research conducted by Strategy&, who use maturity profiles to compare current maturity with average importance to identify focus areas for future development, as indicated in Figure 10 (Houston *et al.*, 2012). They therefore appear to use the average importance profile assigned by respondents as a target maturity level that companies should aim for and develop towards.

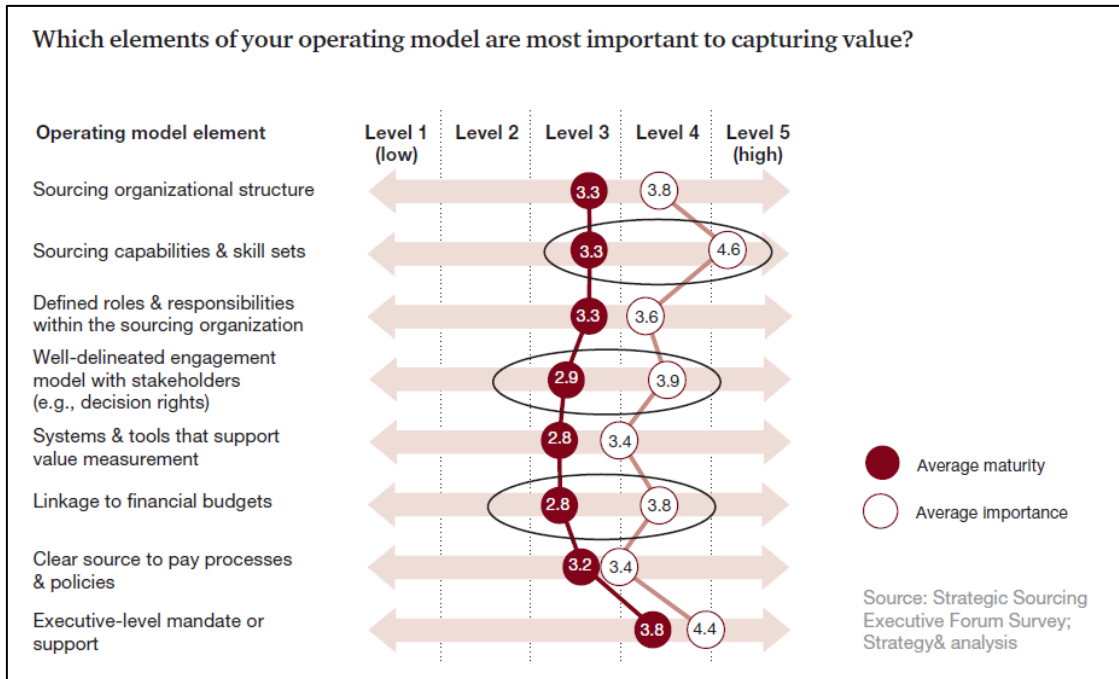


Figure 10: Average maturity and average importance comparison (Houston *et al.*, 2012)

Table 24: Summary of consulting research on procurement maturity

Consultancy name	Findings on Maturity	Maturity development	Maturity measurement	Unit of analysis	Maturity aspects
A.T. Kearney (Blascovich <i>et al.</i> , 2011; Easton <i>et al.</i> , 2014)	Higher performing companies behave differently in seven key aspects	Inductive, based on performance percentile	Profile	Firm/function	• Align with the business • Contribute to top and bottom line • Manage risk systematically • Use supplier relationship management • Tailor category strategies • Adopt technology • Win the "war for talent"
Accenture (Accenture, 2007)	Find that the company maturity is related to aggregate financial performance	Inductive, based on maturity level percentile	Average	Firm/function	• Procurement strategy • Sourcing and category management • Requisition to pay • Supplier relationship management • Workforce & Organisation • Technology
Bain & Company (Tsang <i>et al.</i> , 2013)	Define how companies can get to superior maturity	not provided	Average	Firm/function	• Organisation • Process • Tools and systems • P&L effectiveness • Tool management • Results delivery
Insight Sourcing Group (Insight Sourcing Group, n.d.)	Show how companies can move from one stage to the next	not provided	Average	Firm/function	• Process efficiency • Organisational structure • Category strategy • Spend visibility and procurement policies • IT systems • Demand and supplier management • Outside market knowledge • Procurement involvement

Consultancy name	Findings on Maturity	Maturity development	Maturity measurement	Unit of analysis	Maturity aspects
KPMG (Consulting Practice) (Khushalani, 2013)	Show which aspects companies have to develop to be ready for 2025	Inductive, based on interviews with 25 Chief Procurement Officers (CPOs)	Profile	Firm/function	• Internal consultant • Market intelligence & cost modelling • Financial expertise • Risk mitigation • Supplier coach • Relationship broker • Legal expert • Sustainable steward
Strategy& (Houston <i>et al.</i> , 2012)	Find that the largest gaps are in skills gaps, the engagement models with internal stakeholders and linkage to financial budgets	Deductive, tested in a survey	Profile	Firm/function	• Organisational structure • Skills • Roles & responsibilities • Engagement model with stakeholders • Systems & tools • Link to financial budgets • Process & policies • Status
The Hackett Group (Mitchell and Dowling, 2010)	Find that top performers have different capabilities in processes and technology; find that value, performance and capabilities levels should be aligned in the organisation	Inductive based on performance quartile	Average	Firm/function	• Value evolution (non-transactional focus, business expectations, value measurement, operating model, involvement) • Performance (expenditure influence, cost savings, maverick spending, peer comparison, business expectation) • Capabilities (processes, technology or data, people and talent; organisation)

2.4 Discussion and conceptual model development

First, the analysis clearly highlights the limitations of existing literature, especially in the underlying assumptions. Procurement maturity literature was shown to generalise to an extent that cannot be reconciled with findings in the field of procurement strategic alignment. Moreover, most procurement maturity models use the firm or procurement function as the unit of analysis, which inhibits the consideration of different category characteristics. Finally, existing literature lacks clarity on the complex and important concept of procurement strategic alignment, both in terms of its conceptualisation and the actual measurement of alignment.

These limitations undermine the relationships identified and raise a number of questions to be considered in future research.

First, the literature appears to disagree upon the measurement type for maturity. Some research uses aggregate measures for maturity, in which any function or firm can only be in one level at a time. Other authors use profiles to determine individual levels for each aspect of maturity (see Table 21 in Section 2.3.3.2 Measures of procurement maturity). This leaves the question around the 'right' measurement type for procurement maturity unanswered.

Furthermore, procurement maturity literature usually measures maturity at a functional or firm level (see Table 22 in Section 2.3.3.2 Unit of analysis for maturity measurement). However, in the broader procurement literature Kraljic's (1983) call for segmentation of purchased items, depending on their importance to the company and the supply market complexity, is widely recognised. Considering the differences between segments, the level at which procurement maturity should be measured appears debatable, raising the question of the 'right' unit of analysis.

These questions will be further unpicked in the following sections, together with propositions to outline possible future research approaches.

2.4.1 How should procurement strategic alignment be conceptualised in procurement maturity models?

Procurement strategic alignment in this research is defined as the fit between procurement's strategy and activities with the firm strategy (see Baier *et al.*, 2008; González-Benito, 2007; Handfield *et al.*, 2015). The first element of this definition is the development of an aligned procurement strategy (the *alignment process*). However,

the definition clearly includes another aspect, the alignment between procurement activities and firm or procurement strategy (the *extent of alignment*).

The research reviewed focuses on the alignment process – the alignment between firm strategy and procurement strategy (Baier *et al.*, 2008; González-Benito, 2007; Watts *et al.*, 1992). Hespington and Schiele (2016) have extended this framework to include category strategies, which are driven by the procurement strategy. It can therefore be deduced that category strategies should be in alignment with the firm strategy and that these should drive the activities that procurement personnel should perform, i.e. the targets for procurement maturity (as indicated by Houston *et al.*, 2012).

Hypothesis 1: Procurement category strategies should be aligned with the firm and procurement strategy and determine the target maturity profile.

2.4.2 What is the ‘right’ measurement type for procurement maturity?

The analysis clearly highlights issues with literature on procurement maturity models, especially the unclear conceptualisation of the measurement type for maturity (profile or aggregate). This poses a serious limitation, as it inhibits both the identification of future development areas and the prioritisation of maturity aspects. It also directly contradicts procurement strategic alignment literature. For instance, David *et al.* (2002) directly refute the call for more procurement centralisation with their finding that procurement centralisation is contingent upon the firm strategy.

González-Benito (2007) and Baier *et al.* (2008) argue for contingency theory’s premise that procurement can only support competitive advantage if procurement strategy and activities are aligned with the corporate strategy. This is supported by both A.T. Kearney’s (Easton *et al.*, 2014) and Narasimhan and Carter’s (1998) research, which identifies that different competitive priorities are related to different procurement strategies, which in turn drive different procurement practices.

Strategy&’s research indicates an alternative measurement, in which a current maturity profile is compared to a target maturity profile to identify areas for development (Houston *et al.*, 2012). Similarly, Baier *et al.* (2008) compare current procurement practices to an optimum practice profile. These conceptualisations allow procurement practices to be weighted depending upon their importance.

This research therefore proposes that procurement maturity should be measured as a current and a target maturity profile, with potentially different levels for each topic within the maturity matrix.

Hypothesis 2: The most appropriate measurement type for procurement maturity is the maturity profile, not an aggregate maturity measure.

2.4.3 What is the ‘right’ unit of analysis for procurement maturity?

Kraljic’s (1983) seminal paper called for the need to segment materials, depending on the complexity of the supply market and the importance of the purchased item. Several authors have since defined alternative classification drivers, both in consulting (A.T. Kearney, 2017) and academic papers on strategic alignment (e.g. Hespington and Schiele, 2016), which call for procurement practices to be driven by category strategies.

This has implications for procurement maturity models, which define procurement’s development based on the procurement practices applied in the firm. While this research does not seek to clarify which internal or external elements drive segmentation, it does propose that procurement maturity models should not be applied at the functional or company level, but instead at the segment or category level to account for the differences in procurement priorities assigned to different categories of purchased items.

Hypothesis 3: The most appropriate unit of analysis for procurement maturity is the procurement category.

2.4.4 Conceptual model for a strategy-contingent procurement maturity

These propositions are summarised in the conceptual model demonstrated in Figure 11. It defines that the firm strategy drives procurement strategy, which in turn influences the category strategy, together with contextual contingencies. The category strategy then determines the target maturity profile. The gap between the current and target maturity profile, or the “maturity gap”, is related to performance.

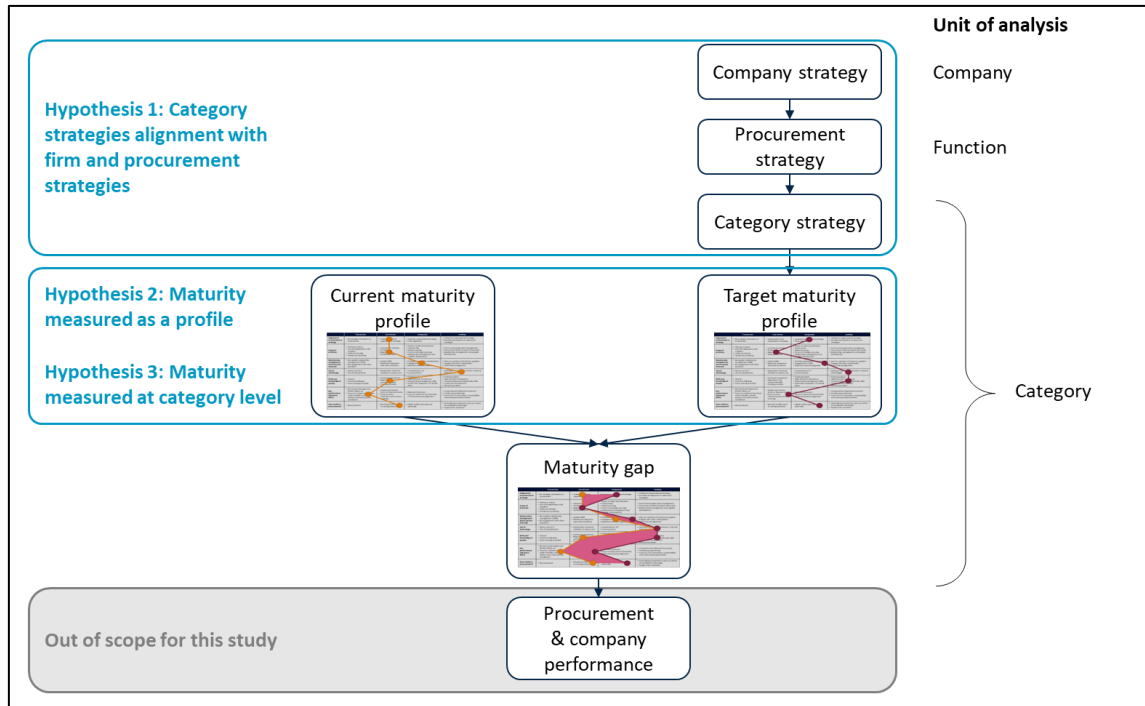


Figure 11: Conceptual model after the literature review

3 Methodology

This chapter initially provides an overview of the overall thesis aims and objectives, followed by the methodology followed for the exploratory mini-cases and the detailed methodology for the in-depth cases. The methodology for the in-depth cases will start with a detailed description of the research strategy and design. Subsequently the case study selection will be discussed, together with methodological adjustments after the pilot case. The chapter will close with a discussion of methodological limitations.

3.1 Aims and objectives

The in-depth case studies are devised in order to answer the overall research question:

How can procurement maturity models support procurement strategic alignment?

This question is supported by two underpinning sub-questions:

RQ1. How do category managers achieve strategic alignment?

This question aims to understand how category managers currently devise category strategies and what contingencies they consider important to those strategies (for example, but not limited to, the business strategy)

RQ2. How is procurement maturity conceptualised by procurement managers?

This element of the research aims to further the understanding of maturity. It focuses on how maturity is perceived by procurement professionals, and therefore how it should be measured

The literature review has demonstrated that limited research has been conducted on these topics so far and, of the existing research, only a few publications are thoroughly grounded in theory. This indicates a nascent field and accordingly a requirement for inductive research with research questions focusing for example on “understanding how a process unfolds [or] digging into a paradox” (Edmondson and McManus, 2007, p. 1162). This aligns with the defined research questions, focusing on the procurement alignment process and indicating a requirement for an inductive research strategy.

However, it is possible to deduce hypotheses from the literature which partially address RQ1 and RQ2. Hypotheses are useful components of a case study research design as they focus the search for evidence (Ketokivi and Choi, 2014; Yin, 2018). The following hypotheses will be investigated during the case studies:

RQ1. How do category managers achieve strategic alignment?

Previous academic literature has established that procurement tactics should be determined by category strategies, which in turn are influenced by the procurement and company strategy. Procurement tactics in this research are represented by maturity topics, with the required tactics being represented by the target maturity profile.

Hypothesis 1 (H1): Procurement category strategies should be aligned with the firm and procurement strategy and determine the target maturity profile.

The mini-cases indicated that procurement strategies are not a clearly defined concept and that procurement and category strategies are interpreted very differently. However, interviewees regularly mentioned specific contextual contingencies as reasons for the selected strategies. This resulted in an update to hypothesis 1, which became proposition 1:

Proposition 1 (P1) (replacing H1): Procurement and category strategies are dependent on contextual contingencies.

The pilot case demonstrated that category strategies resemble the topics in a maturity model. Moreover, strategic alignment is only one of the contingencies considered by procurement managers as part of their category strategy. Instead, category managers consider multiple contextual contingencies to determine the target maturity profile. Proposition 1 was therefore replaced by proposition 2:

Proposition 2 (P2) (replacing P1): The target maturity profile is dependent on contextual contingencies.

RQ2. How is procurement maturity conceptualised by procurement managers?

The measurement type for procurement maturity will be explored by assessing both the current and the target maturity profiles. It is expected that categories will display different levels of current or target maturity for different maturity topics. This would provide meaningful insight into the level of alignment and guidance in determining future improvement opportunities, and would indicate that a profile measure is required to understand a category's maturity.

Hypothesis 2 (H2): The most appropriate measurement type for procurement maturity is the maturity profile, not an aggregate maturity measure.

As part of the analysis, different maturity assessments will be compared: At the category level, functional level and across companies. If meaningful differences exist in either current or target maturity between categories, this would indicate that procurement maturity should be measured at a category level. It is important to note that 'procurement category' in this research is to be understood in its broadest interpretation, as a group of products for which a procurement strategy is defined.

Hypothesis 3 (H3): The most appropriate unit of analysis for procurement maturity is the procurement category.

3.2 Exploratory mini-cases

The exploratory mini-cases have previously been published in Søgaaard *et al.* (2019), together with the literature review.

3.2.1 Aims and objectives

Exploratory mini-cases were included to explore the researched topic and to improve the initial understanding of the key concepts (procurement maturity and procurement strategic alignment).

3.2.2 Research design

The case selection was focused on diversity in industry and company size, as this was expected to influence maturity and alignment. The cases included two food manufacturers, one bank and one automotive aftermarket company. The companies were diverse in terms of size (revenue and employees) and industry (Table 24). For confidentiality reasons, these companies are referred to as BANK, FOOD, CAR and DRINK.

Table 25: Overview of different procurement managers interviewed

Name	Description/industry	Job title	Revenue range (£bn)			Employees (thousands)			Selection rationale
			<5	6-10	>10	1-10	10-100	>100	
BANK	A multinational banking and financial services company	Commercial Banking Business Manager; Previously: Head of Supply Management			X			X	Services industry (Indirect procurement)
FOOD	A multinational food and beverage company	Head of Procurement			X			X	Large manufacturer
CAR	A multinational automotive aftermarket company	European Head of Product Procurement	X				X		Highly decentralised retailer
DRINK	A leading soft drink company	Head of International Procurement	X			X			Smaller manufacturer

Data collection. Data were collected primarily through one hour face-to-face interviews with the Head of Procurement (or an equivalent title). The interviews followed a semi-structured interview protocol, which was reviewed by a panel of experts prior to the interviews. The topics covered interviewees' perceptions of procurement strategic alignment and the application of procurement practices. All interviews were recorded with prior permission and were fully transcribed and sent to the interviewees for validation.

Data analysis. Interviews were analysed using template analysis, which aggregates textual data into a hierarchy of themes. This method has been chosen for its flexibility in approaching the analysis and in coding levels (King, 2012). As the objective was to understand practitioners' views and perceptions, no *a priori* themes were defined. Instead, the analysis focused on emerging themes, which were aggregated into higher level codes. The development of the final template was based on iterations between emerging themes and transcripts.

The interviews were triangulated with secondary data, to define the industry background and company strategy. This was generally based on company websites, but supported by online search engine results and business information websites.

Study rigour. Case study research is commonly judged based on construct validity, internal validity, external validity and reliability (Yin, 1994). Construct validity was ensured through triangulating interview data with publicly available information and by relying on those interviewees that were expected to have the best visibility of the

procurement process. Although internal validity was limited by the single interview approach, these cases were exploratory in character and benefited from the four different contexts. External validity was ensured through the selection of four companies with diverse contexts, as explained above. Reliability was ensured through transparency in data collection and analysis.

3.2.3 Methodological implications of the exploratory mini-cases

The exploratory mini-cases mostly confirmed the research questions and the intended research design. However, they did result in a requirement to update the conceptual model, specifically to replace Hypothesis 1 with the emerging Proposition 1. Figure 12 illustrates the updated conceptual model.

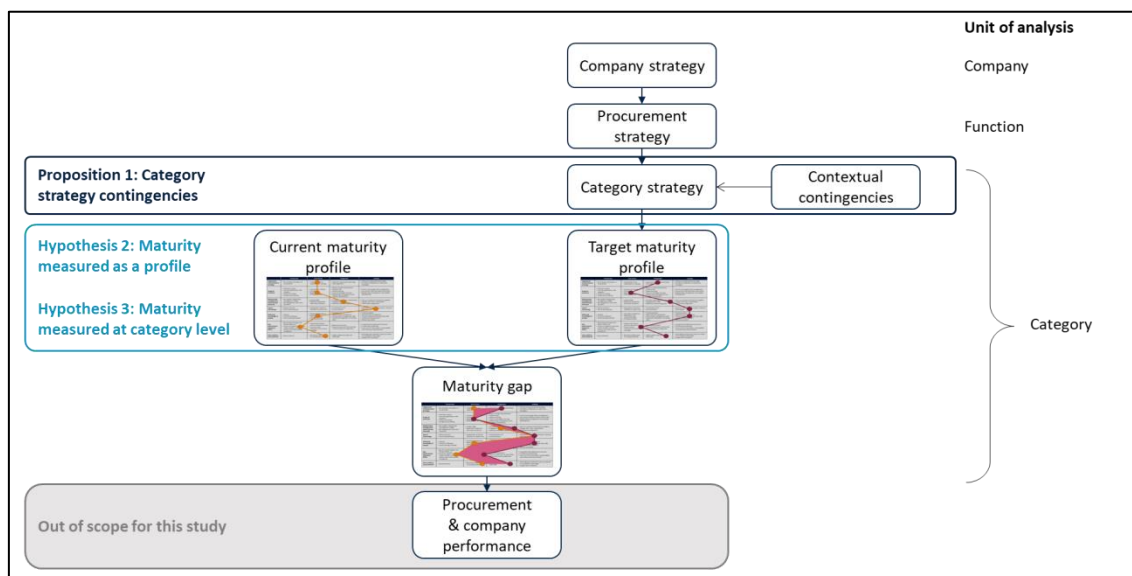


Figure 12: Updated conceptual model after exploratory mini-cases

3.3 Research strategy

This section explains the research strategy followed for the three in-depth cases that followed the exploratory mini-cases.

A research strategy defines the approach taken to answering a research question. Two of the most commonly used strategies are induction and deduction, which are typically used for different research questions. Whilst inductive reasoning supports explorative and descriptive questions, deductive reasoning is often considered more appropriate for explanatory purposes (Blaikie, 2009; Ketokivi and Choi, 2014).

Wallace (1971) and Blaikie (2007) argue that these two approaches are not incompatible, as they also define different phases in the cycle of theory construction (see Figure 13). Here, induction refers to the generation of theory and deduction refers to the investigation of these hypotheses to validate or dismiss a theory. They stress that the cyclic construction is a simplification – indeed, they propose that “the process of moving from one stage to another may involve a series of preliminary trials” (Blaikie, 2007, p. 80).

The literature review has demonstrated that limited research has been conducted on these topics so far and, of the existing research, only a few publications are thoroughly grounded in theory. This indicates a nascent field and accordingly a requirement for inductive research with research questions focusing for example on “understanding how a process unfolds [or] digging into a paradox” (Edmondson and McManus, 2007, p. 1162). This aligns with the exploratory mini-cases, which demonstrated that the academic understanding of procurement strategic alignment does not align with practitioners’ perceptions. Moreover, the defined research questions focus on the procurement alignment process and indicate a requirement for an inductive research strategy.

However, as demonstrated in Section 2.4 (Discussion and conceptual model development) it is possible to deduce hypotheses from the literature which partially address RQ1 and RQ2. Hypotheses are useful components of a case study research design as they focus the search for evidence (Ketokivi and Choi, 2014; Yin, 2018).

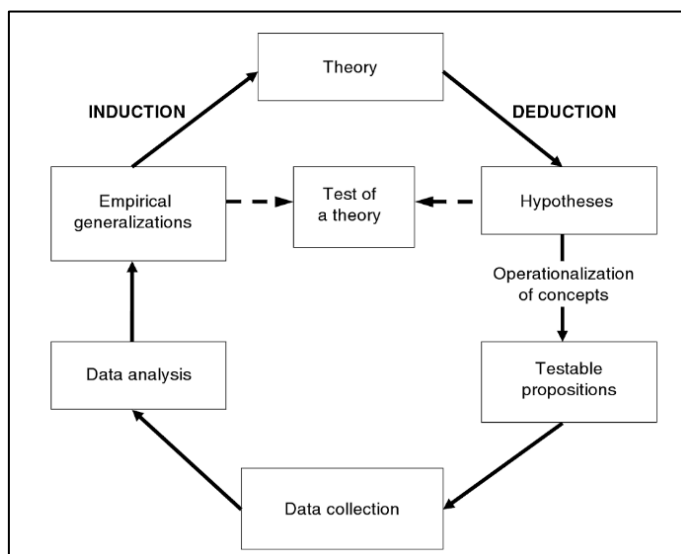


Figure 13: The cycle of theory construction and testing (Wallace, 1971, cited in Blaikie, 2007, p. 81)

This study will therefore draw on both deductive and inductive elements, following Wallace's cycle demonstrated above. Starting with general contingency theory and existing literature on procurement maturity, three hypotheses have been deduced, following a deductive research strategy. These hypotheses are tested in the case studies, using the defined maturity model.

However, as the research questions are broader than the defined hypotheses, inductive reasoning will be applied to enhance the conceptual model. This is done by analysing the empirical data collected and the inducing of empirical generalisations based on this data (e.g. the emerging Proposition 2 from the pilot case study). While the primary objective is to answer the research question, this inductive element is also expected to add contextual information and enable further investigation of the phenomena to extend the understanding of strategic alignment.

The overall research process will therefore be one of iteration between deductive and inductive reasoning, through the iteration of immersion into the empirical environment (induction) and the testing of hypotheses (deduction).

3.4 Research design: Case studies

3.4.1 Case study definition and design

This research is subject to substantial complexity both around the unit of analysis and the organisational levels considered. In line with the importance of the context of the phenomenon studied, this research will be based on an embedded case study design with multiple cases (Yin, 2018, pp. 47–63).

Case studies are selected through a theoretical sampling process (Eisenhardt, 1989), attempting to select cases that differ in criteria which are expected to influence procurement maturity, including the company's industry, the firm strategy, size and procurement organisation, as well as the individual categories selected, as demonstrated in Figure 14. Cross-case commonalities reflect those criteria required to conduct the outlined analysis (sufficient categories) and access considerations (UK-based procurement headquarters). Companies from different industries have been selected to enable analysis of procurement maturity and contingencies in different contexts, with the expectation that this will provide more detailed insight into the underlying mechanisms on how the two concepts are related:

- Aerospace and defence was selected as a highly customised, engineer-to-order (ETO) environment, in which procurement has to balance efficiency and customer alignment
- Water utilities services have been selected as a highly regulated environment with a large breadth of sourced products and services, in which procurement has to deliver a highly reliable service to customers, whilst also ensuring prices are affordable for lower income groups
- Banks represent an industry without a traditional supply chain, but with a highly mature procurement function focusing on Indirect procurement. In an industry characterised by extremely rapid technology change and high volumes, procurement focuses on achieving a better value through traditional cost savings, but also technological innovations

BANK refers to the same case as analysed during the mini-cases, since the exploratory interview led to a full case study with the company. BANK_Function_1 in the case studies refers back to comments during the exploratory interview.

		Case study design														
		Case 1: A&D Aerospace & Defence					Case 2: WATER Utilities (Water Services)					Case 3: BANK Financial Services				
Industry	Cross-case commonalities	Companies with >1 category and defined category managers Procurement headquarter in the UK to ensure access														
	Type of product	Customised products (ETO), changing supply chains & requirements					Large variation in products & services with focus on operational continuity					Indirect Procurement (mostly services) in a business that is driven by customer service				
	Key regulatory concerns	Offset requirements					Price controls, water quality, tendering regulations					Money laundering regulations (Know your third party - KYTP)				
Company	Strategic focus:	Strategic focus: technology leadership					Strategic focus : Sustainability, cost savings					Strategic focus : Cost savings				
	Size:	Large					Medium					Very large				
	Procurement:	Matrix organisation (central vs project); End-to-end process ownership					Central organisation for letting frameworks; framework management is decentralised					Central organisation with regional contacts; End-to-end process ownership (incl. P2P)				
Categories	Product or service?	Indirect	Radar	Laser	Mech.	Optics	Chem.	Tank'ing	Assets	Products	Services	HR	CRE	FinTech	Cyber	Ops
		Service	Product	Product	Product	Product	Product	Service	Product	Product	Service	Service	Service	Product	Product	Service
	Complexity driver	Stakeholder	Technology	Technology	Supplier capability	Technology	Science	Supplier availability	Technology	Stakeholder	Supplier availability	Stakeholder	Contract management	Technology	Technology	Converting customers
	Organisation	Central	Project	Project	Central	Central	Central	Central	Central	Central	Central	Central	Central	Central	Central	Central
	Global or local?	Local	Global	Global	Local	Global	Global	Local	Local	Local	Local	Local	Global	Global	Global	Local
Interviewees		Function + Capability + 6 category managers					2 x Function + 5 category managers					2 x Function + 5 category managers				

Figure 14: Definition of case selection strategy

In addition to the three different industries, categories have been chosen to allow for further comparison through embedded units of analysis. The category selection has been focused on differences in categories both in terms of the product range included

in the category, and the responsibilities of the category manager. Specifically, the three cases and categories chosen differ in a number of criteria that are expected to potentially influence the procurement tactics deployed (see also Table 26 in Section 3.5 Research background: Case company comparison):

First, the three cases differ in terms of not only the end-product sold to the customer, but also in terms of the products procured. A&D as an engineer-to-order (ETO) company procures highly customised components that are both technically complex and typically very expensive. However, the categories interviewed in A&D also differ in terms of the products bought. Where the Radar and Laser categories buy customised components, Mechanicals and Optics products are somewhat standardised and Indirect is responsible for both services, such as printing, and complex products, such as testing equipment. WATER also focused on direct categories, but the products sourced in the individual categories were more service-focused, including tankering or construction services. However, WATER also included more physical products, such as the chemicals used to clean water, instruments used in the sites, or other materials used for pipe maintenance. In contrast to A&D these products are more standardised, and all categories have a high local service requirement. Finally, BANK focused on indirect categories, thus having an even higher service element, focusing on services such as hiring or real-estate. However, the categories also included bank operations (e.g. the sourcing of bank cards), cyber security software and financial technologies (FinTech). FinTech in particular stands out here as it differs from all other categories across cases in that it is a very immature market with rapidly changing technology and consequently, a very immature supply base with many small- and medium-sized enterprises (SMEs). Generally, the services sourced by BANK are very mature and commoditised, since they are required by almost any company.

The cases also differ in their procurement organisation and resulting category structure. A&D are organised in a matrix structure, locating procurement managers sourcing customised components such as radars and lasers in projects and thus working directly with engineers and designers on the end-product. In contrast, more standardised products such as mechanicals and optics are centralised to ensure a cohesive strategy across the company. This also impacts on team dynamics; where procurement managers in central categories work closely together, procurement managers in projects work in procurement teams of one or two people as part of the project team. However, procurement managers are always responsible for the end-to-

end procurement process, including the definition of the sourcing strategy, the supplier selection and the oversight of the suppliers' delivery. In WATER the whole procurement team is centralised. However, WATER has decided to split sourcing from supplier management, i.e. the central team is only responsible for supplier selection, but hands over the supplier management to framework managers in line of business. It has to be noted here, that there is a clear mismatch in expectation between category managers and the head of procurement: Whilst the head of procurement expects the category managers in the central team to still remain accountable for supplier management, category managers themselves see this mostly as the responsibility of the framework managers. This split in responsibilities, together with the smaller size of the company, has resulted in a rather small central team, including generally only one or two procurement managers in each category. Finally, BANK, as a large company, also has an immense procurement organisation. BANK's category management covers the end-to-end process and is fully centralised. However, most categories additionally include some staff overseeing operational order placement, which has been outsourced to a third party, as well as procurement responsibilities in the different offices around the world, who manage local supplier delivery. However, in contrast to WATER, BANK's central category managers consider themselves fully accountable for any procurement-related activities in their category.

These different organisational set-ups should be considered in the context of the industry and company size. A&D provides customised products towards individual customer orders on a global level. However, as aerospace technology is highly regulated, especially with regard to the offset requirements (i.e. how much of the product has to be sourced locally in the customer country), it is important to align the supply base for each customer with these requirements. WATER is a comparatively small company providing water services to a dedicated region in the UK. As a monopoly in this industry, WATER is also highly regulated, but very differently from A&D: WATER's regulation focuses on EU procurement regulations around due process, water quality standards, as well as pricing restrictions defined by the UK government. These regulations go hand in hand with a much more local focus: All of WATER's customers are located in their region and the nature of the product generally requires a high service level from suppliers provided in the same region. Finally, BANK also has a high service requirement. However, the size and global footprint of the company require this service to be carried out across the globe – resulting in a more global service requirement than defined by WATER. As with the others, BANK is also highly

regulated, but again with a different focus: Here, regulation focuses on protecting customer's data and supply chain visibility to avoid money laundering (i.e. KYC – know your customer and KY3P – know your third party).

The remainder of this section will outline the proposed unit of analysis, data collection and analysis approach, as well as the quality criteria used to support the contribution of the study.

3.4.1.1 *Unit of analysis*

The primary unit of analysis for this study is the procurement category, with secondary units of analysis as the procurement function and firm. The different units of analysis are required, as the defined hypotheses cover different firm levels, but also to enable testing of the conceptual model developed out of the literature review (see Figure 15).

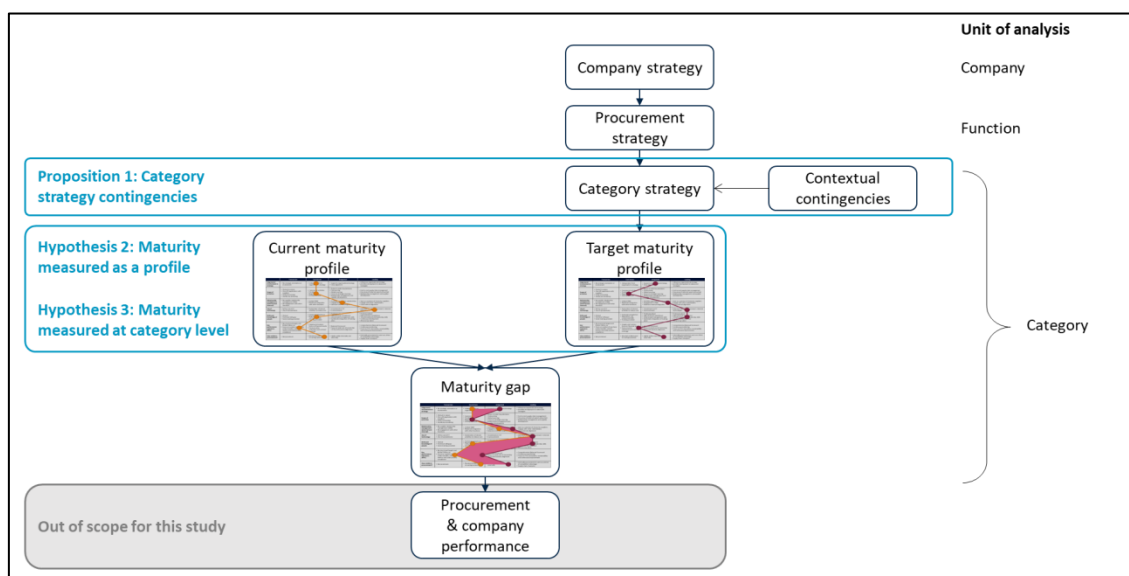


Figure 15: Conceptual model after exploratory mini-cases

The research questions will be approached through various perspectives, as indicated in Figure 15. The research focuses on a double unit of analysis, i.e. the company or procurement function and the procurement category. “Procurement category” here refers to a group of products with a defined procurement strategy. Additionally, the head of procurement and the category manager are considered separate units of analysis, as individuals. This distinction is required to differentiate between the interviewees’ perceptions and the category characteristics.

Primarily, the research will rely on interviews with category managers, which are triangulated through additional interviews with the head of procurement as well as secondary data from company and open source documents.

Table 26: Organisational levels considered in study

Unit of analysis	Interviewees (title)	Secondary Data
Firm/procurement function	Head of procurement, Procurement capabilities manager	Firm strategy documents, Procurement organisation, Procurement strategy documents, approach to segmentation
Procurement category	Category manager	Category strategy documents, any further segmentation, performance data, supporting evidence for maturity assessments
Head of procurement	Head of procurement, Procurement capabilities manager	n/a
Category manager	Category manager	n/a

3.4.2 Case study data collection and analysis

3.4.2.1 Data collection approach

The data collection is focused on answering how procurement maturity can support procurement strategic alignment. However, the research also needs to support the development of an empirically-based understanding of procurement maturity and procurement strategic alignment, as the literature review has demonstrated that these two important concepts are not very well understood thus far.

The data collection will be conducted in two stages for each case, starting with procurement strategic alignment and followed by procurement maturity. Methodologically, the data collection focuses on interviews, observations and supporting document collection (see Table 27). This means that for each case, two interviews will be conducted with each interviewee (typically category manager), where the first interview focuses on strategic alignment and the second interview on procurement maturity and maturity contingencies. Before both interviews, relevant documents will be requested to prepare for the interviews. The interview process is summarised in Figure 16.

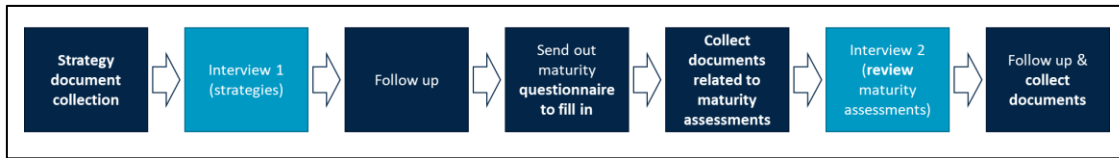


Figure 16: Interview process

Table 27: Overview of proposed data collection and within-case analysis approach

Method		Stage 1: Procurement strategic alignment	Stage 2: Procurement maturity
Objective		- How do category managers select tactics and practices? - Is there an overarching strategy or do strategies exist at category level?	- Clarify any open questions - Assess category maturity – both current and target
Interviews	Interviewees	Head of procurement & multiple category managers	
	Interview questions	- How do they define “strategy”? - What is their strategy? - How is it defined? - What is it based on (contingencies)? - Do they differentiate strategies for different suppliers/materials? - What procurement practices do they use?	- Assess current/target maturity - Why do they choose different target maturity levels (practices)? - What are the contingencies for target maturity? - Have they made any changes recently? Why?
	Analysis	- Comparison of described category strategy with firm strategy - Definition of procurement priorities - Drivers for category strategy - Category strategy definition processes	- Alignment of current and target maturity - Drivers for target maturity
Secondary data	Data collected	- Firm strategy - Procurement strategy - Category strategy - Practices/manuals	- Current maturity profile - Target maturity profile - Practices/manuals supporting maturity assessment
	Analysis	Comparison of firm, procurement and category strategies as well as manuals (similarities/differences)	- Comparison of maturity scores across topics - Comparison of maturity scores across categories
Comparative analysis		- Compare findings from interviews with different category managers - Compare findings from interviews and secondary data - Do different category managers mention similar or different contingencies for their level of maturity or their selected strategies?	

3.4.2.2 Interview guide

The interview guide was based on the learnings from the mini-cases, but adapted to place a greater focus on the maturity assessments. To allow for more time spent on follow-up questions, the original interview guide has been split into two interviews.

The first interview focuses on strategic alignment, including the interviewees' perception of procurement strategies in general and their perception of their own procurement/category strategy. The general perception of procurement strategies was included to enable interpretations of strategic alignment, which requires understanding how interviewees interpret procurement strategies. The strategic alignment section focuses on understanding how well a category is aligned as well as how alignment is achieved (how a strategy is developed). This first interview also includes an exploratory section on procurement practices to understand which maturity topics are important for the interviewee.

The second interview focuses on conducting a maturity assessment. The maturity assessment starts with the current and the required maturity, but also includes questions on drivers for maturity levels in order to understand why some topics are more important than others and current maturity is not the same as required maturity (where these differ).

The final interview guide was reviewed with subject matter experts to ensure relevance and clear formulation of questions.

The interview questions were deliberately open-ended to account for the exploratory character of this study. They thus allowed the researcher to deviate from the interview guide and follow up on unexpected leads and answers.

3.4.2.3 Maturity model development

The maturity model is based on a six-step process, aiming to create a consolidated model based on existing literature (see Figure 17).

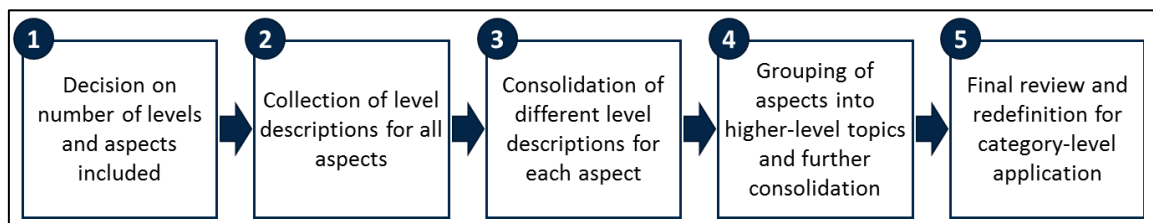


Figure 17: Maturity model development process

As a first step, the structure of the model was developed. The model includes all maturity aspects that were included in more than one existing maturity model

included in the systematic literature review. The exception to this is the aspect 'resources and organisation', which included different elements in different models that could not be consolidated into a coherent description.

The topics originally identified in the literature review are summarised in Figure 18 and Table 28. The first step of the maturity model therefore includes the topics highlighted in green in Table 28.

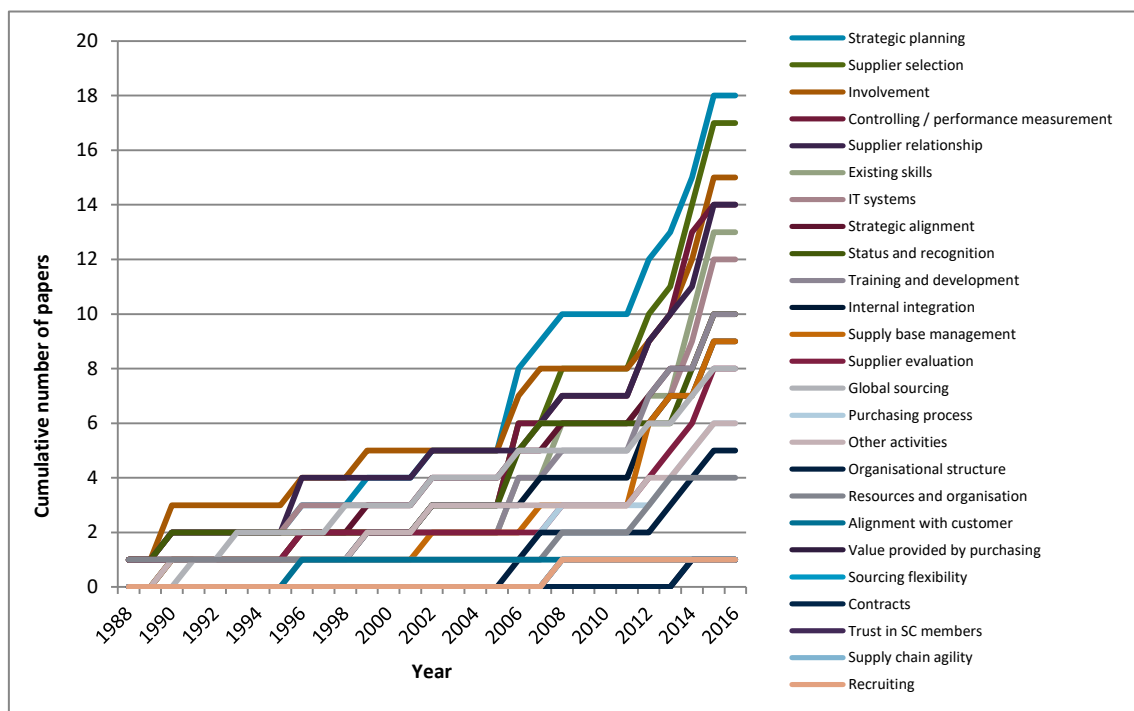


Figure 18: Topics included in maturity models (based on original SLR 2017)

Table 28: Topics included in maturity models (based on original SLR 2017)

**Note: Some papers cover more than one topic so the total column and row may appear lower*

Maturity model topic	Number of papers	% of papers
Strategic planning	18	56%
Supplier selection	17	53%
Involvement of the purchasing function	15	47%
Supplier relationship	14	44%
Controlling/Performance Measurement	14	44%
Existing skills	13	41%
IT systems	12	38%
Status and Recognition	10	31%
Strategic alignment	10	31%
Training and development	10	31%
Supply base management	9	28%
Internal integration	9	28%
Supplier evaluation	8	25%
Global sourcing	8	25%

Maturity model topic	Number of papers	% of papers
Purchasing process	6	19%
Other activities	6	19%
Organisational structure	5	16%
Resources and organisation	4	13%
Alignment with customer	1	3%
Value provided by purchasing	1	3%
Sourcing flexibility	1	3%
Contracts	1	3%
Trust in SC members	1	3%
Supply chain agility	1	3%
Recruiting	1	3%
Total*	32	100%

Further, it was decided to use four maturity levels, since the majority of papers use between three and five maturity levels (see Table 29). Since Schiele (2007) provides one of the most comprehensive and most detailed maturity models, it provided the basis for the maturity model used in this research. As in Schiele's (2007) maturity model, the levels are named 'Stage 1', 'Stage 2', 'Stage 3' and 'Stage 4'. Whilst not providing any indication of the professionalism at each maturity stage, this naming ensures objectivity and inhibits misinterpretation.

Table 29: Number of papers by number of maturity levels (based on original SLR 2017)

Number of levels	Number of papers	% of papers
2	2	6%
3	8	24%
4	9	26%
5	9	26%
6	2	6%
10	2	6%
Total	32	100%

Subsequently, the first model version was created. For each aspect, the content from different models with qualitative descriptions for each level was collected. The models that provided the most detailed and easily understandable definitions and which were thus mostly used in this early model, were: Schiele (2007) – 21 aspects, Mikalef *et al.* (2014) – 12 aspects, Úbeda *et al.* (2015) – 9 aspects, Hartmann *et al.* (2012) – 8 aspects, Foerstl *et al.* (2013) – 4 aspects and Pearson and Gritzmacher (1990) – 3 aspects (see also Table 29). Additionally, Paulraj *et al.* (2006), Cousins *et al.* (2006) and Ellram *et al.*'s (2002) descriptions were included for those aspects where the other models did not reflect the wider body of literature.

Table 30: Sources used for maturity topics

Maturity model topic	Key sources
Strategic planning	Schiele (2007), Hartmann <i>et al.</i> (2012)
Involvement of the purchasing function	Schiele (2007)
Supplier relationship	Schiele (2007), Pearson and Gritzmacher (1990)
Controlling / Performance Measurement	Mikalef <i>et al.</i> (2014), Hartmann <i>et al.</i> (2012)
Existing skills	Schiele (2007), Hartmann <i>et al.</i> (2012), Mikalef <i>et al.</i> (2014), Úbeda <i>et al.</i> (2015)
IT systems	Schiele (2007), Mikalef <i>et al.</i> (2014), Úbeda <i>et al.</i> (2015)
Status and Recognition	Schiele (2007), Pearson and Gritzmacher (1990), Úbeda <i>et al.</i> (2015), Paulraj <i>et al.</i> (2006), Cousins <i>et al.</i> (2006), Ellram <i>et al.</i> (2002)
Strategic alignment	Schiele (2007), Hartmann <i>et al.</i> (2012), Úbeda <i>et al.</i> (2015)
Training and development	Schiele (2007), Foerstl <i>et al.</i> (2013), Úbeda <i>et al.</i> (2015)
Supply base management	Schiele (2007), Foerstl <i>et al.</i> (2013), Hartmann <i>et al.</i> (2012)
Internal integration	Schiele (2007)
Supplier evaluation	Schiele (2007), Mikalef <i>et al.</i> (2014)
Global sourcing	Mikalef <i>et al.</i> (2014), Foerstl <i>et al.</i> (2013)
Purchasing process	Schiele (2007), Mikalef <i>et al.</i> (2014)
Risk management	Hartmann <i>et al.</i> (2012), Úbeda <i>et al.</i> (2015)
Organisational structure	Schiele (2007), Foerstl <i>et al.</i> (2013), Úbeda <i>et al.</i> (2015)
Supplier selection	Schiele (2007), Pearson and Gritzmacher (1990), Mikalef <i>et al.</i> (2014)

As a next step, this first model was consolidated into coherent descriptions for each of the aspects considered. This included adapting any three- or five-level models into four-level descriptions to align with the model structure, as well as the removal of duplications. However, the resulting model still included more than one description per aspect for some aspects.

As a fourth stage, the stage three model aspects were ordered into sensible higher-level constructs (the “topics” used in the final maturity model) to facilitate model assessment workshops. Moreover, during this stage, any remaining duplication of descriptions was consolidated.

The final review resulted in only minor adjustments being made to the model. As part of this, the model was further refined to redefine the mostly procurement function and company-level definitions for category-level use. The model was also reviewed by subject matter experts from academia and industry to ensure the model was sensible and easy to understand for self-assessment.

By including open-ended questions on the practices used and prioritised in the category, the final model will also be tested for completeness and consistency with category managers’ expectations.

3.4.2.4 *Data analysis*

Overall, the data analysis followed an embedded case analysis strategy, i.e. the research included within-case and cross-case analysis. First, within-case analysis focused on the similarities and differences between categories within the same company, as the embedded unit of analysis. Subsequently, cross-case analysis focused on the similarities and differences between different companies and industries, as the primary case level.

The two stages were analysed separately. In the first stage, focusing on how category managers achieve strategic alignment, analytical focus was placed on open-coding of responses, using template analysis. This method has been chosen for its flexibility in defining the research approach and coding levels. Even though this allows the researcher to start the analysis with predefined themes this research followed an open-coding approach to focus on emerging themes (King, 2012). This means that some predefined themes were used, but emerging themes were included through a constant revision of analysis results.

In particular, the review of maturity topics against contextual contingencies relied on open-coding (see sections 5.2.1.5, 6.2.1.3 and 7.2.1.3 (Contingencies to procurement maturity: Maturity model review by topic)). First, interviewees' responses were grouped into contingencies and maturity topics. Second, relationships between aspects of maturity topics and the different contingencies were identified. The classification into 'Higher' (positive) and 'Lower' (negative) relationships was based on the comparative analysis of contingencies, but nevertheless there was an element of subjectivity. 'Higher' in this analysis constitutes a relationship where the existence of a contingency requires a higher level of maturity, for example, a more critical product might have a higher requirement for strategic planning. In contrast, 'Lower' indicates that this contingency requires a lower level of maturity, such as a higher local service requirement resulting in a lower requirement for global sourcing. Whilst this approach provides meaningful insight into the relevant contingencies as well as the direction of the relationship, it is limited in identifying the extent of the relationship. Using the example above, the data may support that less global sourcing is required, but it cannot provide a target level in the maturity model based on the contingencies.

Additionally, different types of relationships had to be taken into consideration. For instance, interviewees would mention that strategic alignment is easier to achieve for Indirect categories. This does not necessarily constitute a requirement for higher

maturity, but a higher ability to achieve higher maturity. In contrast, where for example a higher status is necessary to balance engineering, this would be considered a requirement for higher maturity.

For the second stage, the focus was placed on pattern matching to compare possible answers. Hypothesis 2, stating that the most appropriate measurement type for procurement maturity is the maturity profile, was tested by comparing the current and target maturity scores within a category across different topics. It was hypothesised that categories will score differently for different topics, indicating that a profile score conveys more information and is therefore more appropriate.

Hypothesis 3, the most appropriate unit of analysis, was analysed by comparing current and target maturity profiles across different categories within the same company. If meaningful differences exist in either current or target maturity between categories, this would indicate that procurement maturity should be measured at a category level, whereas a lack of differences between categories would indicate that a functional or company level would be more appropriate.

3.4.3 Quality criteria

Case study research is commonly judged based on construct validity, internal validity, external validity and reliability (Yin, 2018, pp. 42–47). Table 31 demonstrates how this research attempts to meet these criteria.

Table 31: Quality criteria

Criterion	Description	Quality assurance
Construct validity	The correctness of operational measures and quality of data collected	• Using multiple sources of evidence • Data or source triangulation: Responses from different interviewees are compared (multiple category managers and head of procurement) • Methodological triangulation: Evidence collected through different methods is compared (interviews and documentation analysis) (Yin, 2018, pp. 127–128) • Reliance on those interviewees that are expected to have best visibility of the overall process • As complex concepts are used in the interviews, interviewees will be provided with definitions of key concepts throughout the interview process • A validation procedure is established, where findings are presented back to the case companies for validation (Yin, 2018, pp. 134–135)
Internal validity	Establishing causal rather than spurious relationships	• Quality in the data analysis process is improved primarily by following analytical techniques where possible (e.g. explanation-building to establish alignment processes) (Yin, 2018, pp. 175–178) • An attempt to further enhance internal validity is made by following Yin's approach for analysing embedded units and making repeat observations (Yin, 1994, pp. 134–138), as well as through

Criterion	Description	Quality assurance
		discussions with other researchers
External validity	The domain to which the findings can be generalised	- Enhanced through studying multiple and diverse product categories - Limited through the small number of companies considered, but improved by comparison across diverse companies (different industries, sizes, procurement organisations etc.)
Reliability	The repeatability of the study	- Enhanced through transparency in data collection and analysis, including a defined interview protocol, detailed recording and transcription of interviews (Yin, 2018, pp. 118–121) - Reliability is also supported through the creation of a case study database (Yin, 2018, pp. 130–134)

To ensure data triangulation, all data have been validated against different sources, as demonstrated in Table 32.

Table 32: Data triangulation

Research question	Hypothesis/expected result	Data collected/analysed	Primary data source	Secondary data sources
RQ1: How do category managers achieve strategic alignment?	Inductive: Description of how category managers define procurement category strategies	Cross-category comparison of category managers' approaches to strategy definition	Multiple interviews with category managers	Company documents (e.g. procurement strategies)
	P1: Procurement and category strategies are derived from contextual contingencies AND P2: Contextual contingencies influence the target maturity profile	Cross-category and cross-case comparison of contingencies and category/company backgrounds	Multiple interviews with category managers	- Company documents (e.g. procurement strategies) - Company background
RQ2: How is procurement maturity conceptualised in industry?	H2: The most appropriate measurement type for procurement maturity is the maturity profile	Current and target maturity profiles	- Comparison of levels of maturity across different topics - Review with head of procurement	Company documents (e.g. process documentation, supplier performance assessments)
	H3: The most appropriate unit of analysis for procurement maturity is the procurement category	Current and target maturity profiles	- Comparison of levels of maturity across categories - Review with head of procurement	Company documents (e.g. process documentation, supplier performance assessments)

3.4.4 Data collection detail

Table 33 provides an overview of the different categories reviewed in each of the case studies, including the primary interviewee ID, the category they represent, the interviews they participated in (“Strategy” refers to the first interview focusing on background and alignment, “Maturity” to the second interview, focusing on the maturity assessments), as well as any documentary evidence they provided for triangulation.

The table demonstrates that a total of 37 interviews were conducted for this research, typically lasting 60 minutes. Not all interviewees participated in all interviews; in some cases this was by design (e.g. head of procurement would be interviewed for background and not to the same level of detail as others), but generally it was driven by access limitations. Two special cases should be highlighted: First, in the A&D Laser category, the same interviewee could not participate in both interviews, so two different employees were interviewed for Lasers. Second, in the WATER case, multiple interviewees filled in the maturity assessment, but weren’t available for interviews. This limits the conclusions that can be drawn on contingencies and the triangulation of maturity assessments. However, this limitation was somewhat counteracted by providing a comment field in the survey, that was used extensively by participants. These access limitations of course limit the overall research, which will be discussed in further detail in Section 10.1.3 (Generalisability).

Table 33: Data collection overview

Interviewee ID	Interviews		Maturity assessment	Documentary evidence
	Strategy	Maturity		
A&D_Function (Head of Procurement)	Yes (background)	Yes (background and triangulation of category results)	Yes	• Company overview • Strategy and value chain analysis • Operational Framework • Procurement organisation: Core principles • Procurement Plan and Objectives 2017 onwards • Working with SMEs • CPO meeting: Status & update • Draft Strategy Map Procurement • 2016 objectives and key performance indicators (KPIs) Operations Council • Individual KPIs example
A&D_Capability – (Procurement Capability)	Yes (background)	Yes (background and triangulation of category results)	Yes	
A&D_Indirect	Yes	Yes	Yes	• Indirect Procurement Brochure 2017 • Global definition • Category Strategy for Test Equipment
A&D_Radar	Yes	Yes	Yes	• Procurement Plan example • Supplier Scorecard example • Supplier Demonstrated Performance • Supplier selection process guide
A&D_Laser_1	Yes	No	Yes	• Procurement Plan example • Laser business plan

Interviewee ID	Interviews		Maturity assessment	Documentary evidence
	Strategy	Maturity		
A&D_Laser_2	No	Yes	Yes	• Supplier Demonstrated Performance • Procurement Processes • Supplier selection process guide • Personal KPIs overview • Laser team KPIs overview
A&D_Mechanical (Central Category)	Yes	Yes	Yes	• Central Mechanical Strategy • Supplier Demonstrated Performance • Supplier selection process guide • Source review board example • Personal KPIs overview • Mechanicals team KPIs overview
A&D_Optics (Central Category)	Yes	Yes	Yes	• Optics Strategy 2017 • Optics Strategy 2018
WATER_Function_1	Yes (background)	No	No	• Digitalising procurement 2019 • Procurement strategy 2019
WATER_Function_2	Yes (background)	No	Yes	• Organisational structure
WATER_Chemicals	Yes	Yes	Yes	• Sourcing Strategy: Mobile Liming • Chemicals Price Review • Chemicals price analysis • Benefits form
WATER_Tankering & Jetting	Yes	Yes	Yes	• Sourcing Strategy: Sewer Jetting • Sourcing Strategy: Tankering • Process manual
WATER_Assets & Instrumentation	Yes	Yes	Yes	• Sourcing Strategy: Line stopping • Sourcing Strategy: Pressure Management Equipment and Systems • Sourcing Strategy: Electrical Valve Actuators • Benefits Framework • Supplier selection matrix
WATER_Water materials	Yes	Yes	Yes	• Supplier dashboard • Contract plan
WATER_Services Portfolio	Yes	Yes	Yes	• Sourcing Strategy: Screens Maintenance • Leakage report
WATER_Function 3	No	No	Yes	
WATER_Construction Services	No	No	Yes	
WATER_Chemicals & Water Materials	No	No	Yes	
WATER_Portfolio	No	No	Yes	
WATER_Water metering	No	No	Yes	
BANK_Function 1	Yes (background)	No	No	
BANK_Function 2	Yes (background)	No	Yes	
BANK_HR	Yes	Yes	Yes	• HR Category Plan 2019 • Sourcing Strategy Global Executive Recruitment • APAC Evaluation Tool • Supplier Risk Management • Supplier performance KPIs • 2019 objectives
BANK_CRE	Yes	Yes	Yes	• CRE Category Plan 2018
BANK_FinTech	n/a	Yes	Yes	
BANK_Cyber	Yes	Yes	Yes	• Cyber Category Plan 2019
BANK_Ops	Yes	Yes	Yes	

Figure 19 demonstrates the progress of this research, including when each case took place.

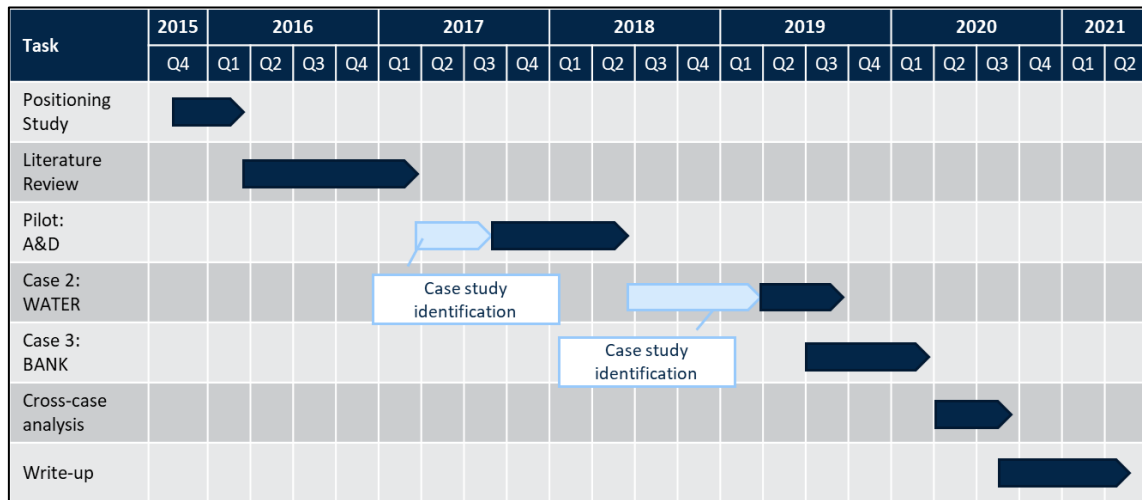


Figure 19: Study progress and case study data collection

3.5 Ethical considerations

The research has been subject to an ethical review, ensuring that all ethical risks are covered. Main risks were identified in the interviews, where potentially commercially sensitive information could be shared. To minimise these risks, case companies and interviewees have been anonymised and NDAs were signed with all three case studies. Moreover, interviewees signed a consent form, in which they are informed about the study and data collection process. Importantly, they were also informed about the opportunity to withdraw their consent.

3.6 Research background: Case company comparison

Table 34 provides an overview of the case companies included in the study. It reviews their industry, company and procurement details, thus demonstrating the differences in industries, companies and procurement function.

A&D is an aerospace & defence company and provides highly complex and engineered-to-order products, whereas WATER delivers water and wastewater services and BANK is in the financial services industry. Albeit very different in size (both revenue and employees), all three are relatively large companies in their industry, but still face unfavourable power relationships with some suppliers (e.g. large technology suppliers). The companies also differ in their strategic focus: where A&D focuses on technological innovation and customer cooperation, WATER is concerned with continued operational delivery of their services and BANK with high customer service.

The procurement organisations are also different: A&D and BANK cover the complete procurement process (BANK is even responsible for accounts payable), whereas WATER has split the contract set-up from the contract management. Organisationally, A&D is fairly decentralised, integrating procurement into their projects, whereas WATER and BANK are mostly centralised. However, WATER has decentralised the operational procurement responsibilities and BANK has decentralised regional procurement managers that do, however, report to the central category managers. Where all three companies are similar, is that all of them have aligned their organisation to their customers, i.e. they are set up to be closest to the internal customer.

Although all three industries are highly regularised, regulations in these three industries impact procurement in different ways: Where A&D focuses on offset requirements (“offset” refers to local sourcing requirements in different countries, usually specifying components or a percentage of the overall product value that has to be sourced locally), WATER is focused on compliance with water quality regulations as well as EU procurement legislation and BANK is concerned with compliance with money laundering regulations.

Table 34: Case company comparison

Criterion		Case companies		
		A&D	WATER	BANK
Industry	Industry name	Aerospace & Defence	Utilities – water	Financial services
	Product type	- Highly complex and costly products - Low order quantities per customer - High R&D cost element - Often engineered-to-order for specific customers	- Directs procurement with high service level, but for customer delivery - Large differences between categories - Often high science element	- Indirects – mostly services for internal customers - Generally high volumes - Headcount as largest cost driver
	Market growth	Declining market in military budgets, increasing shift towards civil aircraft	Stable market with small volume increase	Moderate growth
	Power relationships	- Strong buyer power due to large size (governments, few private customers) - Strong supplier power (substitutability of customers through other industries)	- Limited buyer power, but protected by regulatory authorities - Moderate supplier power: Strong dependence on a few, large suppliers	- Moderate buyer power, esp. through high degree of competition/market rivalry and customer price sensitivity - Strong supplier power (high reliance on ICT, security, low substitutability)
	Competition	Intense rivalry, increasing consolidation to achieve power and economies of scale	Limited competition due to regional monopolies	High technological change
	Speed of change	Rapid change in technological innovation	Low speed of change	Rapid change in technological innovation
Company	Company type (key function)	Engineering & project management company	Operations service company	Customer service company
	Strategic focus	- Expansion/growth - Technological leadership/innovation - Customer cooperation	- Customer satisfaction - Sustainability (esp. environmental)	Profit increase through sales growth and cost reduction
	Product range	- Helicopters and aircraft - Airborne & Space Systems	- Clean water services - Wastewater services	- Commercial banking - Retail banking and wealth management
	Financial year (used for data below)	2016	2019	2018
	Revenue (range)	£10-20bn	<£5bn	£20-50bn
	EBIT margin (range)	5-10%	<0%	>10%
	Employees (range)	20-50k	<5k	>100,000
	Operating countries	Global	UK	Global

Criterion		Case companies		
		A&D	WATER	BANK
Procurement	Procurement strategy	Organisational structure: Matrix structure (project vs. central) & Think global, act local	Delivering water and wastewater services to customers; efficiently, effectively and cost effectively, but also with minimal disruption to the environment	Risk management: Know your supplier: Self-service procurement (a business-to-consumer experience in a business-to-business environment)
	Department organisation	Project-focused: Some central categories, but most procurement managers sit in on projects and certainly all of them buy for and are in close alignment with projects	Centralised strategic sourcing and decentralised operational procurement: Central contract set-up and negotiation ('experts' for tendering process etc.); another team does central framework management; products are pulled by sites/projects/operators directly during day-to-day work	Centralised with local support: Central category management, supplier selection, framework management etc., but regional procurement managers that sometimes do sourcing if local supply, but certainly manage the local supplier/suppliers' contacts
	Formal objectives	On-time delivery, quality (returns), management of promised dates (audit driven), cost	Contribution to team success (workload, compliance, timeliness of deadlines etc.), cost	Cost, stakeholder feedback (NPS), risk agenda
	Key considerations	Ensure products are delivered on time for project	Ensure quality to avoid compliance issues	Ensure risk management (compliance), cost
	Regulatory concerns	Offset (+ somewhat traceability)	Regulation 31 (traceability/quality of products in contact with water)	KYC (Know your customer) & KYS (Know your supplier)/KYTP (Know your third party)
	Key projects	Supply chain mapping (2nd tier SC visibility)	Procurement systems implementation to increase workers' efficiency	Self-service procurement (ML system implementation)
	Process responsibilities	Supply base management	Supply base management	Supply base management
		Supplier selection	Supplier selection	Supplier selection
		Strategic supplier relationships	Strategic supplier relationships (sometimes)	Strategic supplier relationships
		Contract management	Contract management (sometimes)	Contract management
		Supplier performance management		Supplier performance management
		Order placement		Order placement
				Accounts payable

Sources: (A&D, 2017a, 2017b; BANK, 2019a; MarketLine, 2015, 2017a, 2019a; WATER, 2019a)

3.7 Methodology adjustments after the pilot case

A&D (Aerospace & Defence) was selected as a pilot case, as it provided the most comprehensive insight into different categories: The case included two decentralised project-based categories with complex engineered parts and two centralised categories, which focused on slightly more standardised products. Additionally, this case included an indirect category, covering several different products from company cars to test equipment.

3.7.1 Research focus adjustment

The pilot study has demonstrated that the research design delivers insight into procurement maturity and highlights potential areas for contributions in the use of procurement maturity and the design of procurement maturity models. Whilst not all of the initial hypotheses were fully supported, interviewees indicated an approach to procurement maturity that is considerably different from existing maturity models and includes contextual contingencies.

However, the analysis has also highlighted a requirement to adjust the research design. The analysis of RQ1; How do procurement managers achieve strategic alignment?; has demonstrated that category strategies resemble the topics in a maturity model and that strategic alignment is only one of the topics considered in the maturity model and by procurement managers as part of their category strategy. Instead, interviewees focused on a large number of different contingencies that impact procurement maturity.

Going forward, the research will therefore shorten the analysis of procurement strategies or strategic alignment (RQ1). Instead, this section will focus on contextual contingencies in general and how they influence the application of procurement maturity models, specifically the target maturity profile. Future cases will determine whether the emerging Proposition 2 (the target maturity profile is dependent on contextual contingencies) can be supported by other cases. This section will also include a review of maturity models, similar to the one provided in Section 5.2.1.5 (Contingencies to procurement maturity: Maturity model review by topic) that considers the contextual contingencies to maturity topics or elements.

3.7.2 Case study design adjustments

Cases 2 and 3 will follow a similar research design to the pilot case, with some changes in process to improve the quality of information collected.

The first round of interviews continues to support research question 1, as well as the analysis of the emerging Proposition 2 that replaces Proposition 1. Similarly, the second interview round will largely remain the same as during the pilot case, as this enables the discussion of contingencies in addition to the data collection for research questions 2 and 3.

3.7.2.1 Case study definition and design

The most critical change to the research design is in the updated conceptual model. Since Proposition 1 is replaced with the emerging Proposition 2, the conceptual model has to be updated for the remaining two cases WATER and BANK. Figure 20 illustrates the updated conceptual model.

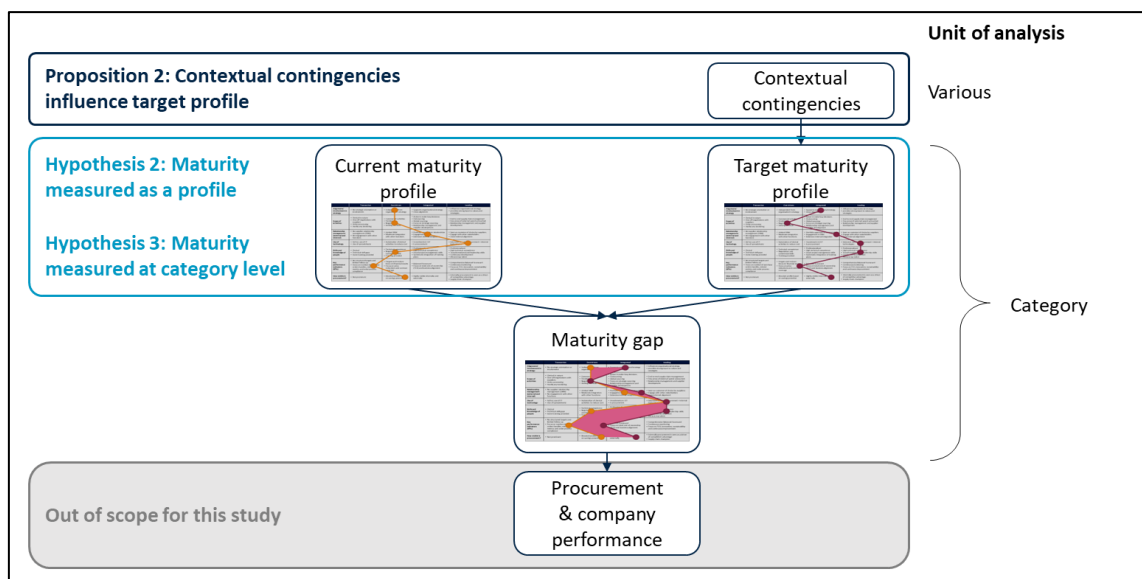


Figure 20: Updated conceptual model after A&D

3.7.2.2 Data collection

However, some changes will be made to the data collection process and analysis, as demonstrated in Figure 21. In future cases, documentary evidence will be collected before the interviews, to allow the interviews to focus as much as possible on the

discussion of documents and assessments, rather than the assessment itself. This is expected to accelerate the process (analysis and validation of interview results).

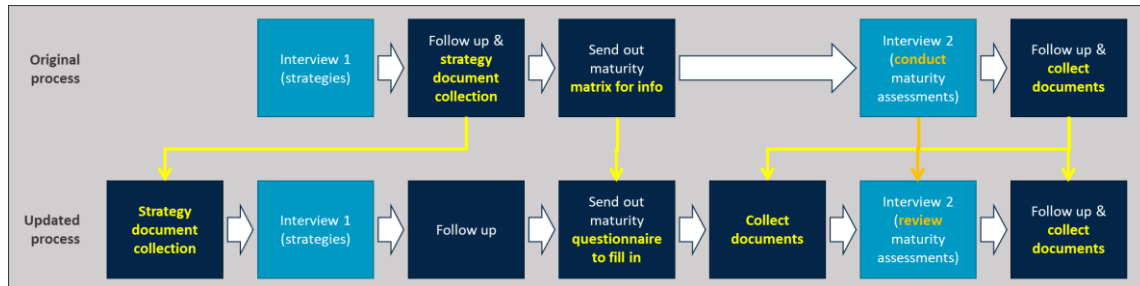


Figure 21: Data collection process update

Finally, the updated process is supported through an updated interview guide. However, as per the discussion above, changes to the interview guides are minor, as the current data collected generally supports the analysis.

3.7.3 Data analysis

The data analysis will be updated to focus on the emerging Proposition 2, thus shortening the analysis outlined in Section 5.2.1 (RQ1: How do procurement managers achieve strategic alignment?), and instead will focus on the analysis in Section 5.2.1.5 (Contingencies to procurement maturity: Maturity model review by topic). It will continue to follow the analysis outlined in Section 5.2.2 (RQ2: How is procurement maturity conceptualised by procurement managers?).

3.8 Methodological limitations

3.8.1 Case study methodology and generalisability

As with all case studies, the findings from the specific cases are not statistically generalizable to a population from which they are taken, as no statistical sample is used. Instead some findings common to all cases may be generalizable beyond the immediate cases, whilst others may be more context-specific.

To mitigate this limitation to external validity, diversity was sought in the embedded units of analysis (i.e. the categories). The research includes multiple embedded units of analysis, especially the five focus categories interviewed in each case, and cases themselves were specifically chosen for their varied industries, strategic focus and

product range (see Figure 14 in Section 3.4.1 Case study definition and design). This diversity increases the contextual dimensions across which the phenomenon is studied and thereby its analytic generalisation.

It is argued that despite this limitation the case study methodology was required for the exploratory nature of the study. Therefore, this limitation is accepted in return for the depth of data and context provided in the cases, which is required both to test the hypotheses deduced from the literature as well as enable the induction of further insight.

3.8.2 Subjective self-assessments for maturity

Maturity assessments will be based on interviewees' subjective self-assessments. Whilst the current maturity level can be reviewed and triangulated against documentary evidence, there is no such secondary evidence for the target maturity profile.

Neither of these subjectivities will impact research question 1, but will limit research question 2. Hypothesis 2 (the unit of analysis) and hypothesis 3 (the maturity measure) will both primarily rely on the current maturity assessments and can be analysed relatively reliably, due to the triangulation with secondary evidence. Again, this is a limitation accepted in the research design.

4 Results: Mini-cases

This section will summarise the key findings from the exploratory mini-cases, which were conducted ahead of the main empirical study (the three in-depth cases). These mini-cases have previously been published under Søgaaard *et al.* (2018).

4.1 Exploratory mini-cases findings

4.1.1 Perceptions of procurement strategy and strategic alignment

This section presents a review of the findings from the exploratory case studies, which will be compared to the academic literature in the following section.

The term ‘procurement strategy’ does not appear to be clearly defined in industry, as demonstrated by interviewees enquiring what was meant by the term and the different explanations provided, ranging from current change programmes to defined procurement practices (BANK, FOOD). These differences in perceptions could be explained by the implication of a functional strategy, which was contradicted by FOOD and DRINK, who stressed that strategies are different for each category, supported by a definition of structures and principles at a functional level.

Procurement professionals also demonstrated different reactions to the concept of procurement strategic alignment. Similarly to academic conceptualisations, BANK expressed that procurement strategy should be based on the company strategy. However, other interviewees did not perceive a direct link between procurement and company strategy.

Instead, interviewees referred to a number of important contingencies that determine the procurement or category strategy. These can be classified into three categories: internal contingencies, external contingencies, and product and supply driven contingencies (Table 34). Whilst the product and supply driven contingencies include internal and external contingencies, these are distinguished from internal and external contingencies, as they can be more easily influenced through sourcing and range decisions.

Despite the initial appearance of an absence of strategic alignment, the perceived procurement strategy contingencies hint at an alternative explanation. All described contingencies are likely to be common to the company as a whole (rather than just the

procurement function). This indicates a tacit concept of strategic alignment, driven by a common understanding of the company's environment and challenges, rather than a procedural analysis of corporate priorities.

Table 35: Procurement and category strategy contingencies

Contingency group (first order constructs)	Contingencies (second order constructs)	Description/example
Internal or company driven contingencies	Company strategy	"the procurement strategy has to fit in with the overall company strategy" (BANK)
	Corporate principles	"It's more around the corporate business principles that govern how we go through the [...] procurement process" (FOOD)
	Company culture	"I think there's a certain culture... just in terms of expectations of the business" (CAR)
	Stakeholder and business requirements	"Ultimately, you know the business requirements I talked about are the absolute bedrock of the whole process: Do we understand what we need?" (DRINK)
External or demand driven contingencies	Geopolitical changes	"And I'll give you a great example. We have our whole plan around NAFTA, so around the trade agreement of North America; Canada, US, Mexico – we built a whole lot of business going up between Mexico and the US. Guess what Donald Trump is going to do..." (BANK)
	Customer or demand	e.g. the requirement to work with original equipment manufacturers (CAR) or the balance of high quality offering versus the impact of Christmas promotions on profitability (FOOD)
	Industry specifics or requirements	e.g. regulations in the banking and finance industry (BANK), the requirement to reverse-engineer glass for new car models (CAR) or the requirement to react to competitor behaviour (FOOD)
Product or supply driven contingencies	Current contractual arrangements	The contracts currently in place (DRINK)
	Product complexity	Increasing product complexity through new technology (CAR)
	Supplier market	"the market has an impact, you know, the market, how suppliers act, mergers and acquisitions" (BANK) "supplier market is about the market they operate in, is it expanding, is it contracting? Where are those suppliers positioned strategically versus each other? What are their focus areas?" (DRINK) (this aspect was also mentioned by CAR and FOOD)
	Future product development	How requirements may change in the future (DRINK)

4.1.2 Mini-case findings: Perceptions of procurement practices

This section will focus on practitioners' perceptions of applied procurement. Most interviewees identified some practices they feel would apply to any procurement organisation, such as segmentation, systems or centralisation. Similarly, some procurement practices were mentioned across companies, including category management, centralisation and supplier relationship management (BANK, CAR, FOOD, and DRINK).

However, the interview analysis also suggested that other practices may be more distinct to different companies – or at least not as prominent in managers' perceptions. For example, BANK was the only one to mention contract renegotiation, while CAR mentioned requests for more sales involvement. FOOD uniquely mentioned responsible sourcing and DRINK explained their involvement in New Product Development.

None of the managers referred directly to the procurement or category strategy as a basis for procurement practice selection. Instead, they grounded their selection in different contextual contingencies very similar to those identified for procurement or category strategies. These similarities further support the notion of a tacit alignment concept, with both the definition of procurement or category strategy and the actual procurement practices being contingent upon different factors.

4.2 Implications for the conceptual model

The mini-cases demonstrated that both strategic alignment research and industry perceptions align with the three premises of contingency theory (Donaldson, 2001). However, where academic research focuses on the relationship of procurement practices with the firm strategy (e.g. Baier *et al.*, 2008), the practitioners included a wide range of contextual contingencies, i.e. internal, external and product- or supply-based contingencies.

Moreover, academic literature generally assumes a procedural concept of strategic alignment, in which the procurement strategy follows the company strategy as a single contingency (e.g. Watts *et al.*, 1992). In contrast, practitioners described their strategies as being based on a number of contingencies, including the company culture, industry requirements or the supplier market. These contingencies were often expressed as problems that do not only concern procurement, but that the company faces as a whole, thus indicating a more tacit concept of alignment, in which procurement is subject to the same contingencies as the rest of the company.

Hypothesis 1 is therefore updated to reflect the improved understanding of procurement strategic alignment to Proposition 1:

Proposition 1: Procurement and category strategies are dependent on contextual contingencies.

The mini-case findings concurred with academic and consultancy literature on the measurement type and unit of analysis for procurement maturity, so that no updates are required to the remaining hypotheses.

These findings are summarised in the conceptual model demonstrated in Figure 11. It defines that the firm strategy drives the procurement strategy, which in turn influences the category strategy, together with contextual contingencies. The category strategy then determines the target maturity profile. The gap between these two profiles, or the “maturity gap”, is related to procurement performance, which in turn impacts on firm performance.

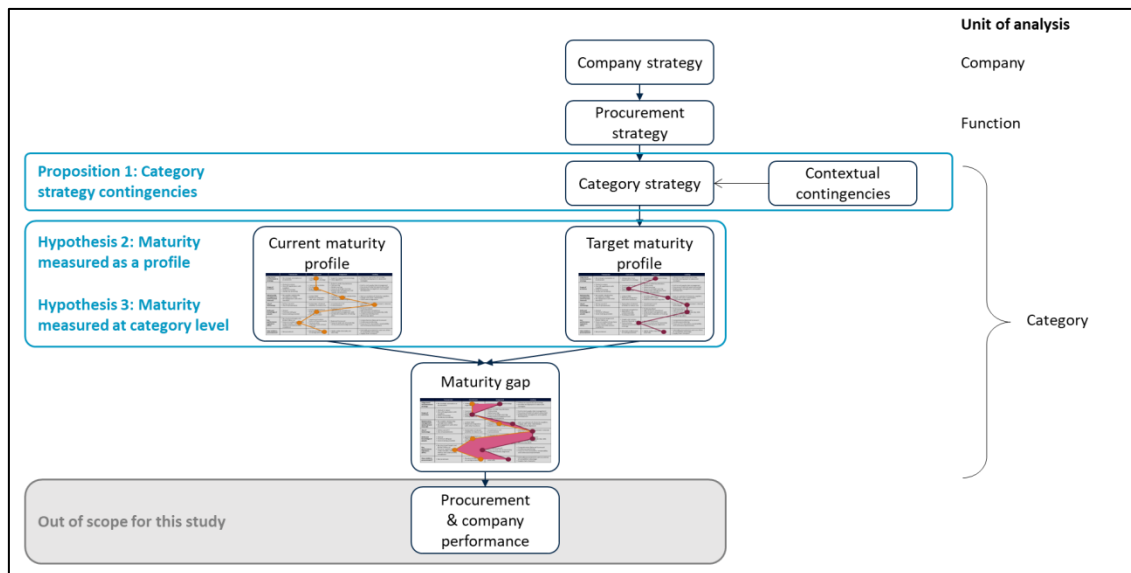


Figure 22: Conceptual model after mini-cases (used for in-depth cases)

5 Results Case 1: A&D

5.1 A&D Case study background

5.1.1 Aerospace and defence industry

The global aerospace and defence industry includes civil aerospace, systems & ordnance, military aircraft, naval vessels, military vehicles and other defence procurement. It is often described as a strategic industry in two ways. First, it is militarily strategic in that it is a central component of national defence. It is also economically strategic, where it is regarded as more important than other industries for a country's economic development due to the number of highly-paid jobs it provides (Hartley, 2014, pp. 4–5).

The global market for aerospace and defence has experienced an average growth of 6.9% between 2012 and 2016 and is expected to continue growing at a similar rate, albeit mostly in civil aerospace, as countries cut their defence budgets as part of austerity measures. Geographically, the United States, Europe and Asia-Pacific account for over 90% of the global market value, in almost equal shares (MarketLine, 2017b).

The industry is characterised by strong rivalry with intense competition between large and globally integrated companies, partly driven by consolidation trends in recent years, but also by the requirement to achieve high sales volumes to recover R&D costs. To overcome competitive pressures, companies attempt to differentiate themselves through ongoing innovation. Innovative products can create spill-overs to the civil aerospace market as well as temporary monopolies that help companies achieve faster return on their investment. They therefore have potential to be highly profitable for aerospace and defence companies (Hartley, 2014, pp. 38–41, 66, 70; MarketLine, 2017b).

It has always been an industry highly dependent on the government, either directly through state ownership or indirectly through government spending (Hartley, 2014, pp. 10–20). Companies typically attempt to increase bargaining power against buyers through integrated solutions with high switching costs and the importance attached to these by buyers. However, buyers are typically governments, therefore aerospace and defence companies face large and financially strong bargaining partners (MarketLine, 2017b).

Similarly, relationships with suppliers are driven by high power levels on both sides: in spite of their size and a large number of suppliers to substitute, aerospace and defence companies' power is limited by their requirement for high quality products. Procurement complexity is further increased by raw material price volatility (especially oil and metal) and other industries competing for the same suppliers (e.g. automotive and rail) (MarketLine, 2017b).

5.1.2 Case company profiles: A&D

A&D provides aerospace and defence solutions to different governmental and commercial customers. It is headquartered in Europe, with operations and subsidiaries across the world, most considerably in Italy, the UK, the USA and Poland. With revenues of over €10bn and employing c. 46,000 people in 2016, it is one of the largest aerospace and defence companies in Europe (MarketLine, 2017a).

Strategically, the company prioritises customer-focused innovation through technological excellence and close customer relationships. A&D also attempts to achieve competitive products with sustainable development, especially focusing on integrity and security (A&D, 2017b). A&D defines eight core values:

1. Vision: Looking far ahead to ensure the company's long-term success
2. Integration: Leveraging the company's diverse product portfolio to provide an integrated solution
3. Innovation: Being at the forefront of innovation through highly skilled employees and extensive R&D investment
4. Customer Focus: Ensuring continuous customer focus by providing reliable, timely and customised solutions
5. Internationalisation: A local presence in core customer markets
6. Responsibility: Generating both social and economic value through ethical and trustworthy behaviour
7. Talent: Recognising excellence and promoting scientific and technical learning
8. Technology: Leveraging its companies' experience and technologies to contribute to a safer and more sustainable world (MarketLine, 2017a)

This case study will focus on the Airborne & Space Systems in the UK. The Airborne & Space Systems division's product portfolio includes Airborne Weapon Systems, Airborne Radars, Airborne Electronic Warfare, Airborne Electro-Optics, Avionic Mission

Systems as well as Airborne Communication Navigation & Surveillance (CNS), together with the required support and services (A&D, 2017b).

5.1.2.1 *Functional organisation*

In the UK, A&D is organised into a matrix structure, in which IPTs (Integrated Product Teams) are responsible for the procurement in customer projects and category teams are focused on common products across categories. This structure is supported by a Procurement Capability team, which ensures continuous learning and common approaches across the whole procurement function in the UK.

As such, the categories follow different processes. Procurement managers in IPTs are responsible for the procurement throughout the whole project lifecycle, starting with the bid process, when a new product is sold to a customer, through the engineering design and up to the sourcing of components. Their role is to ensure that components are bought within budget, delivered on time and to the required quality. IPT procurement managers also coordinate any Central Categories that are involved in the project.

In contrast, Central Categories are less involved in the early stages of the bid and engineering process, where they support the IPT procurement managers. Category managers are responsible for managing common products across all projects, and thus are more supplier- than customer-focused.

Although classified as categories as well, Indirect products are slightly different in that they are not involved in any project-related procurement and are generally much more forecastable and thus easier to plan long term.

Table 36 provides an overview of the key categories interviewed and their differences and similarities.

Table 36: Selected categories comparison (based on interviews)

	Description	Product vs. service	Product complexity	Supply base (number of suppliers)	Typical contract length
Indirect	Indirect services (e.g. travel, real estate, testing etc.)	Mostly service	Low (stakeholder relationships)	Mixed: mostly relatively large	Varying
Radar	Components for radars	Products	High (technology)	Medium	Depending on project (current 9 years)
Laser	Components for targeting lasers, mostly for aircraft, but also manual	Products	High (technology)	Medium	Depending on project (current 9 years)
Mechanicals	Mechanical and machined parts	Products	Medium (technology)	Often small due to capability	Depending on project (current 9 years)
Optics	Optical units for lasers (prisms, crystals)	Products	High (technology & supplier capability)	Often small due to capability	Depending on project (current 9 years)

5.2 A&D Case study findings

5.2.1 RQ1: How do procurement managers achieve strategic alignment?

To answer this research question, three sub-questions will be analysed in this section, starting with how procurement managers define procurement ‘strategies’, followed by a comparison of procurement ‘strategies’ with procurement maturity topics and a review of procurement contingencies, in order to understand how procurement strategic alignment is achieved. This last part is based on the hypothesis developed from the literature (P1: Procurement and category strategies are dependent on contextual contingencies).

5.2.1.1 *What is a procurement ‘strategy’?: Procurement ‘strategies’ provided by category managers*

This section will summarise procurement managers’ responses to the question “How would you describe your procurement/category strategy?” It will review the answers provided in detail and conclude with a summary and interpretation in the wider context of the research question. For the remainder of this section, it will follow the

terminology used in the literature, accepting the use of the terms 'procurement strategy' and 'category strategy'. These will be reviewed at the end of the section.

First, Table 5136 shows the scope and content of the procurement strategies for each of the categories. It demonstrates that the answers provided by procurement managers differ considerably: The overall procurement (functional) strategy provides an overarching structure and general standards with ways of working that all categories should adhere to, as well as an improvement programme, which includes opportunity areas for the coming years (A&D_Function, A&D 2017 Procurement Objectives). Similarly, the indirect strategy has identified ten top priorities to work on for the year, together with individual detailed plans and targets for the product groups within Indirect (A&D_Indirect, A&D Test Equipment Strategy example, A&D Indirect Procurement Brochure 2017). For instance;

"It might be that we want to expand our category across the whole of the UK. So we might have an expansion plan to take control over the spend. All of our individual category strategies are really our bible for that category for the duration of the contract, or for a period of time. Individual category strategies are very important for us so that we know what we're doing in those areas" (A&D_Indirect)

Table 37: Procurement strategy scope and content for each of the procurement categories

Category	Procurement strategy scope	Procurement strategy content
A&D_Function	- Structure (differentiation) - Ways of working - Improvement programme	"'Integrating Procurement Excellence' [...] One of the themes at the conference was about continuous improvement – 'Better never stops'. We decided to represent that in defining procurement excellence. But for us it's the integrating of procurement excellence which makes it different, especially by the way that we are organised with our customer-centric approach"
A&D_Indirect	Improvement programmes	"that's the direction that the company wants to go [and] at our level we can influence the supply chain in order to get that strategic objective achieved" "we tend to set top ten strategies, goals that we want to work on" "all the categories [within Indirect] will have that individual category strategy [...], about what we want to achieve within the category and with our stakeholders" - Top 10 priorities (Indirect Procurement Brochure)
A&D_Radar	Project delivery (risk management)	"I think the macro strategy is where we document the risks in the risk register, and we tend to keep it top level."
A&D_Laser_1	Project delivery (supply base management)	"So this year the strategy is to continue working with the vendors that we have and maintain those relationships and work with those vendors to understand what else they could bring to us as a company for future laser programmes. [...] It's all about ensuring production and that we have the necessary supply to meet demand."
A&D_Mechanical	Supply base and procurement	From interview: "What we do is, we feed into the projects' procurement

Category	Procurement strategy scope	Procurement strategy content
	improvement programmes	plans, there are sections within each project procurement plan, where they need to engage with the central functions" • "Defining what capability each of the vendors has – a capability matrix, all the different types of machining that we do with the vendors" • "In terms of the vendors, what we normally do is share our forecasts with them" • "From a procurement perspective we also put together outline agreements" • "We have agreements in place with standard terms and conditions, that something that we have that for 90% of the spend under our control" • "Alignment of order quantities with supplier production quantities" • "We don't always ensure the lead time the vendor gives us is one real problem. It's not reflected in the system" • "Another area that we need to get consistency on is export controls " • "Getting my guys to being more proactive in the questions they are asking in an RFQ" • "More competition is one thing that I would love to see" From category strategy – category deliverables • "Continuity of supply of machined parts • Introduce more competition into category • Leading to price reductions • Risk sharing with key suppliers • Ensuring the category can and continues to meet business needs"
A&D_Optics	• Support the business strategy by building a robust supply base	• "So, we've got the usual mission statement, quite simple, we've got an overall category strategy, which is three bullet points: • To establish robust sources of supply for optics from a small number of high performing broad capability suppliers, supported by a selected network of competent providers. • In addition, to maintain and develop a number of key suppliers of specific products, processes or specialisms which are unique to the Category and which provide key materials to our business. • Recognise and support business needs for specific industrialisation, geographical, political and strategic purposes"

Central category procurement managers (Mechanicals and Optics) defined their strategy as a long-term plan to improve or refine their supply base, together with detailed programmes for identified issues or opportunities. Both categories provided category strategy documents, albeit with a slightly different focus and different level of detail (A&D_Mechanical, A&D_Optics).

In contrast, IPT procurement managers defined strategies focused on project delivery (A&D_Radar, A&D_Laser_1), including risk management and supply base management

– demonstrating a strong customer and supplier focus. This different focus for procurement managers in projects is supported by their strategy documents, which outline a project management approach for procurement in project teams (A&D Radar Procurement Plan example and A&D Laser Procurement Plan example). This is not accidental, instead,

“That’s absolutely how they’re designed – they’re designed to pivot around the success factors of a project: each project will have a strategy and its own project aims” (A&D_Function).

In particular the IPTs are also characterised by A&D’s limited ability to plan long-term, as the visible demand is limited to the length of the project (A&D_Function, A&D_Radar).

Table 5237 demonstrates the elements included in the different strategy documents provided. It shows that most documents support some form of category background, targets, stakeholder detail, and product and supplier overview. However, the actual detail included differs between categories.

The overall functional strategy focuses on the targets, improvement areas and major projects, but does not include any detail on the business background, sourced products, used suppliers or stakeholders – these are, however, defined in separate documents (A&D_Function, Strategy and value chain analysis, Operational Framework, Procurement organisation: Core principles, Procurement Plan and Objectives 2017 onwards, Working with SMEs). The functional strategy focuses on ‘Integrating Procurement Excellence’:

“It’s all about setting standards for achieving excellence in procurement and how do we look at integrating that. We think that our company, by the way we’re organised with procurement and these IPTs and the hybrid model, being customer-centric, we think that’s a discriminator to lots of our counterparts [...] So we’ve tried to define, what do we mean by integrating, what do we mean by procurement excellence and we’ve had this mantra [that] helps to define our culture: “Customers first, united always”. [...] For us, this really fits with what we do: Customers first, through the IPTs, align the objectives by being there – whether that’s on a board, or in a management team... And this is where the category management comes in, [...] being united with what the category strategy might be and in another project and in another site.” (A&D_Function)

Table 38: Elements included in category strategy document provided

Highlighting indicates whether the element is included in the strategy (red = 'No', green = 'Yes')

Note: 1) This information has been included in other documents rather than the official 'strategy document'

Summary	Element	A&D_ Function	A&D_ Indirect	A&D_ Radar	A&D_ Laser_1	A&D_ Mechanicals	A&D_ Optics
Background	Business overview	No	Yes	No	No	Yes	Yes
	Project overview	Yes	No	Yes	Yes	No	Yes
	Org structure	No ¹	Yes	Yes	Yes	Yes	No
	Risks/opportunities	No	No	Yes	Yes	Yes	Yes
	Key processes	No ¹	Yes	Yes	Yes	No	No
	Demand forecast	No ¹	No	Yes	Yes	Yes	No
Targets	Vision	Yes	Yes	No	No	No	Yes
	Objectives	Yes	Yes	Yes	Yes	Yes	Yes
	Improvement areas	Yes	Yes	No	No	Yes	No
Sourced products	Product detail	No	No	Yes	Yes	No	Yes
	Product matrix	No	Yes	No	No	Yes	No
Supplier detail	Supplier overview	No	No	Yes	Yes	Yes	Yes
	Individual supplier strategy	No	No	No	No	No	Yes
	Supplier matrix	No	Yes	Yes	Yes	Yes	No
	Supplier review plan	No	Yes	Yes	Yes	No	No
Stakeholder detail	Customer overview	No	No	Yes	Yes	No	Yes
	Stakeholder map	No	Yes	No	No	No	No
Total pages		8	34	41	24	12	77

Both IPTs' procurement plans demonstrate a very similar content, which is likely to be driven by the fact that these are standard and audited documents:

"The intention in there is that the line of business will have a review of the procurement plans etc., but the actual format and content of the procurement plans, that is owned in my area. We will provide that as a template, and again, we will tweak that periodically, as new things come along, so I touched on earlier on, cyber security, I would imagine our next update of our procurement plan has a much a much stronger cyber-specific section."
(A&D_Capability)

They include a project background, a customer summary including their objectives, a summary of purchased products and an overview of suppliers used (Radar Procurement Plan example and Laser Procurement Plan example).

“They read like a project plan, and that’s absolutely how they’re designed – they’re designed to pivot around the success factors of a project” (A&D_Function)

In contrast, Central Categories and Indirect have much more varying strategy documents, generally providing some category background and overall objectives for the year, but focusing on key products and suppliers as well as improvement initiatives (Indirect Procurement Brochure 2017, Central Mechanical Strategy, Optics Strategy 2017, Optics Strategy 2018). They differ from IPT strategies in that they demonstrate less of a focus on customer objectives and delivery milestones, but instead show a consideration of longer-term sourcing options for different products. This may be driven by the organisational set-up, in which IPTs focus on customer alignment and the Central Categories aspire to efficiency benefits for common products (A&D_Function).

5.2.1.2 Category-specific priorities

Besides the overall definition of a procurement or strategy, interviewees were also asked about the category priorities they considered important for decisions on the design of the supply base (see Table 39). The priorities provided in Table 39 are in response to the question “What are the most important priorities in your category?” It should be noted that “(1)” indicates top priority for that category and that whilst A&D_Radar described a project in the late development/early production phases, A&D_Laser_1 focused on projects in production stages.

Table 39: Key priorities by category provided in the first round of interviews

Blue highlighting indicates primary priority

Priority	A&D_Function	A&D_Indirect	A&D_Radar	A&D_Laser_1	A&D_Mechanicals	A&D_Optics
Cost	Yes	Yes		Yes (1)	Yes (1)	Yes
Quality		Yes	Yes	Yes (1)	Yes	Yes
Service		Yes				
Customer satisfaction	Yes (1)	Yes (1)				
Delivery/lead time		Yes	Yes (1)	Yes		Yes
Continuous improvement				Yes		
Supplier capability			Yes		Yes	
Optical performance						Yes (1)

These answers indicate that the priorities differ by category. Table 39 also demonstrates that the category priorities differ from the overall functional and corporate priorities. As a company, A&D differentiates itself through customer satisfaction (customisation) and innovation (A&D_Capability; A&D, 2017b).

At a procurement functional level, procurement strategies focus on customer satisfaction as a key priority, but also attempt to be efficient: “Integrate within our IPTs (*effective*) and collaborate centrally (*efficient*)” (A&D 2016 objectives and KPIs). This is demonstrated both by the organisational set-up as well as through the mantra “Customers first, united always” and the strategy to be “Glocal”. Both straplines are about putting the customer and the local requirements first, but trying to achieve cost efficiency benefits where possible:

“For us, this really fits with what we do: Customers first, through the IPTs, align the objectives by being there – whether that’s on a board or in a management team... And this is where the category management comes in, being united always. [...] We see companies that do everything in category management, very efficient, that doesn’t have that connection with the project” (A&D_Function)

“[‘Glocal’ is] taking into account this being effective, being locally based, being deployed with the business, versus being efficient, which is trying to do things centrally, trying to do things consistently.” (A&D_Capability)

Category priorities during the first interview differ considerably, from focusing on customer satisfaction (A&D_Indirect), delivery and lead time (A&D_Radar), cost and quality (A&D_Laser_2), cost (A&D_Mechanical) to Optical performance (A&D_Optics). However, during the second round of interviews, priorities not only changed from the first round, but categories were also much more aligned, with most interviewees agreeing that quality, cost and delivery are the three most important priorities (see Table 39). Table 39 demonstrates how interviewees ordered procurement priorities. The coloured priorities refer to how interviewees ordered these during the second round of interviews. In contrast, the row ‘Initial (1st priorities)’ refers to the primary priorities identified during the first round of interviews. The row ‘Reason for differences’ provides the reasoning interviewees provided for the differences between their initial and later priorities.

Table 40: Category priorities provided during the second round of interviews

Colours indicate different priorities (e.g. green = low prices)

Priority	Indirect	Radar	Laser	Mechanicals			Optics		
1	Product/Service Innovation	High Product Quality	High Product Quality	Dependable Delivery	Low Prices	High Product Quality	Dependable Delivery	Low Prices	High Product Quality
2	Process Innovation	Customisation	Dependable Delivery						
3	High Product Quality	Low Prices	Low Prices						
4	Customisation	Technology Leadership	Product/Service Innovation	Rapid Volume Changes			Process Innovation		
5	Technology Leadership	Dependable Delivery	Technology Leadership	Customisation			Technology Leadership		
6	Dependable Delivery	Process Innovation	Fast Deliveries	Technology Leadership			Product/Service Innovation		
7	Fast Deliveries	Fast Deliveries	Process Innovation	Product/Service Innovation			Customisation		
8	Low Prices	Product/Service Innovation	Customisation	Process Innovation			Environmental Concerns		
9	Rapid Volume Changes	Rapid Volume Changes	Rapid Volume Changes	Fast Deliveries			Fast Deliveries		
10	Environmental Concerns	Environmental Concerns	Environmental Concerns	Environmental Concerns			Rapid Volume Changes		
Initial (1 st priorities)	Customer satisfaction	Delivery/lead time	Quality, Cost	Cost			Optical performance		
Initial (others)	Cost, Quality, Service, Delivery/lead time	Quality, Supplier capability	Delivery/lead time, continuous improvement	Quality, Supplier capability			Cost, Quality, Delivery/lead time		
Reason for differences	n/a	Project lifecycle: Project moved from development to production phase	n/a	Common first (delivery, prices and product quality are equal) - number one is influenced by current activities/issues			Common first (delivery, prices and product quality are equal) - number one changes depending on the customer, project and product		

Table 39 also demonstrates that these priorities changed between the first and second interview (the interviews were about four months apart). For Radar the most important priorities in the second interview were High Product Quality, Customisation and Low Prices, in comparison to Delivery/Lead Time in the first interview. This change was explained by the fact that the project had moved on from a development phase, where the project encountered multiple lead time issues, towards a stable production phase, where the focus shifted to quality outputs and efficiency:

“I think in the development phase, because you have to design something brand new, you know what is the art of the possible, lead time has to be ahead of quality there. And then in production, we have to get everything right first time now – so things will move [towards quality]” (A&D_Radar, supported by A&D_Laser_1 and A&D_Mechanical)

For Laser, the priorities changed from Quality and Cost being a joint first priority, to High Product Quality, Dependable Delivery and Low Prices in the second interview, which was explained by the differing perspectives of the two interviewees:

“I think A&D_Laser_1 and I probably came at this one from different angles.

Where I was coming from was – we deal in the Aerospace and Defence Market with very exacting requirements and demanding specifications for all parts so I rarely expect pricing to be ‘low’ in absolute terms.

I expect where A&D_Laser_1 was coming from is that we have constant pricing challenges – particularly from our Laser customers who are US primes – and we have to work hard to ensure that any price escalation is justified, or we embark on a price down challenge by engineering cost out of the design or manufacture. So in this context pricing is very important.” (A&D_Laser_2)

Similarly, A&D_Mechanical explained that in Mechanicals, High Product Quality, Dependable Delivery and Low Prices will always be equally important priorities, but the order may differ depending on issues that the procurement managers face:

“Looking at the list I think I would weight my top three very similarly, i.e. you could ask me tomorrow and the top three would stay the same, but perhaps the one I place first could change.

Over the past couple of months or so the Mechanical Category has ‘suffered’ more due to the first two in the list below and this may have influenced my thoughts, when [during the time of the first interview] I was carrying out more price comparison/negotiation/justification and contract placement activities.” (A&D_Mechanical)

Whilst initially highlighting Optical Performance as the most important priority, A&D_Optics explained that this would be classified as High Product Quality. In agreement with Mechanicals, High Product Quality, Dependable Delivery and Low Prices make up a joint first priority in Optics, with a differing order, depending on the project, product or customer:

“Optical Quality came in as part of the Product Quality at No. 3 – but as I said across the board I see Delivery, Price and Quality as all being roughly equal. This does of course vary quite considerably from project to project and product to product, driven by customer demand and sometimes by product complexity.” (A&D_Optics)

5.2.1.3 *What is the relationship between procurement tactics and procurement maturity?*

Following the above analysis on procurement ‘strategies’, this section aims to further understand the relationship between procurement maturity and procurement tactics. Thus, it will compare the topics included in the maturity model with the procurement tactics mentioned during the ‘strategy’-related interviews and the procurement strategy documents provided.

Table 41 shows how the different tactics and procurement practices mentioned during the first round of interviews and in the strategy documents relate to the procurement practices mentioned in the maturity model used during the second round of interviews. It demonstrates that all maturity practices were included in the strategy

considerations by at least some of the categories – although some practices were mentioned considerably more often than others and some tactics are not included at all in the maturity model.

For example, strategic planning was considered for all categories, as demonstrated by the fact that they all produced a strategy document, however with varying content (see Section 5.2.1.1 What is a procurement ‘strategy’?). Interviewees also mentioned the requirement to align the category ‘strategy’ across business units and sites and the importance of translating strategies into tangible objectives to ensure the strategy execution is aligned with the strategic intent:

“If you’ve done the strategy properly, you should be able to actually have it written in objectives. And I think that’s a much better way of flowing down the requirement into what people do day to day” (A&D_Capability).

The strategy documents provided alignment with the requirement of a written procurement strategy in the maturity model; however, interviewees disagree with the requirement that this must be known to everyone. Instead, they propose tangible objectives to ensure the correct behaviour:

“We used to make a big thing in the past, and this was very European influenced, about looking at the... We spoke about top-down and bottom-up – and the top-down side, we spent time on, but we’d end up, and we still have them, with all these polished strategy models, lovely bubbles and a chart and everything... but if you stopped someone in procurement, and you asked, do you recognise this, they may struggle, whereas what we have done here, we now have a practice that says, we write our objectives, which people are going to be assessed on every year – as a manager – where we’re sitting with a list of that and check how those objectives cross-reference. And if you’ve done the job properly, you should be able to actually have it written in every part of the objectives. And I think that’s a much better way of flowing down the requirement into what people do day to day.” (A&D_Capability)

Table 41: Overview of procurement tactics and procurement maturity comparison

Maturity area	Maturity topic	A&D_Function	A&D_Capability	A&D_Indirect	A&D_Radar	A&D_Laser	A&D_Mechanical	A&D_Optics
Strategy and planning	Strategic planning	- Existence of procurement strategy - Translate strategy into objectives	Translate strategy into objectives	- Existence of procurement strategy - Translate strategy into objectives	Existence of procurement strategy	Existence of procurement strategy	- Existence of procurement strategy - Requirement to align strategies across categories	Existence of procurement strategy
	Strategic alignment	Alignment with company strategy		Alignment with company strategy		Alignment with company strategy	Alignment with company strategy	Alignment with company strategy
Organisation and controlling	Organisational structure	Balance between vendor and project focus		Balance between vendor and project focus	Balance between vendor and project focus	Balance between vendor and project focus	Balance between vendor and project focus	
	Procurement process	- Process documentation and governance - Improve process efficiency	Process documentation and governance	Improve process efficiency	Process documentation and governance	Process documentation and governance	Lead time is more important for slower parts	- Process documentation and governance - Improve process efficiency
	Controlling / Performance Measurement	- KPIs should reflect company requirements - Cost savings	KPIs should reflect company requirements	Cost savings	- Cost is always important - On-time delivery is more important if no safety stock - Lead time is more important for slower parts	- KPIs should reflect company requirements - Cost is always important - Cost savings		Cost savings
	Internal integration	- Managing the engineering relationship - IPT/category relationship		Working with other functions for supplier selection	- Working with other functions for supplier selection - IPT/category relationship	- Working with other functions for supplier selection - IPT/category relationship	- Working with other functions for supplier selection - IPT/category relationship	IPT/category relationship
Status and involvement	Status and Recognition	Increase procurement status						
	Involvement	Early procurement involvement in projects			Early procurement involvement in projects	Early procurement involvement in projects		

Maturity area	Maturity topic	A&D_Function	A&D_Capability	A&D_Indirect	A&D_Radar	A&D_Laser	A&D_Mechanical	A&D_Optics
Sourcing and supply base management	Supplier selection			Select suppliers	- Defined process for supplier selection - Selection parameters can differ by project - Select suppliers	- Defined process for supplier selection - Selection parameters can differ by project		
	Supply base management	- Single source vs. multiple sources - Market (capability) classification	Market research	- Single source vs. multiple sources - Make or buy	- Single source vs. multiple sources - Make or buy - Market research - Market (capability) classification - Drive competition	- Single source vs. multiple sources - Make or buy - Market research - Market (capability) classification	- Market (capability) classification - Set up supply base - Drive more competition	- Single source vs. multiple sources - Make or buy - Market research - Set up supply base
	Global sourcing	Offset	Offset		Offset	Offset		- Offset - Lower cost option
	Risk management	Supply chain mapping			Risk register	Risk register	- Risk register - Be proactive on critical issues	- Risk register - Be proactive on critical issues
Supplier management	Supplier relationship	- Supplier enabled innovation - Share forecast with suppliers	Supplier to support difficult customer requirements		Importance of supplier relationships	- Supplier enabled innovation - Depending on project lifecycle	- Supplier enabled innovation - Share forecast with suppliers	Importance of supplier relationships
	Supplier development		Support suppliers when they have issues			Support suppliers when they have issues		Support suppliers when they have issues
	Supplier evaluation	Regular performance reviews for suppliers	Single system ensures common measures for performance	Regular performance reviews for suppliers	Regular performance reviews for suppliers	Regular performance reviews for suppliers	Regular performance reviews for suppliers	
Skills	Existing skills	- Technical skills - Leadership skills						
	Training and development	Training plan						
IT	IT systems	Single system	Single system		Single system	Single system	IT system to fulfil requirements	
Other	Commercials / contract management		Standard contracts for vendors	Standard contracts for vendors	Standard contracts for vendors	- Standard contracts for vendors - Creative elements	- Standard contracts for vendors - Creative elements	Standard contracts for vendors

5.2.1.4 What contingencies influence category tactics?

This section will present results related to the first hypothesis developed from the literature, which posits that procurement and category tactics are dependent on contextual contingencies. This hypothesis is supported if the interviewees indeed identify contextual contingencies as an influencing factor for their category tactics.

Interviewees mentioned several contingencies that influence the tactics they selected, which will be reviewed in this section. For instance, A&D_Function described how he used lessons learnt from recent years and overall business requirements to define his procurement 'strategy'.

Table 42 highlights that interviewees recognise several contingencies to their tactics, which can be grouped into top-down alignment, external contingencies, internal contingencies, product- or supply-related contingencies and other contingencies.

Table 42: Overview of contingencies to procurement tactics

Category	Top-down alignment	External contingencies	Internal contingencies	Product/supply contingencies	Other
Function	• Business requirements • Business strategy	• End-customer requirements • Regulatory requirements		• Product complexity • Supply base structure	• Lessons learnt • Demand predictability
Indirect	• Targets provided • Business strategy • Functional strategy	• End-customer requirements • Currency fluctuation • Regulatory requirements	• Stakeholder expectations • Risk mitigation • Security • Budget	• Range • Product value • Product complexity • Supplier power	• Project lifecycle • Time pressure • Health impact
Radar	<i>Not mentioned</i>	• End-customer requirements • Regulatory requirements	• Engineering requirements	• Product value • Supplier motivation • Supplier capacity • Supplier capability • Lead times	• Project lifecycle
Laser	• Business requirements	• End-customer requirements • Regulatory requirements	• Engineering requirements • Production requirements	• Range • Product complexity • Supply base structure	<i>Not mentioned</i>
Mechanicals	• Business requirements	• Regulatory requirements	• Engineering requirements	• Product complexity • Supply base structure • Supplier capability • Lead times	• Project lifecycle

Category	Top-down alignment	External contingencies	Internal contingencies	Product/supply contingencies	Other
Optics	• Business strategy • Functional strategy • Business requirements	• End-customer requirements • Competition	• Engineering requirements	• Product value • Product complexity • Supply base structure • Supplier capability	<i>Not mentioned</i>

However, not all interviewees recognise the same contingencies; whilst most mention some notion of top-down alignment, the detail of what they align to differs between categories. Most frequently mentioned were the business requirements and the business or functional strategy; however, Indirect also mentioned targets provided, especially “the cost challenges and the efficiency challenges” (A&D_Indirect). A&D_Radar did not mention any top-down alignment contingencies, which could mean that they are not as important in these projects or could equally be driven by the fact that these were not on the top of the respondent’s mind at the time of the interview. Whilst all of the contingencies mentioned in this area are slightly different, they refer to a similar notion: the requirement to support the overall business direction (strategic alignment).

All interviewees mentioned some form of external contingencies, most frequently the end-customer requirements or regulatory requirements. This is in line with the business context:

“I think we’re a project management company. [...] customers pay us to project manage our products” (A&D_Function)

Currency fluctuations and competitors are also mentioned as contingencies influencing the selection of procurement tactics.

Similarly to external contingencies, internal contingencies are mentioned by all interviewees. These include a number of different factors, most frequently expectations of stakeholders, including engineering and production requirements. However, the list also includes the company culture (A&D_Function), risk mitigation, security concerns and the budget (A&D_Indirect).

All interviewees mention multiple product and supply contingencies. Product characteristics include the product range, value or complexity. Supply-related contingencies most frequently include supplier capability, lead times, supplier capacity and the supply base structure, but also the supplier power (A&D_Indirect).

Finally, some interviewees also mentioned other requirements, especially the project lifecycle (A&D_Indirect, A&D_Radar, A&D_Mechanical). A&D_Indirect also mentioned time pressure and health impact, and A&D_Function mentioned lessons learnt.

Whilst demonstrating that there are considerable differences between interviewees (and thus categories), it is important to note that interviewees may not mention contingencies for two reasons: they could either be less important for their procurement tactics, or they could just not have thought of them at the time of the interview.

5.2.1.5 *Contingencies to procurement maturity: Maturity model review by topic*

The above analysis highlights that procurement tactics are comparable to maturity topics. The existence of contingencies to procurement tactics indicates that procurement maturity might be directly related to these contingencies.

This section will review the implications of procurement managers' comments around procurement tactics and maturity, focusing on the contextual contingencies that define whether a topic of content element is important to a specific category or product, considering contextual contingencies both to procurement maturity and to procurement tactics.

This section will refer to the analysis in Section 5.2.1.3 (What is the relationship between procurement tactics and procurement maturity?), but also include additional comments made during the maturity-related interviews. It will also include the analysis of contingencies to procurement maturity (see detailed tables in each section).

Note: as this section refers to Section 5.2.1.3 it will be duplicating findings to some extent – therefore, in future cases, this section will not exist anymore (see methodology updates after pilot case).

This remainder of this section analyses how the comments around contextual contingencies influence the individual topics in a maturity model.

For the maturity topic strategic planning (in maturity area 'Strategy and Planning'), interviewees agree on the importance of defining a 'strategy', as:

"Every category – whether it's an IPT or a commodity – should be able to describe their long-term strategy. It doesn't equal the corporate strategy, and it doesn't equal integrating procurement excellence, but they should be able to find their connection in there..." (A&D_Function, supported by A&D_Capability, A&D_Indirect and A&D_Optics).

Interviewees did however stress that there are some contingencies to this (see Table 43). The table shows the aspect of Strategic planning that is influenced by the contingency, the type of relationship and the direction of the relationship. For example, more critical products result in a higher requirement to create long-term plans. A&D_Optics explain for example, that strategies focus on the 80% most critical products – even though ‘critical’ may mean different things:

“It’s hard to tell on that, is it 80% by value, volume, difficulty or risk mitigation – most measures would be on value or volume, and we’re probably well into that. In terms of risk and the effort involved we’re probably not, because that’s the bit where we focus the strategies on and most of the work that we do within our team.” (A&D_Optics)

A&D_Radar adds that product criticality tends to be higher in IPTs, especially at the beginning, when the risks aren’t known yet. Their comments are supported by the procurement strategies provided by A&D_Mechanical and A&D_Laser 1.

Table 43: Contingencies to strategic planning

Influenced aspect	Contingency	Relationship type	Relationship direction	References A&D
Create long-term plan	Product criticality	Requirement	Higher	A&D_Radar, A&D_Laser 1, A&D_Mechanical, A&D_Optics
			Lower	
	Product standardisation	Requirement	Higher	A&D_Function, A&D_Laser 1
			Lower	A&D_Function, A&D_Radar
Create & execute long-term plan	Ability to forecast/standardisation	Ability to achieve	Higher	A&D_Capability
			Lower	A&D_Function, A&D_Laser 2, A&D_Mechanical, A&D_Optics
	Indirect categories	Ability to achieve	Higher	A&D_Function, A&D_Capability
			Lower	A&D_Capability, A&D_Radar

Along very similar lines, A&D_Function, A&D_Laser 1 and A&D Radar explain that the creation of a long-term plan is also more important for more standardised products. As A&D_Function explains: “Should it be second nature for Optics and Mechanical [i.e. the central categories] to say in five minutes or less to give an elevator lift – they should be able to tell you. And then they should use it, 90% of the time.” Whereas on the other hand, things are different for IPTs:

“If it isn’t common then it doesn’t need a category strategy – and to some degree that’s led by the IPT itself” (A&D_Function)

This is supported by A&D_Laser 1’s long term plan and A&D_Radar’s difficulty in defining a long-term plan due to the high level of customisation in their project.

Any strategy needs to be balanced against short-term project requirements, especially in the IPTs:

“It’s a constant battle to get the balance right between being able to focus on your category strategy, which is important for the business, and satisfying the demand of all of the projects” (A&D_Laser_2, supported by A&D_Capability, A&D_Radar)

Strategies may therefore require different levels of rigidity in their execution – where stable, forecastable categories should focus on the long-term plan, with clear actions and objectives, more operational categories (projects) focus on project management and customer delivery. For instance, A&D_Capability explained:

“You’re working within a category and you’re day to day in it, you’re placing orders, you’re managing suppliers, and you’re in it. So the Indirect guys, from a strategy point of view, they’ll be able to articulate their strategies much more clearly. I think the Direct guys, they just lose it a little bit – it’s not that they’ve forgotten about it, they just become immersed in supplier management.”

Along similar lines, A&D_Function also explains why Indirect categories are more able to create and execute long-term plans:

“What’s also different for Indirect is it’s about long-term deals and the ability to forecast and to aggregate their overhead spend is maths – in the direct side, [...] the probability that we achieve what we predicted at the beginning of the year is not great. [...] Forecasting in Indirect land is much more straightforward, and that then becomes core to your strategy.”

This analysis demonstrates that interviewees mentioned contingencies to all the topics included in the maturity model, indicating that category tactics are indeed influenced by contextual contingencies. However, in contrast to the initial Proposition 1, maturity topics are influenced by more than just the category or procurement strategy. Instead, a number of different contingencies are included in the analysis, such as the product criticality or the supplier relationship.

5.2.1.6 *RQ1 Summary: Multiple contextual contingencies to procurement maturity*

The section summarised how procurement managers define their procurement and category strategies in order to answer research question 1 (How do procurement managers achieve strategic alignment?). The section started with an analysis on how procurement managers define procurement ‘strategies’, followed by a comparison of procurement ‘strategies’ with procurement maturity topics. It concluded with an analysis of contextual contingencies to procurement maturity.

It demonstrated that the procurement and category strategies reviewed focus on operational delivery, such as quality or on-time delivery, or initiatives to improve these operational KPIs (Procurement Plan and Objectives 2017 onwards). Only the functional procurement strategy additionally includes the organisational set-up, which is defined in order to improve customer service and differentiate A&D from competitors (A&D_Function, Procurement Plan and Objectives 2017 onwards). In contrast, the category strategies focus solely on operational aspects, such as a category background, operational risks or a demand forecast. This is supported by the category priorities, focusing on operational aspects, such as quality, cost and delivery.

It is also noteworthy that it was a conscious process for A&D to move away from formal procurement strategies towards more operationalised objectives:

“A number of years ago, we looked at a slightly different approach when it came to strategy, and we worked with a different approach to acting it. And we made that big thing, where we tried to mobilise a procurement strategy every year and even capture that, how we did it – and we dropped it, we went away from that. Because [...] it got to the stage where, irrespective of how your organisation changes, we have a strong way of working. And every year we expect that we have a set of objectives. We know that we will tweak them based on what the business requires from us. [...] So, rather than having a standalone strategy document, I think we have a practice and behaviour, which I think is probably more important in terms of being effective for the business.” (A&D_Capability)

The analysis also raises the question of whether these category tactics are strategic enough to drive maturity profiles. Some of the tactics mentioned include elements that are very similar to the topics in a maturity model, such as Radar’s risk register (risk management) or Mechanical’s target to increase competition (supplier selection). Indeed, most of the mentioned tactics could be classified into one of the topics included in maturity models, albeit some tactics go beyond the topics included in maturity models, such as the inclusion of make or buy decisions in the supply chain design.

The section also showed several contingencies to procurement tactics, including top-down alignment, internal, external, product and supply-related contingencies as well as other, currently unclassified, contingencies. Whilst this provides some support for Proposition 1, the similarity between procurement tactics and procurement maturity topics raises the question on how these contingencies are related to the maturity model.

This was analysed in the final sub-section, which reviewed the maturity model against different contingencies mentioned by category managers. The analysis highlights that

all maturity model topics are subject to some contingencies, indicating a strong and direct relationship between contextual contingencies and procurement maturity. Moreover, it can be seen that many different contingencies were mentioned by category managers, not, as initially assumed, only the procurement or category strategy. These additional contingencies were identified at several units of analysis:

- Product (such as product complexity or product criticality)
- Supplier (such as supplier relationship or supplier size)
- Category (such as whether it is a direct or indirect category)
- Company (such as cost pressure)
- Industry (such as regulatory requirements)

Overall, this section concludes that what is referred to as category strategies by category managers is akin to category tactics. Going forward, the term 'tactics' will be used where possible to avoid confusion; in order to align with practitioners' language and to distinguish between those tactics that are considered strategic by category managers, the term 'strategy' may still be used in this document. However, where this research refers to category 'strategies', it refers to the type of tactics identified above.

This section also indicates that the relationship between contextual contingencies and procurement maturity is very complex and impacts the alignment process for category managers. It demonstrates that procurement strategic alignment is not a linear process, as initially assumed after the literature review. This could be driven by the fact that the category 'strategy' does not provide the strategic direction expected, but instead appears to be more like maturity tactics.

5.2.2 RQ2: How is procurement maturity conceptualised by procurement managers?

To answer this question, the hypotheses developed from the literature review will be analysed. The first hypothesis (P1: Procurement and category strategies are dependent on contextual contingencies) has been reviewed in the previous section. Hence, the following section will focus on the remaining hypotheses:

- H2: The most appropriate measurement type for procurement maturity is the maturity profile, not an aggregate maturity measure.
- H3: The most appropriate unit of analysis for procurement maturity is the procurement category.

The discussion of these hypotheses is based on maturity assessments conducted with category managers. These will be provided in the following section, before the implications of these assessments on the hypotheses are discussed.

5.2.2.1 *Maturity assessments*

This section will summarise the maturity assessments per category. In the following assessments, the 'x' demonstrates the current maturity stage, the 'o' represents the target maturity level and the pink area depicts the maturity gap. The current maturity profile is based on documentary evidence to establish the current maturity profile (e.g. strategy documents, process descriptions etc.), but uses category managers' self-assessments to nuance the assessments (e.g. to establish to what extent defined processes are followed). As no documentary evidence is available for target maturity assessments, these were based solely on category managers' self-assessments.

In the following sections, any instances where the target maturity score set by interviewees is lower than the current maturity score set through documentary evidence will not be discussed, as this is driven by a higher documentary score than the original self-assessed score. Usually this means that interviewees did not see a requirement to considerably increase their self-assessed maturity, but documents indicated that the actual (current) maturity level was higher than interviewees indicated.

For each category, a detailed maturity assessment has been conducted. The Radar maturity assessment (see Figure 23) is based on documentary evidence as well as the maturity assessment provided by A&D_Radar.

Radar scores in the middle ranges in both strategic planning and strategic alignment, due to the project-focused set-up. This results in project- rather than category-focused strategies, which are primarily aligned to customer requirements instead of the company strategy (Procurement Plan example):

“It’s an interesting phrase “The strategy is executed across the business”. My strategy on this project will be different from what other IPTs are doing because of the very nature of the product again.” (A&D_Radar)

Nonetheless, A&D_Radar sets a relatively high requirement for both topics (level 3.5).

A&D_Radar					
Area	Topic	1	2	3	4
Strategy and planning	Strategic planning			X	O
	Strategic alignment			X	O
Organisation and controlling	Organisational structure		X		O
	Purchasing process				XO
	Controlling / Perf Measmt			X	O
	Internal integration				X
Status and involvement	Status and Recognition				XO
	Involvement				XO
Sourcing and supply base management	Supplier selection			XO	
	Supply base mgmt			XO	
	Global sourcing			XO	
	Risk management		X	O	
	Supplier relationship			X	O
Supplier management	Supplier development			XO	
	Supplier evaluation			XO	
Skills	Existing skills			X	O
	Training and developm't			X	O
IT	IT systems		X		O

Figure 23: A&D_Radar maturity assessment

Scores in organisation and controlling vary considerably. Organisational structure and controlling and performance measurement are very low, due to the high level of decentralisation in the projects and the strong focus on operational KPIs, such as on-time delivery and cost (Individual KPIs example, Personal KPIs overview, Laser team KPIs overview, Personal KPIs overview, Mechanicals team KPIs overview). However, procurement process and internal integration score very high, due to the high level of process documentation (Procurement Processes, Supplier selection process guide) and the very high level of integration in the projects.

Radar also scores very high in status and involvement, again due to the close collaboration with stakeholders in the projects:

“I think the IPTs try and get involved with other functions to get ideas, same as other functions try to get involved with procurement, because at the end of the day, we’re all working on the same project for the same goal. It’s not like a company director says I must work with operations on this specific task, this happened organically, and I feel that sometimes that gets better results because the person I’m speaking to tries to understand the same objective I’m trying to achieve, so you come together quite quickly, rather than a corporate thing, which can slow things down.” (A&D_Radar)

In sourcing and supply base management, Radar scores relatively high across the board, with only a slightly lower score in risk management. This is based on the high level of detail in the procurement plan defined for the project, in which suppliers are identified very early and systematically, with a very good visibility of the global supply base (Procurement Plan example, Supplier selection process). The only one scoring

slightly lower is risk management, since it is very focused on the first tier supply base. However, this is a key strategic initiative for the company to improve:

“I would say we’re probably at stage 2, we do focus a lot on tier one suppliers... There’s a supply chain mapping going on, when we’ll get some output from that, we’ll start looking at the level below that.” (A&D_Radar)

The current profile aligns relatively well with the target profile in this area.

In supplier management, Radar scores quite high across all three areas, again due to the high focus on supplier relationships (Supplier Scorecard example, Supplier Demonstrated Performance). Radar is the only category that also engages very frequently with suppliers to discuss performance proactively (Procurement Plan example, A&D_Radar). However, the target maturity levels vary considerably across this area, since A&D_Radar puts a higher focus on relationships.

In skills, the current level is relatively high for existing skills and training, with A&D_Radar setting the requirement at very high, especially for training:

“I suppose we could argue that we would like it to be four, because of the amount of governance and due diligence that we’re asked to employ all the time now. And it’s becoming more and more burdensome... More focus on that. And we can’t ignore it, because it’s legislation, audits and that. So I think we really should be aiming to be in a four, even in this stage. For the existing skills, I would leave it in the middle (between 3 and 4), but with the training we definitely should be a four.” (A&D_Radar)

Finally, in systems the current level is quite low due to the systems limitations; however, A&D_Radar sets the requirement as very high, arguing that a business of their size really should have a well-functioning IT solution (A&D_Radar).

In general, both current and target maturity levels differ considerably between different topics and areas.

5.2.2.2 How should maturity be measured?

The second hypothesis compares different measurement profiles used for procurement maturity, the maturity profile and aggregate maturity measures. It proposes that a maturity profile would be more meaningful than an aggregate measure, as it conveys additional and important detail.

To test this hypothesis, maturity profiles were compared. It can be seen that in all categories there are immense differences between topics – where some topics have a much higher score, others score considerably lower, often with good reasons. For example, the Mechanicals category scores level 3.5 in Organisational structure, which

is demonstrated by the clearly described structure in the procurement plan and the highly centralised procurement (A&D Central Mechanical Strategy). There is also some anecdotal evidence of continuous improvement (i.e. matrix structure, A&D_Mechanical). The same category scores only level 1 in global sourcing, due to the high reliance on local suppliers (A&D_Mechanical).

Moreover, all category assessments show differences in the current and target maturity profile, with gaps that again differ by topic. In fact, these gaps range from 0 points to 4.0 points – using almost the whole of the available range and highlighting potential areas for improvement.

The maturity assessments therefore demonstrate that clear profiles exist in categories' maturity assessments, indicating that a profile conveys important information, both regarding the current and the target maturity level.

5.2.2.3 At what level should maturity be measured?

This hypothesis relies on the assumption that there are differences between procurement categories. This would result in a requirement to measure procurement maturity at a category level, to be able to provide insight for each of the different category requirements.

This hypothesis was tested by comparing the current and target maturity profiles between categories. The comparison of the individual maturity assessments also demonstrates the different assessments provided for current and target maturity profiles. It shows that the assessments considerably differ between categories. This is especially obvious by comparing the Organisation and controlling area across categories: Whereas central categories such as Mechanicals and Optics score very high in the organisational structure and lower in the integration with other functions, the project-based categories (Radar and Laser) score low in organisational structure and high in integration – exactly the other way around. This is by design, as project-based categories are decentralised exactly to be close to other functions.

Whilst the current maturity assessments show a wide variation in defined profiles, the target maturity profiles are much more similar, generally varying only between levels 3 and 4. On the one hand this might provide some support to the original premise of maturity models, as procurement managers generally aim to achieve higher maturity. However, the maturity assessments also showed that the target maturity profiles vary

across procurement categories, mostly with clear rationales provided by the category managers. For instance, A&D_Mechanical explained that his target maturity score for global sourcing was not required to be as high as it is for other categories, as the low quantities and specialist requirements don't support a business case for global sourcing. At the same time, it has to be noted that A&D_Function disagrees with this assessment, as the UK supply base was a strategic decision in itself:

"It's strategic for us to have Machining sourced locally. It's actually part of being Brexit-proof. We've strategically and tactically kept SMEs on the book, because actually it's quite useful to have it. We have established to put Machining into other countries, in India, but it's just not the right thing to do. It's just sometimes it's important to remind people that we have an international sourcing strategy for Machining and that's to have UK SMEs. And I can't work out how to bridge that gap sometimes – maybe it's just step back from the question you're asked, and not just focus on "all my suppliers are local, so we don't have an international strategy"." (A&D_Function)

Finally, interviewees clearly mentioned exceptions at the product and supplier level, and even developed 'strategies' for individual products or suppliers:

"Strategy at procurement level is a little more granular than the business one is, and then the strategy for a particular supplier or product will be even more granular." (A&D_Optics)

This raises the question whether the category exceptions identified above are just that – exceptions – and the functional perspective remains accurate, or whether maybe even a lower unit of analysis is required.

5.2.2.4 RQ2 Summary: *Maturity measured as a profile at category level*

This analysis focused on the research question; How is procurement maturity conceptualised by procurement managers?

Hypothesis 2, that the most appropriate measurement type for procurement maturity is the maturity profile, was analysed by comparing the differences between topics within the maturity assessments. All interviewees (functional and category levels) identified differences between topics both for current and target profiles. Whilst the actual profiles differed between categories, all interviewees provided clear rationales for the differences between topics. Moreover, the differences in the current profile were supported by documentary evidence.

Hypothesis 3, that the most appropriate unit of analysis for procurement maturity is the procurement category, was analysed by comparing the maturity profiles across categories. Whilst there were clear differences in the category level current assessments, interviewees also referred to differences at a unit of analysis lower than

the category – such as individual products or suppliers. Moreover, the differences of target profiles were much less pronounced than the differences between current profiles.

5.2.3 Mapping of contingencies' influence on the maturity topics

This section will review the implications of interviewees' commentary regarding the procurement maturity model and provide a comparison of the different units of analysis identified.

The contingencies mapped in section 5.2.1.5 (Contingencies to procurement maturity: Maturity model review by topic) highlight that contingencies have a complex relationship to maturity: Contingencies appear at multiple units of analysis and impact different areas of the maturity model. The analysis enabled the grouping of contingencies, which will provide more clarity on the relationship between contingencies and procurement maturity. Contingencies can be grouped as follows:

Unit of analysis: Product

- Product characteristics (Product criticality, Product complexity, Product standardisation, Product customisation, Ability to forecast/Inability to forecast)
- Service users (Local service requirement, Local users of service (customer/stakeholder relationship))
- Supply base (Changes in market, Market maturity, Size of supply base (large), Size of supply base (small/limited capacity), Small suppliers, Supplier availability (local), Disconnected supply chain)

Unit of analysis: Supplier

- Supplier characteristics (Supplier criticality, Dependence on supplier, Lacking supplier capability, Supplier relationship)

Unit of analysis: Category

- Category characteristics (Direct categories/Indirect categories)
- Stakeholders (Business has clear priorities, Cost pressure, Customer/stakeholder relationship, Customer/stakeholder requirements, Large number of stakeholders, Stakeholders are interested in cooperation, Working with difficult stakeholders, Working with engineering/in a technical area)

Unit of analysis: Company

- Procurement context (IT system capabilities, Organisational complexity, Single IT system)

Unit of analysis: Industry

- Industry characteristics (Geopolitical uncertainty)
- Regulatory requirements (Regulatory requirement, Regulatory requirement - local availability, Regulatory requirement - local supply)

Unit of analysis: Situation

- Individual purchase (Enough time available, New product/supplier, Time pressure/emergency situation)
- Personal situation (Training requirement)

If the analysis above is used to group the influenced maturity aspects by the contingencies that influence them, some additional conclusions can be drawn. This will be highlighted in this section. Table 44 provides an overview of the different contingencies identified in A&D.

Table 44: Mapping of contingencies' influence on the maturity topics based on A&D*(numbers and shading represent the number of interviewees that support the relationship; darker green = more interviewees support relationship)*

Unit of analysis	Contingency type	Contingency	Strategy and planning	Organisation and controlling	Status and involvement	Sourcing and supply base management	Supplier management	Skills	IT	Other	Total
Product	Product characteristics	Product criticality	5	3	4	11	7			6	36
		Product complexity		4			6	1		2	13
		Product standardisation	4	5		4	2		2		17
		Product customisation		9	4	2					15
		Ability to forecast	5							4	9
		Inability to forecast								2	2
		Quality is important					2				2
	Service users	Local service requirement				2					2
	Supply base	Market maturity	1								1
		Size of supply base (large)				9					9
		Size of supply base (small/limited capacity)				4					4
		Supplier availability (local)				1					1
		Disconnected supply chain				2					2
Supplier	Supplier characteristics	Supplier criticality				4	10				14
		Dependence on supplier					4				4
		Lacking supplier capability		3		3	12				18
		Small suppliers				1					1
		Supplier relationship		3					4		7
Category	Category characteristics	Indirect categories	6								6
	Stakeholders	Business has clear priorities	1								1
		Cost pressure		1			2			2	5
		Local users of service (customer/stakeholder relationship)		2							2
		Customer/stakeholder requirements		1			3				4
		Working with difficult stakeholders			3			7			10
		Working with engineering/in a technical area						5			5
Company	Procurement context	IT system capabilities		1							1
		Organisational complexity		2							2
		Single IT system		2			2				4
Industry	Industry characteristics	Geopolitical uncertainty				1					1
	Regulatory requirements	Regulatory requirement		2		5	2	1			10
		Regulatory requirement - local supply				4					4
Situation	Individual purchase	Enough time available				6					6
		New product/supplier				3					3
		Time pressure/emergency situation		1							1
	Personal situation	Training requirement						1			1

5.2.3.1 *Product-level contingencies*

The most frequently mentioned contingency is product criticality and it influences almost every area of the maturity model. Product criticality especially drives strategic planning, better procurement control (e.g. through centralisation, higher process standardisation, or integration), and a higher status requirement, but also a closer supply base and risk management as well as supplier management, through closer relationships and closer evaluation. Product criticality covers any products that are important to the business – typically because of value, volume or risk considerations.

Product complexity and product customisation are somewhat similar contingencies, but with slightly different nuances – and different implications for procurement maturity. Product complexity tends to refer to technical complexity and drive a closer cooperation with other functions and a closer supplier management, mostly through close supplier relationships. Product customisation is somewhat similar, as customised products in A&D also tend to be highly technically complex, but the focus here is on the made-to-order nature of the product, which increases the requirement for early involvement through less centralisation and a higher level in internal integration (i.e. being closer to the project).

The inverse of this is product standardisation, which typically refers to high volume ‘retail type’ products. In spite of the overlap with critical products (high volume), they are different in that these can also be low-value products, such as screws. They tend to drive a higher level of centralisation and global sourcing, as well as supplier consolidation, as higher benefits can be gained.

Similarly to standardisation, but not always the same, a higher ability to forecast enables long-term strategies – and longer contract periods, whereas non-forecastable products require a more flexible set-up.

‘Service users’ refers to those products that have a local service requirement. Typically these tend to be service-focused or have a high level of collaboration or maintenance. They tend to require a local sourcing solution, as a global provider would not be able to offer this local service.

Finally, the supply base is also defined as a product-level contingency, even though it is not strictly a product characteristic. The reason for this definition is that the individual contingencies tend to refer to the availability of suppliers for a specific product or product group. Mostly the contingencies in this cluster tend to impact the supply base

management: The more suppliers that are available, the higher the ability to tender. On the flipside, the smaller the supply base, or the more disconnected the supply chain, the more important are proactive supply base management and risk management.

5.2.3.2 Supplier-level contingencies

Unsurprisingly, supplier-level contingencies primarily drive the requirement for supply base management and supplier relationship management. Generally, more critical suppliers (in value, volume or risk) should be managed more closely, as should less capable suppliers – or those that have issues at a given point. ‘Managing suppliers’ could mean establishing closer, more cooperative relationships, more frequent supplier evaluation or supplier development efforts.

Where small suppliers are sourced for a product, this typically requires more creative risk management to protect the business. This is partially due to the higher risk from small suppliers, but also due to the fact that standard risk management methods don’t always work in the same way.

Finally, in situations where a good supplier relationship is important, it is advisable to look into centralising procurement to ensure a single point of contact for the supplier. It is also less important to have an automated IT system, since the relationship itself is more important than the automation of processes.

5.2.3.3 Category-level contingencies

At the category level, interviewees made an interesting distinction between direct and indirect categories, in that indirect categories have a higher ability to strategically plan and align with the business, whereas direct categories, that are more immersed in operational delivery, sometimes struggle to keep a long-term outlook. However, this was phrased as an ‘ability to achieve’ not as a ‘requirement’, hence it is maybe not a requirement for higher or lower maturity, but a concern for procurement managers to consider in their organisational set-up.

The main influencing contingency at category level, however, is the stakeholder. They can drive the organisational set-up towards decentralisation, where there are local users of a service, or towards centralisation, where the stakeholder relationship is very important. They can sometimes set specific criteria for supplier relationships (e.g. co-creation or collaborative innovation). Most of all, they drive the required procurement

skills level and status. Where procurement has to deal with difficult stakeholders, this often requires a higher status and skillset to manage and challenge stakeholders' views.

5.2.3.4 Company-level contingencies

At company level there are only a few contingencies. Organisational complexity can drive the requirement for process standardisation and for documented interfaces. Existing IT systems on the other hand can drive a requirement to follow system processes, or enable complex performance measurement.

5.2.3.5 Industry-level contingencies

Similarly to company level, there are only a few contingencies at industry level. The most important contingency is the regulatory requirement. For A&D the key concern is in offset requirements, which drive local sourcing requirements. But more general industry requirements can also drive a higher process of standardisation (e.g. following specific sourcing procedures), supply base visibility and product traceability, or even the supplier relationships.

5.2.3.6 Situation-level contingencies

Finally, situation-level contingencies mostly refer to individual purchases, where tendering is only possible if enough time is available – and where, in emergency situations, standard processes cannot always be followed.

5.2.3.7 Summary: Contingencies at different units of analysis

This section set out to provide a comparison of the different units of analysis mentioned by interviewees. It highlighted that contingencies were mentioned at multiple units of analysis, specifically:

- Product level (product characteristics, service users and supply base)
- Supplier level (supplier characteristics)
- Category level (category characteristics and stakeholders)
- Company level (procurement context)
- Industry level (industry characteristics and regulatory requirements)
- Situational level (individual purchase and personal situation)

It also highlighted that these contingencies influence different areas of maturity; where product-level contingencies influence almost all aspects of the maturity model,

supplier-level contingencies focus on sourcing and supply base management and supplier management. Similarly, category-level characteristics (esp. stakeholder characteristics) are the only contingencies to strongly influence skills and industry-level characteristics (esp. regulatory requirements) strongly influence sourcing and supply base management. Company-level and situational contingencies were more sporadic and thus do not demonstrate a clear pattern across the maturity model.

5.3 A&D Case Study discussion

5.3.1 RQ1: How do procurement managers achieve strategic alignment?

5.3.1.1 *Procurement strategic alignment – or procurement contextual contingencies?*

The analysis highlights that category managers aim to align with the company strategy, especially for critical products, but they also consider other contingencies to develop their procurement strategies – or target maturity profiles. Other contingencies were classified into top-down alignment, internal contingencies, external contingencies, product- and supply-related contingencies and other factors. In order to understand how procurement managers select tactics or practices of a maturity model to achieve strategic alignment, the analysis needs to include all contingencies that are considered important by procurement managers. This indicates a requirement to shift the research focus from procurement strategic alignment to procurement contextual contingencies. This aligns with the literature on contingency theory, especially the premise that changes in this contingency factor will, over time, cause changes in the organisational characteristic (Donaldson, 2001).

5.3.1.2 *How are procurement contextual contingencies related to procurement maturity?*

The conceptual model proposed that target maturity profiles could be determined based on category strategies, which in turn would be influenced by contextual contingencies. The analysis highlighted that category 'strategies' are more operational than previously assumed, resembling tactics focused on short-term goals to support operational efficiency targets such as High Product Quality, Dependable Delivery and Low Prices.

The analysis continued by comparing the procurement tactics mentioned during the 'strategy' interviews with topics in the procurement maturity models, identifying clear similarities between maturity topics and the tactics described by procurement managers as well as their 'strategy' documents.

As described above, the analysis supported the importance of contextual contingencies to procurement tactics. In light of the similarity between procurement tactics and procurement maturity practices, this raises the question of how contextual contingencies are linked to procurement maturity.

If tactics are indeed included in maturity models as topics, and the selection of the most appropriate tactics – or maturity topics – is influenced by contextual contingencies, it can be inferred that in contrast to the conceptual model, procurement maturity target profiles are directly influenced by contextual contingencies, thus eliminating category 'strategies' as a link between target maturity profiles and contextual contingencies.

5.3.2 RQ2: How is procurement maturity conceptualised by procurement managers?

This section focuses on the review of the hypotheses underpinning the maturity element of the conceptual model.

5.3.2.1 *How to measure maturity – Profile or aggregate*

Hypothesis 2, that procurement maturity should be measured as a profile was supported by the data. Both the self-assessments of category managers and the document-based assessments showed clear differences between topics, highlighting that additional insight can be gained in comparison to aggregate assessments. Moreover, the contingencies identified to the different maturity topics highlight differences in higher and lower requirements, providing additional support for this hypothesis.

This is a considerable shift from existing literature, which generally focuses on aggregate maturity assessments (e.g. Cousins *et al.*, 2006; Ellram *et al.*, 2002; Paulraj *et al.*, 2006) to assess the link to performance or other business characteristics. The analysis in this study clearly highlights that the profile provides additional and relevant detail that an aggregate measure cannot deliver.

5.3.2.2 *Where to measure maturity – Unit of analysis*

The analysis in section 5.2.2.3 could not provide a definite answer to hypothesis 3, that procurement maturity should be measured at a category level. Whilst the analysis identified some support for the hypothesis to measure a category level, exceptions were also identified for individual products and suppliers. Maturity could therefore be measured at different units of analysis:

- Functional level, with exception management for categories, suppliers, products, etc.
- Category level, aggregating ‘exceptional’ products or suppliers
- A lower organisational level – e.g. product, supplier, customer

The cross-case analysis has provided a discussion of these different units of analysis, indicating that the category level could be an appropriate unit of analysis, as it provides category-level differences as well as a feasible level for data collection and analysis. In contrast, existing literature demonstrates a clear preference for functional-level assessment. Where academic literature considers differences between segments or categories, authors often argue that the lower maturity categories should catch up – they even deem these differences “appropriate for the nature of the commodities that both departments purchase and the cost and operational risk that their supply presents” (Deasy *et al.*, 2014, p. 26):

“The increasing recognition is that a strategic perspective of procurement can have considerable cost and performance benefits for all organizations. The consistent implementation and execution of procurement strategy is of paramount importance. [...] the discovery that procurement strategy and practice are asymmetric across a relatively small organization suggests that this may be a common problem” (Deasy *et al.*, 2014, p. 26)

It can be concluded that the findings of this research are somewhat aligned with existing literature on the current maturity assessments, in that categories can differ in the level of maturity they achieve. However, where academic literature argues for a consistent increase of maturity across categories, this research also suggests differences between categories for the target maturity level, as demonstrated for instance by the different requirements with regard to global sourcing or centralisation. Future cases will provide more clarity on this question.

5.3.3 Impact on the conceptual model

The overarching rationale for this research was supported by the A&D case, i.e. target maturity profiles are not solely driven by achieving ‘best practice’, but depend on several contingencies. However, the findings indicate a requirement to update the conceptual model slightly.

Figure 34 demonstrates the impact of the analysis findings on the conceptual model: The link between firm, procurement and category strategy could not be supported. Instead, contextual contingencies could be linked directly to the target maturity profile. Whilst the measurement of maturity as a current and target profile could be supported from the analysis, future cases will determine whether the category is the correct unit of analysis.

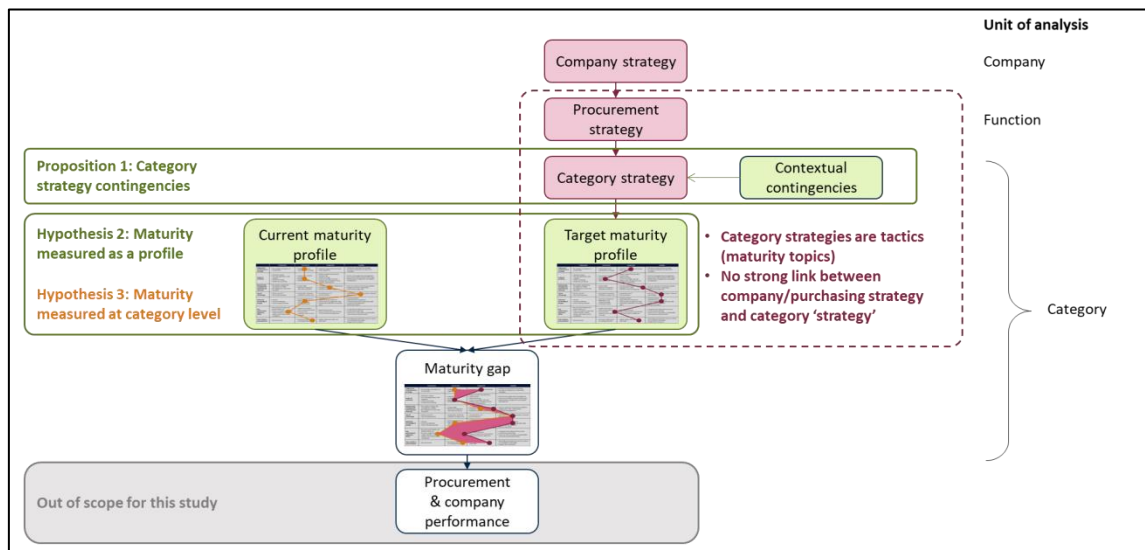


Figure 24: Impact of analysis findings on the conceptual model

Considering the above discussion, the conceptual model is therefore updated to the model demonstrated in Figure 25.

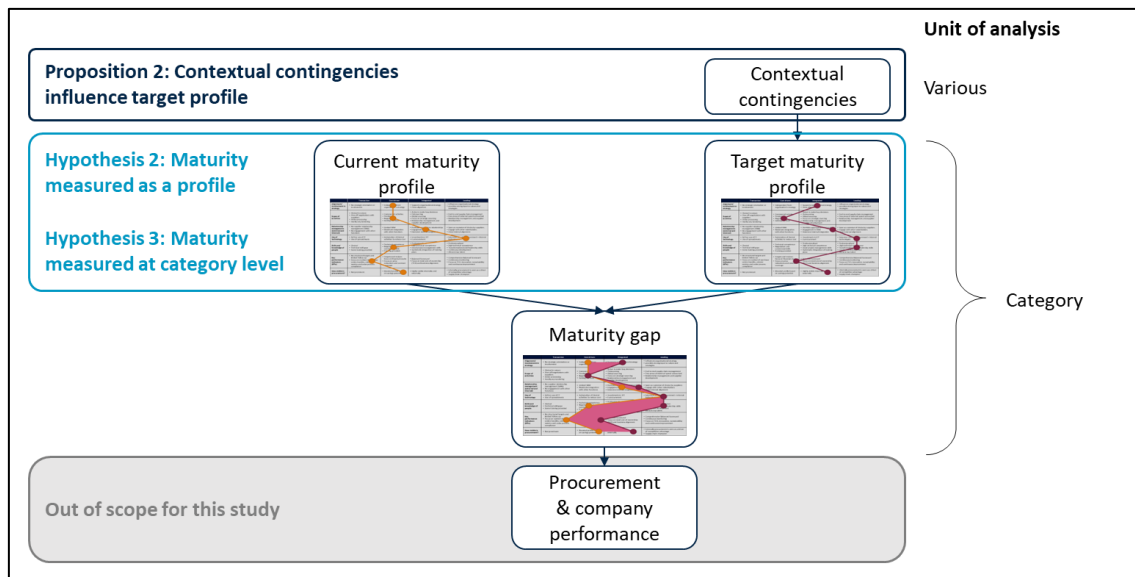


Figure 25: Updated conceptual model

5.3.4 A&D access limitations

A&D was primarily limited by the suboptimal process: A better introduction to the maturity model would have improved this case (see section 3.7).

Moreover, A&D_Laser 1 was not available for the second interview, requiring a different interviewee to step in. This may have increased diversity in findings, but may also have reduced the robustness of findings.

Finally, A&D_Function did not fully participate in the interview process, as A&D_Function was not available for a detailed maturity assessment review. Instead, the interviews focused on providing important context to the company and function.

5.4 Implications for case 2 (WATER) and case 3 (BANK)

As discussed in section 3.7.2 (Case study design adjustment), only minor updates have been made to the case study design after the pilot case; however, the conceptual model has changed slightly. The pilot case A&D has demonstrated that category strategies don't exist as a bridge between procurement (functional) strategy and maturity model topics or tactics. Instead, category strategies are much like a maturity model itself and are directly influenced by many contingencies, of which the company direction is only one.

As the comparison between category strategies and tactics (maturity topics) duplicates the contingency analysis, the following cases will not revisit this analysis. Instead, they will provide only a short overview of the procurement strategies provided, to confirm that a similar phenomenon is taking place, and then move on directly to the maturity contingency review and RQ2 (How is procurement maturity conceptualised by procurement managers?).

6 Results Case 2: WATER

6.1 WATER Case study background

6.1.1 Water utilities industry

The water utilities industry includes all services around the collection, treatment and distribution of clean water and wastewater. In the UK, water utilities services are performed by regional monopolies, which are regulated by the Water Services Regulation Authority (Ofwat) (MarketLine, 2015).

Water utilities are one of the oldest industries in the world. The industry is impacted by both socio-economic developments (population growth, increasing urbanisation, increasing wealth) which have increased the overall demand for water, as well as environmental developments such as heat waves, draughts or the long-term implications of global warming (MarketLine, 2018).

The market volume and value have been relatively stable in the past with only minor growth and are expected to continue growing at a similar pace (1.5% p.a. volume, 1.8% p.a. value).

The water services industry in the UK was privatised in 1989, at which point Ofwat was created to protect customers and ensure the stability of the water system, both in the physical supply and in the financial stability of the water companies. To protect customers, Ofwat sets 5-yearly price limits to the water services companies (National Audit Office, 2015).

Water utilities companies supply a large number of customers, including private households, businesses and the public sector. Customers have limited buying power due to the regional monopolisation of water services. The largest customers in the UK are industrial (73%), followed by domestic (23%) and agriculture (4%) (MarketLine, 2018).

Most products and services sourced by water utilities companies are relatively generic, ensuring a large potential supply base. However, the high degree of regulation around the procurement process, quality standards and environmental implications limits the supply base. This results in a strong dependence on a small number of large and suitable suppliers (MarketLine, 2018).

6.1.2 Case company profiles: WATER

WATER is a water utilities company providing clean water and wastewater services to around 6m people in the UK. The company achieves an annual revenue of over £2bn and has over 5,000 employees (MarketLine, 2015; WATER, 2018).

WATER's strategy focuses on three core areas: Smart business, smart communities and smart environment:

- Smart business: Resilient business; investing for tomorrow; fair charges, fair returns; our people: healthier, happier, safer
- Smart communities: Positive impact on communities; safe, clean water; delighted customers
- Smart environment: A smaller footprint; a flourishing environment; supply meets demand

This strategy is supported by a proactive and caring company culture, which underpins the social and environmental aspirations set out by the company (WATER, 2018).

6.1.2.1 Procurement: Functional organisation

WATER's procurement is split into Direct and Indirect procurement, with Direct being further split into strategic sourcing and framework management. This case study focuses on the Direct strategic sourcing department, covering five different categories. These categories differ in product complexity, annual spend, product/service orientation and the supply base structure, as indicated in Table 45.

Table 45: Selected categories comparison (based on interviews)

	Description	Product vs. service	Product value	Product complexity	Supply base (number of suppliers)	Typical contract length
Chemicals	Gases, chlorines, neutralisers, coagulants, salts, flocculants	Products	£18m	High (scientific technicality)	Small	2-3 years
Tankering & Jetting	Tankering vehicles, Tankering services	Mostly service		Medium (peak lopping)	Few that are large enough	5 years
Assets & Instrumentation	Plant rooms, pumps & instrumentation actuators	Mostly products, but with service element (maintenance)	£21M	Depending on product (e.g. actuators are very technically complex)	Range/some products large, some products small	5 years (up to 8 years)

	Description	Product vs. service	Product value	Product complexity	Supply base (number of suppliers)	Typical contract length
Water products	Pipes, valves, manhole covers	Mostly products	£6-7m	Medium	Few that are large enough	5 years (up to 8 years)
Services portfolio	Investment projects, logistics, screens maintenance, cleaning & refurb, stores, pump hire	Service	£200m	High (lot sizing)	Mixed: Few that are large enough	5-8 years

6.2 WATER Case study findings

6.2.1 RQ1: How do category managers achieve strategic alignment?

The pilot case has demonstrated the difficulties in answering this research question due to the lack of ‘strategies’. This issue will be further investigated in this second case, by analysing how category managers define the category ‘strategies’.

This section will summarise category managers’ responses to the question “How would you describe your procurement/category strategy?” and the initial Proposition 1: Category strategies are dependent on contextual contingencies. It will review the answers provided in detail and conclude with a summary and interpretation in the wider context of the research question. For the remainder of this section, it will follow the terminology used in the literature, accepting the use of the terms ‘procurement strategy’ and ‘category strategy’. These will be reviewed at the end of the section.

6.2.1.1 *Procurement ‘strategies’ provided*

First, Table 46 shows the scope and content of the procurement strategies for each of the categories. It demonstrates that the answers provided by procurement managers differ considerably: the overall strategy focuses on cost-efficient end-customer delivery under regulatory and environmental requirements:

“When we talk about delivery to customers it is about delivery to customers efficiently, effectively and cost effectively, but it is also about minimal disruption to the environment as well.” (WATER_Function_2)

Table 46: Procurement strategy scope and content for each of the procurement categories

Category	Procurement strategy scope	Procurement strategy content
WATER_Function_2	Delivering water and wastewater services to customers	• Delivering prices agreed with Ofwat: efficiently and effectively • Minimal disruption to the environment
WATER_Chemicals	Resilience, business need and alignment with business objectives	Resilience, business need and alignment with business objectives: • Identify product groups and market trends • Stakeholder engagement and supplier relationships • Management of considerable changes (e.g. plant shutdown in Europe, innovation to build resilience/avoid shortages for sulphuric acid (and for environmental objectives), chemical dosing)
WATER_Tankering & Jetting	Delivery of products/services to business	Planning to get the best solution for the business • Ideally a win-win for supplier and company • Resilience, ready supply and guaranteed vehicles
WATER_Assets & Instrumentation	Standard processes but with strategy aligned to stakeholders	Standard processes but with strategy aligned to stakeholders • Pumps: market review to include innovative products and reduce prices • Instruments: Consolidate product range bought • Actuators: Speed of correction/maintenance service agreement
WATER_Water Materials	Delivery of products/services to business	Ensure the correct product is available from the correct suppliers • Total Expenditure • Learn from the procurement history • Improve product returns (return on time for refund)
WATER_Services Portfolio	Delivery of products/services to business	Decision on what to tender (scope) and how to break the volume into lots to obtain most interest

However, WATER's category managers don't write category strategies separately from their supplier frameworks. As such, strategies generally refer to those frameworks and focus on the delivery of products, the tendering process, cost reduction and supply chain resilience.

In contrast, the overall functional strategy is strongly linked to the business strategy for the next water investment period AMP7 (2020-2025):

"Any transformation activity within [Procurement] must have a causal link to the AMP7 strategy, the goals that have been set by the business and the strategic measures that will determine success." (WATER_Procurement Strategy 2019)

Focus of the procurement strategy is the digitalisation journey, starting with the implementation of a new Source-to-Pay tool, which is expected to enable higher process efficiency as well as allow category managers to focus on more strategic activities instead of manual workarounds and reporting (WATER_Digitalising procurement 2019).

6.2.1.2 Category-specific priorities

Besides the overall definition of a procurement or strategy, interviewees were also asked about the category priorities they considered important for procurement decisions (see Table 47: Most important priorities at the top, least important at the bottom). The priorities provided in Table 47 are in response to the question “What are the most important priorities in your category?”

Table 47: Key priorities by category provided

Colours indicate different priorities (e.g. green = low prices)

Chemicals		Tankering and Jetting			Portfolio			Portfolio	Water Materials
CSR/Sustainability		Low Prices/Cost savings			Product/Service Innovation			High Product/Service Quality	Technology Leadership
High Product/Service Quality	Low Prices/Cost savings	Dependable Delivery			High Product/Service Quality			Product/Service Innovation	Product/Service Innovation
Dependable Delivery	Process Innovation	Fast Deliveries			CSR/Sustainability	Technology Leadership	Process Innovation	Technology Leadership	High Product/Service Quality
Rapid Volume Changes		High Product/Service Quality			Dependable Delivery			Dependable Delivery	Customisation
Fast Deliveries		Rapid Volume Changes			Low Prices/Cost savings			Low Prices/Cost savings	Dependable Delivery
Product/Service Innovation		CSR/Sustainability			Fast Deliveries			CSR/Sustainability	Fast Deliveries
Technology Leadership		Product/Service Innovation			Customisation			Process Innovation	Low Prices/Cost savings
Customisation		Technology Leadership	Process Innovation	Customisation	Rapid Volume Changes			Customisation	CSR/Sustainability
							Fast Deliveries	Rapid Volume Changes	
							Rapid Volume Changes	Process Innovation	

The answers provided indicate that the priorities differ by category, but more importantly, they also differ from the priorities provided by WATER_Function_2 (cost-efficient delivery and sustainability).

The different priorities show considerable differences between categories. For Chemicals, sustainability is the most important priority, which is driven by the high environmental impact chemicals can have (WATER_Chemicals). On the other hand, Tankering & Jetting focuses on operational efficiency (cost, delivery and quality), which is aligned with the operational character of the category (WATER_Tankering & Jetting).

The portfolios focus on innovation, quality and technology leadership – again aligned with the character of the products in these categories (high service element) (WATER_Assets & Instrumentation, WATER_Services Portfolio). Water materials has similar priorities to the portfolios, driven by the high quality requirement of material that stays in the ground for 10+ years (WATER_Water Materials).

However, there is also some similarity in that dependable delivery and product/service quality are important for all categories.

6.2.1.3 Contingencies to procurement maturity: Maturity model review by topic

This section will indicate how the tactics related to the maturity model practices and the contextual contingencies influence the individual topics in a maturity model.

The remainder of this section analyses how the comments around contextual contingencies influence the individual topics in a maturity model.

Regarding the maturity topic strategic planning (in maturity area ‘Strategy and Planning’), WATER categories currently only write sourcing strategies for individual frameworks, but do not currently write general category strategies and indeed disagree with the general need to have category strategies:

“My portfolio covers disparate areas, such as site equipment, screens maintenance, reservoir inspections, cleaning and refurbishment, pump hire and logistics, so a strategy across the portfolio is not appropriate.” (WATER_Services Portfolio)

However, this is contradicted by WATER_Function: “you should still be able to do it on a portfolio and understand what your market is and what their spend is, what’s under framework, what’s not under framework and who your key stakeholders are – you should be able to know that”. The lack of category strategies could therefore be interpreted as a sign of lower maturity for WATER.

The contingencies identified for strategic planning are demonstrated in Table 48, which shows the aspect of strategy planning that is influenced by the contingency. The contingency indicates the element that influences whether maturity should be higher or lower and the relationship type indicates the direction of the relationship (i.e. higher or lower maturity).

Table 48: Contingencies to strategic planning

Influenced aspect	Contingency	Relationship type	Relationship direction	References WATER
Create long-term plan	Product criticality	Requirement	Higher	WATER_Chemicals, WATER_Tankering & Jetting
			Lower	
	Product standardisation	Requirement	Higher	WATER_Water materials, WATER_Services portfolio
			Lower	WATER_Function_1, WATER_Assets & Instrumentation
Create & execute long-term plan	Ability to forecast	Ability to achieve	Higher	WATER_Tankering & Jetting
			Lower	WATER_Function_2, WATER_Chemicals

Interviewees raised the point that more critical products have a higher requirement for strategic planning, as demonstrated in the example of Chemicals – a key category for WATER with a complex supply market:

“I think it is only because of the criticality of what we’re purchasing that makes chemicals different but at the same time, [...] I would be surprised if other companies weren’t strategically planning chemicals as we are...” (WATER_Chemicals)

Interviewees also mentioned that strategic planning can be beneficial in cases where products can be grouped together (i.e. more standardised products), whereas this is more difficult for very disparate categories:

“My portfolio covers disparate areas, such as site equipment, screens maintenance, reservoir inspections, cleaning and refurbishment, pump hire and logistics, so a strategy across the portfolio is not appropriate.” (WATER_Services Portfolio)

On the other hand, a higher benefit can be gained where products can be grouped together.

Interviewees also raised a further point, that more stable, forecastable categories have a higher requirement for strategic planning, whereas very volatile categories have a higher requirement to be flexible in their approach:

“It is a judgement based on what you know you have done from the previous period and if you know if there is anything else coming up, so by talking to your stakeholders – I’ve got frameworks for example, which are for procurement vehicles and obviously that isn’t a regular every month sort of thing, so it might be one year they purchase six vehicles and another year they might purchase 12 and the next year they might not purchase any.” (WATER_Tankering & Jetting)

The analysis demonstrates that interviewees mentioned contingencies to all the topics included in the maturity model, indicating that category tactics are indeed influenced by contextual contingencies. However, in contrast to the initial Proposition 1, maturity topics are influenced by more than just the category or procurement strategy. Instead,

a number of different contingencies are included in the analysis, such as the product criticality or the supplier relationship.

6.2.1.4 RQ1 Summary: Multiple contextual contingencies to procurement maturity

The section summarised how procurement managers define their procurement and category strategies in order to answer RQ1 (How do procurement managers achieve strategic alignment?). The section started with an analysis on how procurement managers define procurement 'strategies', followed by an analysis of contextual contingencies to procurement maturity.

Category strategies are generally focused on operational delivery. Whilst not formally written, they are focused on ensuring resilience in customer delivery (WATER_Chemicals, WATER_Tankering & Jetting) and alignment to the business or stakeholders (WATER_Chemicals, WATER_Assets & Instrumentation). However, the priorities also demonstrate a strong business, stakeholder and product alignment as demonstrated by the differences between categories.

The analysis also raises the question of whether these category tactics are strategic enough to drive maturity profiles. Indeed, some of the tactics mentioned include elements that are very similar to the topics in a maturity model, such as:

- Chemical's identification of market trends
- Tankering and Jetting's supplier relationship
- Water Material's total cost of ownership consideration
- Asset and Instrumentation's consolidation
- Service Portfolio's tendering

The section also shows several contingencies to procurement tactics, including top-down alignment, internal, external, product- and supply-related contingencies as well as other, currently unclassified, contingencies. Whilst this provides some support for Proposition 1, the similarity between procurement tactics and procurement maturity topics raises the question of how these contingencies are related to the maturity model.

This was analysed in the final sub-section, which reviews the maturity model against different contingencies mentioned by category managers. The analysis highlights that all maturity model topics are subject to some contingencies, indicating a strong and direct relationship between contextual contingencies and procurement maturity.

Moreover, it can be seen that many different contingencies were mentioned by category managers, not, as initially assumed, only the procurement or category strategy. These additional contingencies were identified at several units of analysis:

- Product (such as product complexity or product criticality)
- Supplier (such as supplier relationship or supplier size)
- Category (such as whether it is a direct or indirect category)
- Company (such as cost pressure)
- Industry (such as regulatory requirements)

These contingencies support Proposition 2, that the maturity profile is influenced by contextual contingencies, and re-affirm the profile as being a more appropriate maturity measurement.

This section also indicates that the relationship between contextual contingencies and procurement maturity is very complex and impacts the alignment process for category managers. It demonstrates that procurement strategic alignment is not a linear process, as initially assumed after the literature review. This could be driven by the fact that the category strategy does not provide the strategic direction expected, but instead appears to be more like maturity tactics.

6.2.2 RQ2: How is procurement maturity conceptualised by procurement managers?

The analysis in this section will follow the structure outlined for A&D: First, hypotheses H2 and H3 will be analysed, based on the maturity assessments:

- H2: The most appropriate measurement type for procurement maturity is the maturity profile, not an aggregate maturity measure.
- H3: The most appropriate unit of analysis for procurement maturity is the procurement category.

The discussion of these hypotheses is based on maturity assessments conducted with category managers. These will be provided in the following section, before the implications of these assessments for the hypotheses are discussed.

6.2.2.1 Maturity assessments

In the following assessments, (see Figure 24), the 'x' demonstrates the current maturity stage, the 'o' represents the target maturity level and the pink area depicts the maturity gap. The current maturity profile is based on documentary evidence to

establish the current maturity profile (e.g. strategy documents, process descriptions etc.), but uses category managers' self-assessments to nuance the assessments (e.g. to establish to what extent defined processes are followed). As no documentary evidence is available for target maturity assessments, these were solely based on category managers' self-assessments.

In the following sections, any instances where the target maturity score set by interviewees is lower than the current maturity score set through documentary evidence will not be discussed, as this is driven by a higher documentary score than the original self-assessed score. Usually this means that interviewees did not see a requirement to considerably increase their self-assessed maturity, but documents indicated that the actual (current) maturity level was higher than interviewees indicated.

For each category, a detailed maturity assessment has been conducted. The Chemicals maturity assessment was provided by WATER_Chemicals, with the current profile based on documentary evidence (see Figure 26).

WATER_Chemicals

Area	Topic	1	2	3	4
Strategy and planning	Strategic planning		x		o
	Strategic alignment			x o	
Organisation and controlling	Organisational structure				xo
	Purchasing process		x		o
	Controlling / Perf Measmt		x		o
	Internal integration		x	o	
Status and involvement	Status and Recognition			x	o
	Involvement				xo
Sourcing and supply base management	Supplier selection			xo	
	Supply base mgmt		x		o
	Global sourcing	x			o
	Risk management			x	o
Supplier management	Supplier relationship				xo
	Supplier development	x o			
	Supplier evaluation	x		o	
Skills	Existing skills		x		o
	Training and developm't		x		o
IT	IT systems			x	o

Figure 26: WATER_Chemicals maturity assessment

Chemicals scores in the lower middle range in strategic planning, due to the lack of a formal category strategy. As with other categories in WATER, Chemicals uses the sourcing strategy as a proxy for a category strategy (Sourcing Strategy: Mobile Liming), which is regularly updated but does not include a long-term plan for the category as a

whole. Chemicals scores a little higher in strategic alignment, which also signifies a higher score than WATER as a whole. This is because WATER_Chemicals demonstrated a good knowledge of the company strategy in their interviews. WATER_Chemicals sets the target maturity level as very high in both areas. The target for strategic alignment is a little lower than most other areas due to the split in sourcing and framework management in WATER:

“I would say at this point in time that all staff know the purchasing strategy but how far we are looking into the purchasing stuff, is it just in our team, is it the individuals at those sites ordering the chemicals, so I think I took the view that, that would have been based on individuals or Ops admin placing orders for goods or chemicals and again at the moment, we are definitely not there.” (WATER_Chemicals)

Scores in organisation and controlling vary. Like other categories, Chemicals has a highly centralised organisation (Organisational structure) with well-defined processes (Process manual). However, in the interviews, Chemicals has demonstrated limited knowledge of these processes:

“I would say no – we don’t have a formal documentation process but the individuals in our team are expected to know what they are doing.” (WATER_Chemicals)

In alignment with WATER as a whole, controlling and performance measurement as well as internal integration are also set at a lower maturity level due to the relatively basic performance measures (Benefits form, Benefits Framework) and the lack of integration towards operational sourcing (Organisational structure). WATER_Chemicals sets the requirement for all four areas as very high.

Chemicals has high scores for both status and involvement, due to the high level of involvement in not only sourcing but also overall volume forecasting:

“We generally lead on that – maybe because we know more about what we should be doing in terms of the forecast.” (WATER_Chemicals)

This aligns with the high requirement set by WATER_Chemicals in both those areas.

In sourcing and supply base management scores vary widely. Like WATER overall, Chemicals scores high in supplier selection, due to the very structured and detailed process demonstrated in the sourcing documents (Sourcing Strategy: Mobile Liming). Chemicals scores lower in supply base management, since WATER_Chemicals has shown little activity in proactive management or even the shaping of the supply base. Chemicals, as the only category, has shown some use of global suppliers, as Chemicals are a global market, but the overall procurement focus is still predominantly local, resulting in a low score in this area:

“I don’t actually buy a lot internationally – yes so I think my view here is that when we are carrying out a sourcing strategy, we have from our compliance department, so our chemical assurance – there may be risks involved dependent on where we are buying outside of the EEA – if we to purchased internationally that we had those controls.”
(WATER_Chemicals)

Finally, Chemicals’ sourcing strategy shows a high level of risk management, resulting in a relatively high score in this area (Sourcing Strategy: Mobile Liming). For all of these areas, WATER_Chemicals sets a very high requirement.

In supplier management, Chemicals scores entirely in alignment with WATER overall, with very high scores in supplier relationships and much lower scores in supplier evaluation and supplier development. This demonstrates the strong relationships WATER_Chemicals has built with their suppliers as well as the relatively high level of maturity of suppliers, which it argues requires limited evaluation and development (WATER_Chemicals). In fact, supplier evaluation is primarily based on complaints where suppliers don’t perform:

“It’s just a database where it’s delegated – so an individual can submit a form to say they are not happy with a supplier, this incident happened, a delivery hasn’t happened for example, and then the team will delegate this to me, obviously the notification with the report and then I will just generally carry out the process of sharing that with the supplier.” (WATER_Chemicals)

For supplier relationships, WATER_Chemicals sets a very high target in alignment with the current level, whereas the target maturity score for both supplier evaluation and supplier development is lower.

Chemicals scores a little lower in skills, since they “have no buying qualifications or CIPS qualifications so it’s all experience” (WATER_Chemicals). In the remainder of WATER, training and development also scores relatively low. Nonetheless, WATER_Chemicals sets the requirement as very high for both areas.

A similar picture is offered for IT, where the current level is relatively low, but the requirement is set very high by WATER_Chemicals.

In general, both current and target maturity levels differ considerably between different topics and areas. It can also be observed that WATER_Chemicals generally sets the target maturity level in the very high areas, with some exceptions, where WATER_Chemicals feels that a higher level isn’t required due to the high level of maturity of suppliers (esp. in supplier evaluation, supplier development and supplier selection).

6.2.2.2 *How should maturity be measured?*

This hypothesis postulates that a maturity profile would be more meaningful than an aggregate measure, as it conveys additional and important detail; it is tested by comparing current and target maturity profiles.

First, all maturity assessments show large differences between topics, both in the current as well as the target maturity profile. For instance, strategic planning generally scores very low, but most category managers set a high target maturity level, whereas global sourcing achieves an equally low score, but with a similarly low target level. And there are several topics where WATER categories achieve very high levels of maturity. For example, all categories have high scores in the organisational structure and process, which is supported by the clear role split to ensure centralised procurement and the process documentation (WATER, 2019b, 2019c). At the same time, the categories score low in Global Sourcing, due to the reliance on local suppliers:

“We are at stage one – there is limited international sourcing – we go out through OJEU – we mostly deal with UK and Europe [...] and, as far as I am aware, we don’t have an import/export department so, in terms of shipping and transit documentation and all of that, it could be tricky...” (WATER_Assets & Instrumentation)

These differences are not spurious but driven by the reality of the organisation, which requires local suppliers for high service availability but has a strong focus on centralised category management.

Moreover, interviewees identified gaps between the current and target maturity profile ranging from 0.5 points to 4.2 points – using almost the whole of the available range and highlighting potential areas for improvement.

These differences, both within each profile but also between the current and target maturity profiles, indicate that profiles in categories’ maturity assessments, rather than single aggregate level, convey additional information, thus supporting hypothesis 2.

6.2.2.3 *At what unit of analysis should maturity be measured?*

Hypothesis 3 states that procurement maturity should be measured at category level. This hypothesis would be supported, if there are considerable differences between categories and the measurement of procurement maturity would provide more insight at category than at functional level.

The above analysis demonstrates that whilst there are many topics that are similar across categories, such as the organisational structure, there are also clear differences between categories. This can be seen from the comparison of scores in strategic alignment, where Chemicals and Assets & Instrumentation demonstrate a very good knowledge of the company strategy and also include this in their sourcing strategies, whereas other categories generally show limited knowledge or consideration of the same. Another good example is that most categories have a strong focus on supplier relationships, resulting in lower scores in supplier development and evaluation. However, Tankering & Jetting and Water materials, the two more operational categories, have both started developing supplier evaluation approaches, whilst focusing a little less on supplier relationships.

However, these differences are more prominent in the current maturity profiles. The target maturity profiles are much more similar, generally varying only between levels 3 and 4. This might provide some support to the academic premise of utilising maturity models as a functional-level tool to generally increase maturity. However, there are also strong variations in the target maturity profiles across categories. Moreover, some individuality can also be observed in this area: most category managers agree that for topics such as global sourcing and supplier development, a lower target maturity level is sufficient. This assessment can be supported by the case context: a company like WATER, requiring a high level of service, might well be better served by local suppliers. Similarly, it can be argued that a small company like WATER can offer little in the way of supplier development to – often very large – supplier companies.

6.2.2.4 RQ2 Summary: Maturity measured as a profile at category level

This analysis focused on the research question: How is procurement maturity conceptualised by procurement managers?, as well as hypotheses 2 and 3.

Hypothesis 2, that the most appropriate measurement type for procurement maturity is the maturity profile, was analysed by comparing the differences between topics within the maturity assessments. All interviewees (functional and category levels) identified differences between topics, both for current and target profiles. Whilst the actual profiles differed between categories, all interviewees provided clear rationales for the differences between topics. Moreover, the differences (at least in the current profile) were supported by documentary evidence.

Hypothesis 3, that the most appropriate unit of analysis for procurement maturity is the procurement category, was analysed by comparing the maturity profiles across categories. Whilst there were clear differences in the current assessments, the differences in target profiles were much less pronounced than the differences between current profiles.

6.2.3 Mapping of contingencies' influence on the maturity topics

This section will review the implications of interviewees' commentary regarding the procurement maturity model and provide a comparison of the different units of analysis identified.

The contingencies mapped in Section 6.2.1.3 (Contingencies to procurement maturity: Maturity model review by topic) highlight that contingencies have a complex relationship to maturity; contingencies appear at multiple units of analysis and impact different areas of the maturity model. The analysis enabled the grouping of contingencies, which will provide more clarity on the relationship between contingencies and procurement maturity. Contingencies can be grouped as follows (same grouping as A&D):

Unit of analysis: Product

- Product characteristics (Product criticality, Product complexity, Product standardisation, Product customisation, Ability to forecast/Inability to forecast)
- Service users (Local service requirement, Local users of service (customer/stakeholder relationship))
- Supply base (Changes in market, Market maturity, Size of supply base (large), Size of supply base (small/limited capacity), Small suppliers, Supplier availability (local), Disconnected supply chain)

Unit of analysis: Supplier

- Supplier characteristics (Supplier criticality, Dependence on supplier, Lacking supplier capability, Supplier relationship)

Unit of analysis: Category

- Category characteristics (Direct categories/Indirect categories)
- Stakeholders (Business has clear priorities, Cost pressure, Customer/stakeholder relationship, Customer/stakeholder requirements, Large

number of stakeholders, Stakeholders are interested in cooperation, Working with difficult stakeholders, Working with engineering/in a technical area)

Unit of analysis: Company

- Procurement context (IT system capabilities, Organisational complexity, Single IT system)

Unit of analysis: Industry

- Industry characteristics (Geopolitical uncertainty)
- Regulatory requirements (Regulatory requirement, Regulatory requirement - local availability, Regulatory requirement - local supply)

Unit of analysis: Situation

- Individual purchase (Enough time available, New product/supplier, Time pressure/emergency situation)
- Personal situation (Training requirement)

If the analysis above is used to group the influenced maturity aspects by the contingencies that influence them, some additional conclusions can be drawn. This will be highlighted in this section. Table 49 provides an overview of the different contingencies identified in WATER.

Table 49: Mapping of contingencies' influence on the maturity topics based on WATER*(numbers and shading represent the number of interviewees that support the relationship; darker green = more interviewees support relationship)*

Unit of analysis	Contingency type	Contingency	Strategy and planning	Organisation and controlling	Status and involvement	Sourcing and supply base management	Supplier management	Skills	IT	Other	Total
Product	Product characteristics	Product criticality	4	14	2	8	6			3	37
		Product complexity		2		2	5	1		2	12
		Product standardisation	4	1			3				8
		Product customisation		1							1
		Ability to forecast	3								3
		Inability to forecast								3	3
	Service users	Local service requirement				2					2
	Supply base	Size of supply base (large)				5					5
		Size of supply base (small/limited capacity)				7					7
		Supplier availability (local)				1					1
		Disconnected supply chain				1					1
Supplier	Supplier characteristics	Supplier criticality				1	7				8
		Dependence on supplier					2				2
		Lacking supplier capability		1		3	9				13
		Small suppliers								2	2
		Supplier relationship		2							2
Category	Category characteristics	Direct categories									
		Indirect categories	1								1
	Stakeholders	Business has clear priorities	2								2
		Cost pressure					1		1	4	6
		Customer/stakeholder relationship		4							4
		Local users of service (customer/stakeholder relationship)		7							7
		Customer/stakeholder requirements		1			2				3
		Large number of stakeholders						1			1
		Stakeholders are interested in cooperation		3							3
		Working with difficult stakeholders			3			9			12
		Working with engineering/in a technical area						3			3
Company	Procurement context	IT system capabilities		1							1
		Organisational complexity		8					1		9
		Single IT system		2							2
Industry	Regulatory requirements	Regulatory requirement		6		12	4	1			23
		Regulatory requirement - local supply				4					4
Situation	Individual purchase	Enough time available				1					1
		Time pressure/emergency situation		4							4
	Personal situation	Training requirement						1			1

6.2.3.1 *Product-level contingencies*

Several product characteristics frequently influence maturity, especially product criticality, which influences most areas of the maturity model, except for skills and IT. Product criticality especially drives strategic planning, better procurement control (e.g. through centralisation, higher process standardisation, or integration), a higher status requirement, but also a closer supply base and risk management as well as supplier management, through closer relationships and closer evaluation. Product criticality covers any products that are important to the business – typically because of value, volume or risk considerations.

Product complexity tends to refer to technical complexity and drives a closer cooperation with other functions and a closer supplier management, mostly through close supplier relationships.

Product customisation is somewhat similar to product complexity, and often overlaps where technical machinery is concerned, but it can also refer to high service requirements. In WATER, this is not a very frequently mentioned contingency and has only been related to internal integration.

The inverse of this is product standardisation, which typically refers to high volume 'retail type' products. In spite of the overlap with critical products (high volume), they are different in that these can also be low-value products, such as screws. They tend to drive a higher level of supplier consolidation, as higher benefits can be gained.

Similarly to standardisation, but not always the same, a higher ability to forecast enables long-term strategies – and longer contract periods, whereas non-forecastable products require a more flexible set-up.

'Service users' refers to those products that have a local service requirement. Typically these tend to be service-focused or have a high level of collaboration or maintenance. They tend to require a local sourcing solution, as a global provider would not be able to offer this local service.

Finally, the supply base is also defined as a product-level contingency, even though it is not strictly a product characteristic. The reason for this definition is that the individual contingencies tend to refer to the availability of suppliers for a specific product or product group. Mostly the contingencies in this cluster tend to impact the supply base management: the more suppliers that are available, the higher the ability to tender.

On the flipside, the smaller the supply base, or the more disconnected the supply chain, the more important are proactive supply base management and risk management.

6.2.3.2 Supplier-level contingencies

Unsurprisingly, supplier-level contingencies primarily drive the requirement for supply base management and supplier relationship management. Generally, more critical suppliers (in value, volume or risk) should be managed more closely, as should less capable suppliers – or those that have issues at a given point. ‘Managing suppliers’ could mean establishing closer, more cooperative relationships, more frequent supplier evaluation, or supplier development efforts.

Where small suppliers are sourced for a product, this typically requires more creative contract terms and contract management. This is partially due to the higher risk from small suppliers, which needs to be closely managed.

Finally, in situations where a good supplier relationship is important, it is advisable to look into centralising procurement to ensure a single point of contact for the supplier. It is also less important to have an automated IT system, since the relationship is more important than the automation of processes.

6.2.3.3 Category-level contingencies

At the category level, interviewees made an interesting distinction between direct and indirect categories, in that Indirect categories have a higher requirement and ability to align with strategic company objectives, whereas operational categories are more focused on service delivery objectives. Interviewees did not mention any further topics impacted by Direct vs. Indirect categories.

However, another important contingency in this area is the stakeholders that the category works with. These can include internal customers or scientists, but also operators out in the field. Generally, more difficult stakeholders require higher skills in the category to manage these, especially managerial and soft skills.

But stakeholders can also influence the organisational set-up, which was the most frequently mentioned area: if key stakeholders are local service users, a more decentralised set-up might be more beneficial, whereas if stakeholders sit centrally, it is often beneficial to centralise procurement as well to ensure good cooperation between stakeholders and procurement. Similarly, if stakeholders are interested in

cooperation, this generally results in a much closer integration between procurement and these stakeholders.

6.2.3.4 Company-level contingencies

At the company level there are only a few contingencies. Organisational complexity can drive the requirement for process standardisation and for documented interfaces. Existing IT systems on the other hand can drive a requirement to follow system processes, or enable complex performance measurement.

6.2.3.5 Industry-level contingencies

There are also only a few contingencies at industry level. However, the regulatory requirement has been mentioned frequently. For WATER this mostly refers to EU regulations on water quality standards, but also on sourcing regulations. As such, these requirements often drive a higher process standardisation (e.g. following specific sourcing procedures), supply base visibility and product traceability, or even the supplier relationships. In some situations regulatory requirements can also drive lower process standardisation, where exceptions have to be followed.

6.2.3.6 Situation-level contingencies

Finally, situation-level contingencies mostly refer to individual purchases, where, in emergency situations, standard processes cannot always be followed.

6.3 WATER Case Study discussion

6.3.1 RQ1: How do procurement managers achieve strategic alignment?

6.3.1.1 Procurement strategic alignment – or procurement contextual contingencies?

The analysis highlights that the company strategy is only one of the contingencies that influence procurement maturity. Contingencies identified include the product or supplier criticality, commonality of products, regulatory requirements and supplier capability. This indicates that not only the category strategy, but all contingencies considered important by category managers should be included in this research. This aligns with literature on contingency theory, especially the premise that changes in this

contingency factor will, over time, cause changes in the organisational characteristic (Donaldson, 2001).

6.3.1.2 How are procurement contextual contingencies related to procurement maturity?

These contingencies also indicate that the target profile is not directly influenced by the category strategy or indirectly by contextual contingencies (via the category strategy), as depicted in the original conceptual model (see Figure 15).

First, the analysis has supported that category 'strategies' are very similar to maturity topics, indeed, target maturity profiles could be seen as a demonstration of the category 'strategy'.

Moreover, not only did the analysis find strong similarities between the contingencies of procurement tactics and maturity topics, but also that contextual contingencies influenced maturity directly.

This changes the conceptual model in that category 'strategies' can be eliminated as a link between target maturity profiles and contextual contingencies. It also indicates that contextual contingencies influence procurement maturity and should therefore be included in a maturity model.

6.3.2 RQ2: How is procurement maturity conceptualised by procurement managers?

This section will focus on the hypotheses underpinning the maturity model in the conceptual model.

6.3.2.1 How to measure maturity? – Profile or aggregate

The analysis supports hypothesis 2, that procurement maturity should be measured as a profile, as both the self-assessments of category managers and document-based assessments show differences between topics. This indicates that highlighting these can provide additional insight.

This is different from existing literature, which generally focuses on aggregate maturity measures to assess maturity (e.g. Cousins *et al.*, 2006; Ellram *et al.*, 2002; Paulraj *et al.*, 2006). However this analysis shows that the profile provides detailed insight that cannot be delivered by an aggregate measure.

6.3.2.2 *Where to measure maturity? – Unit of analysis*

The analysis (see Sections 6.2.2 RQ2: How is procurement maturity conceptualised by procurement managers? and 6.2.1.3 Contingencies to procurement maturity: Maturity model review by topic) identified additional units of analysis relevant to procurement maturity, other than the category. Maturity could therefore be measured at different units of analysis:

- Functional level, with exception management for categories, suppliers, products, etc.
- Category level, aggregating ‘exceptional’ products or suppliers
- A lower organisational level – e.g. product, supplier, customer

Lower organisational levels would be infeasible due to the amount of differences having to be implemented for individual products or suppliers – which could be hundreds or thousands. Moreover, in many cases products’ and suppliers’ characteristics are grouped into relatively uniform categories, e.g. the Chemicals category is characterised by its complexity and criticality.

At the same time, the functional level may be too high to distinguish between the differences in products or suppliers at all, hence not providing the differentiation clearly required by interviewees.

This indicates that the category level could be an appropriate unit of analysis, as it provides category-level differences as well as a feasible level for data collection and analysis. In contrast, existing literature demonstrates a clear preference for functional-level assessment. Where academic literature considers differences between segments or categories, the authors often argue that the lower maturity categories should catch up – even if they deem these differences to be “appropriate for the nature of the commodities that both departments purchase and the cost and operational risk that their supply presents” (Deasy *et al.*, 2014, p. 26):

“The increasing recognition is that a strategic perspective of procurement can have considerable cost and performance benefits for all organizations. The consistent implementation and execution of procurement strategy is of paramount importance. [...] the discovery that procurement strategy and practice are asymmetric across a relatively small organization suggests that this may be a common problem.” (Deasy *et al.*, 2014, p. 26)

The findings of this research are somewhat aligned with existing literature on the current maturity assessments, in that categories can differ in the level of maturity they achieved. However, where academic literature argues for a consistent increase of

maturity across categories, this research also suggests differences between categories for the target maturity level, as demonstrated for instance by the different requirements with regard to global sourcing or centralisation.

6.3.3 Impact on the conceptual model

Figure 3425 demonstrates the impact of analysis findings on the conceptual model: the link between firm, procurement and category strategy could not be supported. Instead, contextual contingencies could be linked directly to the target maturity profile. Whilst the measurement of maturity as a current and target profile could be supported from the analysis, the evidence to support the category as the correct unit of analysis is somewhat conflicting.

Overall, the case supports the conceptual model and no further updates are required after this case.

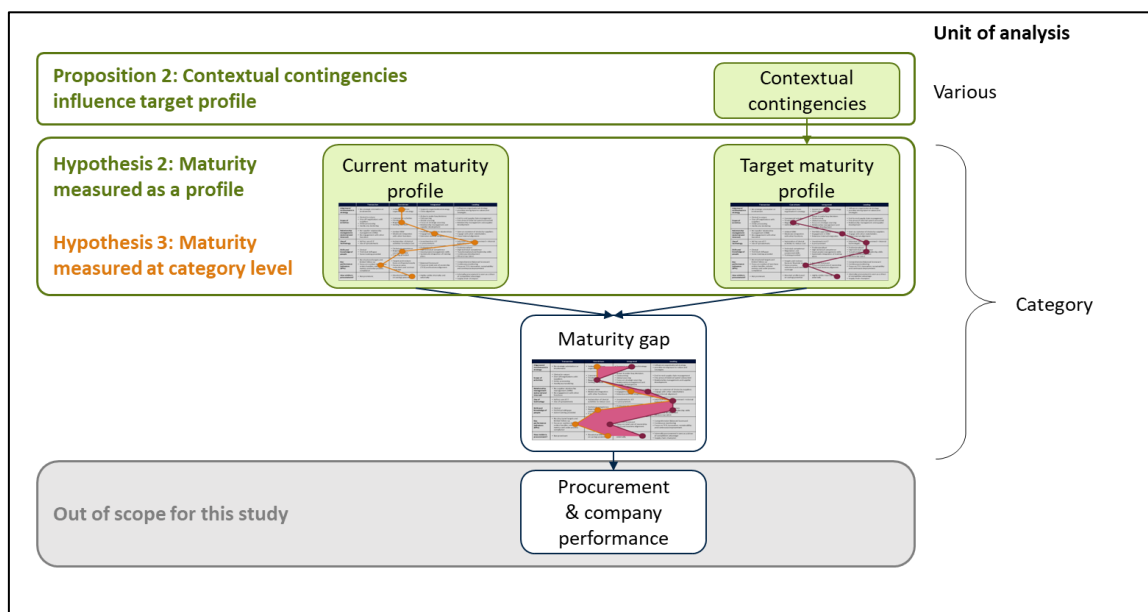


Figure 27: Impact of analysis findings on conceptual model (as updated after A&D case analysis)

6.3.4 WATER access limitations

Similar to A&D, WATER was subject to some limitations in access to the case company. WATER provided multiple maturity assessments (in addition to the five focus categories), which were not accompanied by interviews. These assessments could therefore not be used for the contingency analysis.

Moreover, some interviewees did not fully participate in the interview process, especially WATER_Function 1 and WATER_Function 2, who provided valuable company background in their interviews, but did not go through the detailed discussion of contingencies.

7 Results Case 3: BANK

7.1 BANK Case study background

7.1.1 Banking industry

The banking industry includes companies offering savings, loans and other financial services to businesses and consumers. Almost half of the global banking revenue is achieved by bank credit, followed by trading assets, inter-bank loans, other assets and cash assets (MarketLine, 2019b).

Financial services are a key industry in the UK, both in terms of being indispensable to ensuring sufficient cash in the economy and providing transactional value but also contributing considerably to the gross domestic product (GDP). However, the industry has also suffered considerable loss in reputation since the economic crisis of 2008-2009 and is additionally challenged from new technological developments (MarketLine, 2019a).

Globally, the industry is seeing continuing growth, especially driven by the Chinese market. However, profit margins have been lower due to globally low interest rates, impacting investment. In Europe, especially the UK, the industry is also considerably impacted by Brexit (MarketLine, 2019a, 2019b).

The banking industry is characterised by a level of rivalry. Even though there are a few large players, there is ultimately limited differentiation between products that are offered – forcing banks to differentiate through the service delivered to customers, which directly impacts the bottom line. Moreover, it is a comparatively old industry, and competition is driven by a few, large players, who have been in business for a long time.

Buyer power is moderate in the banking industry. On the one hand, banks provide indispensable services to customers. Moreover, banks tend to have a large customer base, making them less reliant on individual customers. However, whilst banks may not be very dependent on small private customers, the loss of a key corporate customer can have a considerable impact. Buyer power is additionally increased by the high degree of competition in the industry combined with low switching cost. The dropping consumer confidence, together with the increasing technological disruption, puts further pressure on the customer-power-relationship.

Banks tend to have a difficult power relationship with suppliers. Where customers are reliant on banks for key services, banks are equally reliant on a small supplier base for key services (e.g. Visa/Mastercard) and where multiple suppliers are available, only a few tend to meet the size and security requirements to be able to service banks.

7.1.2 Case company profiles: BANK

BANK is a financial services company providing retail banking, commercial banking, private banking, and wealth management services. The company achieves an annual revenue over \$50bn and has over 200,000 employees (BANK, 2019a; MarketLine, 2019a).

BANK's strategic priorities are focused around growth in strong areas as well as turning around non-performing businesses, delivering customer service and innovation, to ensure the bank is set up for the future, and finally to simplify the organisation and empowering employees (BANK, 2019b).

The strategy is supported by a responsible business culture, which underpins the sustainable growth targets set by the company (BANK, 2019b).

7.1.2.1 Procurement: Functional organisation

As a bank, the company does very little direct procurement and thus focuses on indirect procurement. The company has a central procurement department, focusing on strategic sourcing, as well as local procurement managers, who are responsible for day-to-day contract management and supplier relations. This case study focuses on the central procurement department and selected categories.

These categories differ in product complexity, annual spend, product/service orientation and the supply base structure, as indicated in Table 50.

Table 50: Selected categories comparison (based on interviews)

	Description	Product value	Product complexity	Supply base (number of suppliers)	Stakeholder maturity
HR	- Recruitment/resourcing - Learning - Performance & rewards	\$2,200m	Low to medium (performance & reward; unknown volume)	Large supply base, mostly small specialised suppliers	Immature
Commercial Real Estate (CRE)	- Capital projects - Portfolio workplace & estates - Facilities management	\$1,500m	Medium (central vs. local)	Few suppliers that can act globally	Mature
FinTech	Start-up software and hardware	Varying (growing)	High (new technologies)	Small (start-ups)	Varying
Cyber	- Cyber security resources - Technology tools	\$110m	Medium	Small	Medium
Ops	- Operational services - Consumer operations and sales - Business line services	\$1,200m	High	Varying, depending on segment	Medium (reluctant to change)

7.2 BANK Case study findings

7.2.1 RQ1: How do category managers achieve strategic alignment?

Previous cases have demonstrated the difficulties in answering this research question due to the lack of ‘strategies’. This issue will be further investigated in this case, by analysing how category managers define category ‘strategies’.

This section will summarise category managers’ responses to the question “How would you describe your procurement/category strategy?” and the initial Proposition 1: Category strategies are dependent on contextual contingencies. It will review the answers provided in detail and conclude with a summary and interpretation in the wider context of the research question. For the remainder of this section it will follow the terminology used in literature, accepting the use of the terms ‘procurement strategy’ and ‘category strategy’. These will be reviewed at the end of the section.

7.2.1.1 Procurement ‘strategies’ provided

First, Table 51 shows the scope and content of the procurement strategies for each of the categories. It demonstrates that the answers provided by procurement managers differ considerably.

Table 51: Procurement strategy scope and content for each of the procurement categories

Category	Procurement strategy scope	Procurement strategy content
Function	- Roadmap - Cost savings - Risk mitigation	“that’s my strategy. In terms of where we want to be – I want to have a business-to-consumer experience in a business-to-business environment.” (BANK_Function_2) - Improving the customers’/stakeholders’ experience when using procurement (implementation of an AI procurement system) - Focus on risk (KY3P – Know your 3rd party): “I think Procurement is getting more and more important in the financial industry because of the risk agenda. Regulators more and more look at how you manage third parties and how you mitigate the associated risk.” (BANK_Function_2)
HR	- Ways of working - Support the business/stakeholder strategy - Stakeholder relationship management - Operational compliance	“Procurements strategy [is] not just about having the right size of teams, category teams, doing the right sort of procurement at the right time. I’d also be talking about how we offer our other services, like our approach to risk management, our procurement operations, the systems we support our teams on.” “When we get into category strategy and sourcing strategy, that’s probably where all the fun stuff is. And what that really is, is a strategy that achieves the objectives of the stakeholders. And by the stakeholders I mean the direct stakeholders, so in this case HR, but also probably the shareholders of the bank. We shouldn’t be doing anything that doesn’t tell the story.” “My overall strategy for HR this year, because I do think it does go annual, is to be seen in the temporary recruitment space as the commercial partner of choice. So being blunt, that means, not liaising with HR, my staff’s objective is to, you’ve got to take HR with you, take them on board, because it’s politics as well, but you need to go out and build relationships with the businesses.” - Operationalising procurement in HR: “setting up the vendor management utility, helping with PO compliance and risk management.”
CRE	- Being seen as a trusted advisor - Delivering cost savings	“It is about, is that sourcing activity and that sourcing strategy speaking to the bigger picture: there is a well established financial challenge that is on its way to the bank – so what we are doing is looking at some of our longer term relationships, whether there is anything we can do with those, which would deliver short-term benefits – so we are not detracting from the overall goal of being seen as a tried and trusted advisor, but what we are looking at is whether within that, there is there anything we can do to deliver a short-term goal.”
FinTech	- Support the business/stakeholder strategy - Risk mitigation	“Right time; being able to keep up with the business demands; being able to de-risk some of these things we are doing commercially, so making sure we have engagements at scale and we don’t sign things just to get things in the door, so things like ‘yes we’ll sign it, it’s only a small engagement’ and then when it’s scaled out, you’re dealing with a million customers for example so the commercials then don’t stack up; I think for me it is about supporting our business growth and supporting our stakeholders’ strategies and enabling their business strategies...”
Cyber	Cost savings	“It’s about getting the best deal for the bank because we don’t have much choice in terms of some of the vendors they use – so it’s really getting the best deal for the bank based on the right terms.”
Ops	Achieve cost savings through: - Digitise - Demise - Automate	“At a very high level it would be either digitize, demise or automate and that is across all of the services we have spoken about today so can we digitize customer communications – can we demise them in terms of things like are we servicing people who no longer have an account with us or it’s a dormant account and they haven’t used it for 3 years for example but we are still sending correspondence to them, or can we automate things – so back to my example around the checks and people processing bits of paper, can we automate that process. So across all of the operation’s world, it’s that filter – can we digitize it, can we demise it or can we then automate it so we have fewer people touching it...”

Table 51 demonstrates that most category managers see cost savings as a major part of the procurement strategy, with the exception of FinTech and HR. In HR, this could

be explained by the fact that the business partner doesn't pay for HR activities themselves, whereas FinTech is focused on comparatively small projects with limited opportunity to achieve cost savings:

"So for HR, it doesn't come off their cost centre. They're always trying to design a really great thing because they don't have to pay for it." (BANK_HR)

"As I said, for us, we are having to change the way we think about procurement value. So we have not saved significant amounts of money – so it's not like my previous organization where we would save millions of dollars on a deal – we don't do that here because the deals we are doing are not that big, broadly we are not doing 20/30M dollar deals – we are low millions at the high end, mainly lower than that and there is just not that headroom in there – there is not that 'yes, we have negotiated that cost down'. It is cost avoidance and it tends to be because you know there is no leverage, you can't go and run an RFI and try and bring that category spend or engagement..." (BANK_FinTech)

Instead, HR and FinTech focus on supporting the stakeholder strategies in their respective categories (i.e. supporting HR and FinTech business lines). FinTech as well as BANK_Function also mentions the importance of risk mitigation, which is driven by the increasing regulatory pressures.

BANK categories write extensive category strategies, outlining their supply base, cost profiles and key contracts. An exception to this is FinTech, which is a relatively new category for the bank:

"We are starting to build [category strategies], but no we don't at the moment – we have been so transactional driven at the moment as to 'can we do this' – so it's been heads down and very transactional procurement." (BANK_FinTech)

Table 52: Elements included in the category strategy document provided

Colours indicate elements included (green = 'Yes', red = 'No')

Summary	Element	Function	HR	CRE	FinTech	Cyber	Ops
Background	Business overview	<i>Not provided</i>	Yes	Yes	<i>Does not write strategy</i>	Yes	<i>Not provided</i>
	Supply market analysis		Yes	No		Yes	
	Org structure		Yes	No		No	
	Risks/opportunities		No	Yes		Yes	
	Spend overview		Yes	Yes		Yes	
Targets	Vision/purpose		No	Yes		No	
	Objectives		Yes	Yes		Yes	
	Key activities		Yes	Yes		Yes	
Sourced products	Product detail		Yes	No		Yes	
Supplier detail	Supplier overview		Yes	Yes		Yes	
	Individual supplier strategy		No	No		Yes	
	Supplier matrix (relationships)		Yes	No		No	
Stakeholder detail	Customer overview		Yes	Yes		Yes	
	Stakeholder map		Yes	No		Yes	
Total pages		n/a	65	16	n/a	79	n/a

7.2.1.2 Category-specific priorities

Besides the overall definition of a procurement or strategy, interviewees were also asked about the category priorities they considered important for procurement decisions (see Table 53: Most important priorities at the top, least important priorities at the bottom). The priorities provided in this table are in response to the question “What are the most important priorities in your category?”

Table 53: Key priorities by category provided

Colours indicate different priorities (e.g. green = low prices)

Function	HR	CRE	FinTech	Cyber					Ops				
Not provided	High Product/Service Quality	High Product/Service Quality	Dependable Delivery	Dependable Delivery			Fast Deliveries		Not provided				
	Low Prices/Cost savings	Product/Service Innovation	Fast Deliveries	Low Prices/Cost savings	Product/Service Innovation	Customisation	Technology Leadership	High Product/Service Quality		Rapid Volume Changes			
	Dependable Delivery	Dependable Delivery	High Product/Service Quality										
	Product/Service Innovation	CSR/Sustainability	Rapid Volume Changes										
	Technology Leadership	Fast Deliveries	Customisation										
	Process Innovation	Process Innovation	Process Innovation										
	CSR/Sustainability	Technology Leadership	Technology Leadership										
	Rapid Volume Changes	Low Prices/Cost savings	Product/Service Innovation										
	Fast Deliveries	Customisation	Low Prices/Cost savings								Process Innovation		
	Customisation	Rapid Volume Changes	CSR/Sustainability								CSR/Sustainability		

The different priorities show considerable differences between categories. Whilst *high product/service quality* and *dependable delivery* are always amongst the top priorities, category managers differ considerably in their estimation of *low prices/cost savings* and *product/service innovation*. The low priority of *low prices/cost savings* in FinTech is aligned with comments on the procurement strategy (i.e. overall low cost and therefore limited ability to achieve cost savings). However, it is equally misaligned with CRE (cost savings was mentioned in the procurement strategy) as well as HR (where interviewees claimed these were not as important for the procurement strategy).

Generally, categories focus on operational excellence (e.g. delivery, quality) over strategic business priorities, such as innovation or technology leadership. This is aligned with BANK_Function's observation that procurement in a bank has less strategic impact than in a manufacturing environment:

"I don't believe that Procurement is overly strategic anyway in a bank. If you compare the Financial Industry with Manufacturing or Fast Moving, there's hardly a connection you can make between what Procurement does and the results of the firm." (BANK_Function)

7.2.1.3 Contingencies to procurement maturity: Maturity model review by topic

This section will indicate how the tactics related to the maturity model practices and the contextual contingencies influence the individual topics in a maturity model.

For the maturity topic strategic planning (in maturity area 'Strategy and Planning'), interviewees identified multiple contingencies to strategic planning, as demonstrated in Table 54. It highlights the topic that is analysed ('Strategic planning') and the aspect

of this element that is influenced by the contingency. The relationship type indicates whether it is a positive relationship (higher level in the contingency results in higher level of the influenced aspect). The argumentation for the relationship details how the contingency is related to the influenced aspect and the unit of analysis indicates at which organisational level the relationship was discussed by interviewees.

Table 54: Contingencies to strategic planning

Influenced aspect	Contingency	Relationship type	Relationship direction	References BANK
Create long-term plan	Product criticality	Requirement	Higher	BANK_Function 2, BANK_HR, BANK_CRE
			Lower	BANK_Function 2
	Cost pressure	Requirement	Higher	BANK_Function 1, BANK_HR, BANK_CRE
			Lower	
	Organisational complexity	Requirement	Higher	BANK_HR
			Lower	
Create & execute long-term plan	Ability to forecast	Ability to achieve	Higher	BANK_CRE
			Lower	BANK_Function 1, BANK_HR, BANK_CRE, BANK_FinTech

Interviewees identified a number of contingencies to strategic planning. First, interviewees mentioned a higher requirement for a procurement strategy for critical products:

“For our important things, not for everything, but for those things that provide value, or the important things for our stakeholders, we definitely do sit down and define a sourcing strategy that is agreed across HR, Procurement and potentially other functions, dependent on... IT elements in HR, if they’ve got bandwidth to do changes.” (BANK_HR)

Another requirement for long-term plans can stem from a high level of cost pressure in the organisation, especially where this impacts organisational transformation (BANK_Function 1) or long-term procurement projects, such as outsourcing (BANK_HR).

Moreover, interviewees raised the point that there is a higher requirement for a category strategy where it is more important to communicate the strategy to stakeholders, for example when there is a complex organisation:

“There’s sometimes some challenges with people having different conversations, but I think that’s just the way it will always be in a kind of multi-layered, matrix style, global function. Global business, as truly global as BANK, it won’t get any more complicated.... So it’s really hard getting clarity. But a sourcing strategy, done correctly, should give everybody clarity.” (BANK_HR)

BANK_HR also mentioned a higher requirement for critical products to have a procurement strategy.

Finally, interviewees raised the point that more stable, forecastable categories have a higher ability to achieve their strategic plans, whereas more volatile categories have a higher requirement for flexibility in order to react to demand changes:

“Because the business isn’t like that – so the businesses we are supporting don’t have like 20 year road maps – whereas if I think about traditional IT categories, you would typically have an application strategy for an EBS system for example that would have a 10 year road map – so you would have your upgrade cycles and you would know exactly what you were going to do – we simply don’t have that because some of the business lines we are supporting really only know what the next six months are going to look like and the technology is so new – so it is very difficult for us to say certainly more than a year in advance where people are planning budgets and things, what the road map looks like...”
(BANK_FinTech)

The analysis demonstrates that interviewees mentioned contingencies to all the topics included in the maturity model, indicating that category tactics are indeed influenced by contextual contingencies. However, in contrast to initial Proposition 1, maturity topics are influenced by more than just the category or procurement strategy. Instead, a number of different contingencies are included in the analysis, such as the product criticality or the supplier relationship.

7.2.1.4 RQ1 Summary: Multiple contextual contingencies to procurement maturity

The section summarised how procurement managers define their procurement and category strategies in order to answer RQ1 (How do procurement managers achieve strategic alignment?). The section started with an analysis of how procurement managers define procurement ‘strategies’, followed by a comparison of procurement ‘strategies’ with procurement maturity topics. It concluded with an analysis of contextual contingencies to procurement maturity.

At the category level, strategies are generally focused on operational delivery: cost savings (BANK_Function, BANK_CRE, BANK_Cyber and BANK_Ops) and risk mitigation (BANK_Function, BANK_FinTech, CRE Category Plan 2018 and Cyber Category Plan 2019). However, there is also strong evidence for an attempt to ensure alignment to the business or stakeholders (e.g. BANK_HR, HR Category Plan 2019, CRE Category Plan 2018 and Cyber Category Plan 2019).

The analysis also raises the question regarding whether these category tactics are strategic enough to drive maturity profiles. Indeed, some of the tactics mentioned include elements that are very similar to the topics in a maturity model, such as the identification of market trends (Cyber Category Plan 2019), global sourcing

considerations (CRE Category Plan 2018) or risk management (BANK_Function, BANK_FinTech, CRE Category Plan 2018 and Cyber Category Plan 2019).

The section also shows several contingencies to procurement tactics, including top-down alignment, internal, external, product- and supply-related contingencies as well as other, currently unclassified, contingencies. Whilst this provides some support for Proposition 1, the similarity between procurement tactics and procurement maturity topics raises the question of how these contingencies are related to the maturity model.

This was analysed in the final sub-section, which reviewed the maturity model against different contingencies mentioned by category managers. The analysis highlights that all maturity model topics are subject to some contingencies, indicating a strong and direct relationship between contextual contingencies and procurement maturity. Moreover, it can be seen that many different contingencies were mentioned by category managers, not, as initially assumed, only the procurement or category strategy. These additional contingencies were identified at several units of analysis:

- Product (such as product complexity or product criticality)
- Supplier (such as supplier relationship or supplier size)
- Category (such as whether it is a direct or indirect category)
- Company (such as cost pressure)
- Industry (such as regulatory requirements)

These contingencies support Proposition 2, that the maturity profile is influenced by contextual contingencies, and re-affirm the profile as a more appropriate maturity measurement.

This section also indicates that the relationship between contextual contingencies and procurement maturity is very complex and impacts the alignment process for category managers. It demonstrates that procurement strategic alignment is not a linear process, as initially assumed after the literature review. This could be driven by the fact that the category strategy does not provide the strategic direction expected, but instead appears to be more like maturity tactics.

7.2.2 RQ2: How is procurement maturity conceptualised by procurement managers?

The analysis in this section will follow the structure outlined for A&D: First, hypotheses H2 and H3 will be analysed, based on the maturity assessments:

- H2: The most appropriate measurement type for procurement maturity is the maturity profile, not an aggregate maturity measure.
- H3: The most appropriate unit of analysis for procurement maturity is the procurement category.

The discussion of these hypotheses is based on maturity assessments conducted with category managers. These will be provided in the following section, before the implications of these assessments on the hypotheses are discussed.

7.2.2.1 *Maturity assessments*

In the following assessments, (see Figure 26) the 'x' demonstrates the current maturity stage, the 'o' represents the target maturity level and the pink area depicts the maturity gap. The current maturity profile is based on documentary evidence to establish the current maturity profile (e.g. strategy documents, process descriptions etc.), but uses category managers' self-assessments to nuance the assessments (e.g. to establish to what extent defined processes are followed). As no documentary evidence is available for target maturity assessments, these were based solely on category managers' self-assessments.

In the following sections, any instances where the target maturity score set by interviewees is lower than the current maturity score set through documentary evidence will not be discussed, as this is driven by a higher documentary score than the original self-assessed score. Usually this means that interviewees did not see a requirement to considerably increase their self-assessed maturity, but documents indicated that the actual (current) maturity level was higher than interviewees indicated.

For each category, a detailed maturity assessment has been conducted. The HR maturity assessment was provided by BANK_HR, with the current profile based on documentary evidence (see Figure 28).

BANK_HR					
Area	Topic	1	2	3	4
Strategy and planning	Strategic planning			O	X
	Strategic alignment				XO
Organisation and controlling	Organisational structure			X	O
	Purchasing process			X	O
	Controlling / Perf Measmt			O	X
	Internal integration				O X
Status and involvement	Status and Recognition		X	O	
	Involvement			X	O
Sourcing and supply base management	Supplier selection			XO	
	Supply base mgmt		X		O
	Global sourcing		X		O
	Risk management			O	X
	Supplier relationship			XO	
Supplier management	Supplier development		X	O	
	Supplier evaluation			O	X
Skills	Existing skills				XO
	Training and developm't		O	X	
IT	IT systems		X		O

Figure 28: BANK_HR maturity assessment

HR scores very high in both strategic planning and strategic alignment, due to the extensive category plan provided and the explicit reference to the stakeholder strategy. This details the HR strategic pillars and explains how procurement is aligned to and supportive of these (HR Category Plan 2019). This also aligns with the high target set by BANK_HR.

HR also has relatively high scores across organisation and controlling. Whilst slightly lower in organisational structure and purchasing process, due to the lower level of centralisation and the resulting deviations from standard processes (BANK_HR), the scores are very high for controlling and performance management (2019 objectives) and internal integration. In particular, internal integration stands out, which is very high due to the close relationship and collaboration between procurement and key stakeholders (BANK_HR).

The HR category scores in the middle ranges for status and involvement. This mostly reflects the level of involvement in recruiting decisions:

“But being quite honest, I think on some topics we are the go-to people. On some of the procurement topics, resourcing, for example, they’d definitely be speaking to us, and around supplier selection. And then other aspects, they’d mostly talk to us about the process, but they’re going to go with who they’re going to go with. They don’t need our advice on that, they need our advice on how to bring it into BANK’s world.” (BANK_HR)

HR’s scores in sourcing and supply base management vary considerably. Whilst the scores for supplier selection and risk management are relatively high, due to the structured and defined approach for supplier selection (Sourcing Strategy Global

Executive Recruitment) and the strong strategic focus on risk management (Supplier Risk Management), the scores for supply base management and global sourcing are considerably lower. This is mostly due to the disconnected supply base with many local suppliers. Together with the varying regulations in this category, this results in a strong reliance on local suppliers (BANK_HR). For most topics in this area, BANK_HR sets a target maturity level relatively close to the current level – with the exception of supply base management, where BANK_HR feels a considerably higher level would be required, especially in areas that are impacted by new technologies:

“What is procurement doing to reshape the supply chain that sits in whatever digital is replacing? We definitely do it to a lesser extent in HR, you know, technologies, changing the way we do some things... and we’re involved in it, but I wouldn’t say we actively do it, shape the supply chain – it’s more of a pick and choose.” (BANK_HR)

In supplier management, HR achieves relatively high scores in supplier relationship and supplier evaluation (Supplier performance KPIs), mostly driven by the relatively long-term relationships HR has with core suppliers (BANK_HR). However, the scores for supplier development are considerably lower, mostly because BANK_HR doesn’t see a requirement to do much more in this space:

“I’m wondering, in the HR space, I’m not sure we would be developing them, other than... we might come up with problem statements and they might go off and come up with solutions for us.” (BANK_HR)

However, at the same time, BANK_HR feels that the target maturity level could be higher in this space:

“So, in my head, supplier development is that type of thing. In the HR category – there’s probably some, and if there is, we’re probably not doing it.” (BANK_HR)

BANK_HR feels that the level of skills in their category is very high – as is also required, since BANK has outsourced any activities that could be fulfilled by more junior or less skilled staff (BANK_HR). The very high level of skills also results in a lower training requirement, resulting in low current and target scores for training and development (BANK_HR).

Finally, in IT systems BANK scores in the middle ranges, with a slightly higher requirement:

“We do have processes and TORs and stuff, and we can do eAuctions, not as helpful as they used to be... and it would be good to be further up that box, but I’m not sure we would ever get into that one from where we are, yet.” (BANK_HR)

In fact, BANK_HR feels that the focus should be on improving the existing systems, not adding new functionality:

“We need fewer systems. Well, we don’t need fewer systems, we need less process within the systems. The system itself is great, we’re very lucky with what we have. We kind of ruin that by having over-engineered it.” (BANK_HR)

In general, both current and target maturity levels differ a lot between different topics and areas.

7.2.2.2 How should maturity be measured?

Hypothesis 2 postulates that a maturity profile would be more meaningful than an aggregate measure, as it conveys additional and important detail. This hypothesis is tested by comparing current and target maturity profiles.

There is robust support for profiles in categories’ maturity assessments, since both the current and target maturity profiles shows substantial differences in levels between topics. For example, most categories have high scores in strategic alignment, which is supported by the category plans provided. At the same time, systems score relatively low, due to the Indirect context, which differs considerably from a fast/moving consumer goods context:

“It is a people-based service and so to go fully automated, I know people love that home-wise, they love to go on Amazon and they love to go on Asos or whatever it is and place an order and it arrives the next day and it’s fantastic - but again that is easy when you can see what it is and exactly what it is that you want but if you were to go online and look for something that you are not too sure about, often you will be picking up the phone and speaking to a human or you go and visit that person and have a discussion with them...” (BANK_Ops)

Similar differences exist for all categories, indicating that a profile, rather than single aggregate level, conveys important information.

Moreover, interviewees identified gaps ranging from 0 points to 4.0 points – using almost the whole of the available range and highlighting potential areas for improvement. These gaps highlight where to invest and where the incremental benefit would not suffice to pay for the investment:

“I guess the reason why I then not say should we be stage 4, is that some of these ones are... There is no one to say that stage 4 is perfection in everything, I’m not sure what the value of that is... What you’d have to do for stage 4, is so much more meetings, so much more tracking, infrastructure, people – there’s a cost to all of that and I would question the value returned on some of that investment. The incremental value wouldn’t be greater than what you’d be spending both in time and money and then could end up being a bit of a distraction and sometimes stops you being from being as agile and flexible as you could be.” (BANK_HR)

These differences, both within each profile but also between the current and target maturity profiles, indicate that profiles in categories' maturity assessments, rather than a single aggregate level, convey additional information, thus supporting hypothesis 2.

7.2.2.3 At what unit of analysis should maturity be measured?

Hypothesis 3 states that procurement maturity should be measured at category level. This hypothesis would be supported, if there are considerable differences between categories and the measurement of procurement maturity would provide more insight at category than at functional level.

The maturity profiles summarised above show some similarities in maturity levels, such as the purchasing process and controlling and performance management, both of which are centrally managed and governed areas. However, the analysis also demonstrates clear differences; where most categories are very strong on strategic planning and alignment, FinTech is a clear exception due to the frequent changes in the market place. Similarly, Ops is the only category which demonstrated any considerable supply base management or supplier development – and equally the only interviewee that articulated a clear benefit that could be gained from such activities. In particular, the organisational structure and global sourcing are also very different across categories, driven by the level of consolidation in the supply base.

However, at the same time, these differences are more prominent in the current maturity profiles than in the target maturity profiles. The target maturity profiles generally vary between levels 3 and 4, which could provide some support to the academic premise of utilising maturity models as a functional-level tool to generally increase maturity. However, there are also strong variations in the target maturity profiles across categories. An example of this could again be global sourcing, where many interviewees clearly state a lower requirement.

7.2.2.4 RQ2 Summary: Maturity measured as a profile at category level

This analysis focused on the research question: How is procurement maturity conceptualised by procurement managers?, as well as hypotheses 2 and 3.

Hypothesis 2, that the most appropriate measurement type for procurement maturity is the maturity profile, was analysed by comparing the differences between topics within the maturity assessments. All interviewees (functional and category levels)

identified differences between topics both for current and target profiles. Whilst the actual profiles differed between categories, all interviewees provided clear rationales for the differences between topics. Moreover, the differences (at least in the current profile) were supported by documentary evidence.

Hypothesis 3, that the most appropriate unit of analysis for procurement maturity is the procurement category, was analysed by comparing the maturity profiles across categories. Whilst there were clear differences in the current assessments, interviewees also referred to differences at a unit of analysis lower than the category – such as individual products or suppliers. Moreover, the differences in target profiles were much less pronounced than the differences between current profiles. Further research will be required to understand whether maturity should be assessed at the functional level and consider different exceptions (category, supplier, product, etc.), or whether the differences between categories (or products or suppliers) warrant their own target assessments.

7.2.3 Mapping of contingencies' influence on the maturity topics

This section will review the implications of interviewees' commentary regarding the procurement maturity model and provide a comparison of the different units of analysis identified.

The contingencies mapped in section 7.2.1.3 (Contingencies to procurement maturity: Maturity model review by topic) highlight that contingencies have a complex relationship with maturity: Contingencies appear at multiple units of analysis and impact different areas of the maturity model. The analysis enabled the grouping of contingencies, which will provide more clarity on the relationship between contingencies and procurement maturity. Contingencies can be grouped as follows (same grouping as A&D and WATER):

Unit of analysis: Product

- Product characteristics (Product criticality, Product complexity, Product standardisation, Product customisation, Ability to forecast/Inability to forecast)
- Service users (Local service requirement, Local users of service (customer/stakeholder relationship))
- Supply base (Changes in market, Market maturity, Size of supply base (large), Size of supply base (small/limited capacity), Small suppliers, Supplier availability (local), Disconnected supply chain)

Unit of analysis: Supplier

- Supplier characteristics (Supplier criticality, Dependence on supplier, Lacking supplier capability, Supplier relationship)

Unit of analysis: Category

- Category characteristics (Direct categories/Indirect categories)
- Stakeholders (Business has clear priorities, Cost pressure, Customer/stakeholder relationship, Customer/stakeholder requirements, Large number of stakeholders, Stakeholders are interested in cooperation, Working with difficult stakeholders, Working with engineering/in a technical area)

Unit of analysis: Company

- Procurement context (IT system capabilities, Organisational complexity, Single IT system)

Unit of analysis: Industry

- Industry characteristics (Geopolitical uncertainty)
- Regulatory requirements (Regulatory requirement, Regulatory requirement - local availability, Regulatory requirement - local supply)

Unit of analysis: Situation

- Individual purchase (Enough time available, New product/supplier, Time pressure/emergency situation)
- Personal situation (Training requirement)

If the analysis above is used to group the influenced maturity aspects by the contingencies that influence them, some additional conclusions can be drawn. This will be highlighted in this section. Table 55 provides an overview of the different contingencies identified in BANK.

Table 55: Mapping of contingencies' influence on the maturity topics based on BANK

(numbers and shading represent the number of interviewees that support the relationship; darker green = more interviewees support relationship)

Unit of analysis	Contingency type	Contingency	Strategy and planning	Organisation and controlling	Status and involvement	Sourcing and supply base management	Supplier management	Skills	IT	Other	Total
Product	Product characteristics	Product criticality	5	6	6	5	1			2	25
		Product complexity						1		2	3
		Product standardisation		2		3	3		3		11
		Product customisation			2	1					3
		Ability to forecast	5							2	7
		Inability to forecast								3	3
	Service users	Local service requirement				2					2
	Supply base	Changes in market				1					1
		Market maturity	1								1
		Size of supply base (large)				4					4
		Size of supply base (small/limited capacity)				1					1
		Supplier availability (local)				2					2
Supplier	Supplier characteristics	Supplier criticality				1	9				10
		Dependence on supplier					2				2
		Lacking supplier capability				3	6				9
		Small suppliers				2				3	5
		Supplier relationship		2							2
Category	Category characteristics	Direct categories					2				2
		Indirect categories	1								1
		Business has clear priorities	6								6
	Stakeholders	Cost pressure	3	3			1		1	4	12
		Local users of service (customer/stakeholder relationship)		4							4
		Customer/stakeholder requirements		1			1				2
		Large number of stakeholders						1			1
		Stakeholders are interested in cooperation		2							2
		Working with difficult stakeholders			2			15			17
		Working with engineering/in a technical area						2			2
Company	Procurement context	Organisational complexity	1	5					1		7
		Single IT system		3							3
Industry	Regulatory requirements	Regulatory requirement		4		8	2	1	2		17
		Regulatory requirement - local availability		3							3
		Regulatory requirement - local supply				3					3
Situation	Individual purchase	Enough time available				1					1
		New product/supplier				3					3
		Time pressure/emergency situation		2							2
	Personal situation	Training requirement						1			1

7.2.3.1 *Product-level contingencies*

The most frequently mentioned contingency is product criticality and it influences almost every area of the maturity model. In particular, product criticality drives strategic planning, better procurement control (e.g. through centralisation, higher process standardisation, or integration), and a higher status requirement, but also a closer supply base and risk management as well as supplier management, through closer relationships and closer evaluation. Product criticality covers any products that are important to the business – typically because of value, volume or risk considerations.

Product standardisation typically refers to high volume ‘retail type’ products. In spite of the overlap with critical products (high volume), they are different in that these can also be low-value products, such as screws. They tend to drive a higher level of centralisation and global sourcing, as well as supplier consolidation, as higher benefits can be gained.

Product complexity and product customisation are somewhat similar contingencies, but with slightly different nuances – and different implications for procurement maturity. Product complexity tends to refer to technical or stakeholder complexity and drives a higher skills requirement. Product customisation focuses on stakeholder customisation, which increases the requirement for involvement and supply base management.

Similarly to standardisation, a higher ability to forecast enables long-term strategies – and longer contract periods, whereas non-forecastable products require a more flexible set-up.

‘Service users’ refers to those products that have a local service requirement. Typically these tend to be service-focused or have a high level of collaboration or maintenance. They also tend to require a local sourcing solution, as a global provider would not be able to offer this local service.

Finally, the supply base refers to the availability of suppliers for a specific product or product group. Mostly the contingencies in this cluster tend to impact the supply base management: The more suppliers that are available, the higher the ability to tender. On the flipside, the smaller the supply base, or the more disconnected the supply chain, the more important are proactive supply base management and local suppliers.

7.2.3.2 Supplier-level contingencies

Unsurprisingly, supplier-level contingencies primarily drive the requirement for supply base management and supplier relationship management. Generally, more critical suppliers (in value, volume or risk) should be managed more closely, as should less capable suppliers – or those that have issues at a given point. ‘Managing suppliers’ could mean establishing closer, more cooperative relationships, more frequent supplier evaluation or supplier development efforts.

Where small suppliers are sourced for a product, this typically requires more creative risk management to protect the business as well as more creative contractual terms. This is partially due to the higher risk from small suppliers, but also due to the fact that standard risk management methods don’t always work in the same way.

Finally, in situations where a good supplier relationship is important, it is advisable to look into centralising procurement to ensure a single point of contact for the supplier. It is also less important to have an automated IT system, since the relationship itself is more important than the automation of processes.

7.2.3.3 Category-level contingencies

At category level, BANK_Ops mentioned that there is a higher requirement for Direct categories to become involved in supplier development, as it is often not feasible for Indirect products to review the production site.

The main influencing contingency at category level, however, is the stakeholder, which is also an area where BANK identified many contingencies. Where stakeholders exert cost pressure, this increases the requirement for a more mature set-up in strategic planning, centralisation and closer supplier management. Cost savings can also be achieved through more automation or creative contract terms.

Where stakeholders are sitting in de-centralised business units, this often drives a higher level of de-centralisation within the procurement organisation.

Where stakeholders have clear priorities, this can help procurement in enabling better strategic planning. Stakeholders’ requirements can be both more direct and directly influence the process or supplier relationship.

Where stakeholders are easy to work with, this often enables better internal integration. On the other hand, if stakeholders are more difficult to work with, this

requires a higher status for procurement and better skilled staff to manage these stakeholders.

7.2.3.4 Company-level contingencies

At company level there are only a few contingencies. Organisational complexity can drive the requirement for process standardisation, for documented interfaces and a more comprehensive IT system. It can also require more flexibility when working with other functions. Existing IT systems on the other hand can drive a requirement to follow system processes.

7.2.3.5 Industry-level contingencies

At industry level, the most important contingency is the regulatory requirement. For BANK the key concern is in KY3P (know your third party) regulations, which typically drive risk management and closer supplier relationships. But more general industry requirements can also drive a higher process standardisation (e.g. following specific sourcing procedures) and higher training requirements.

7.2.3.6 Situation-level contingencies

Finally, situation-level contingencies mostly refer to individual purchases, where tendering is only possible if enough time is available – and where, in emergency situations, standard processes cannot always be followed. Similarly, it is important to spend more time on the tendering process, if it is a new product or supplier.

7.3 BANK Case Study discussion

7.3.1 RQ1: How do procurement managers achieve strategic alignment?

7.3.1.1 Procurement strategic alignment – or procurement contextual contingencies?

The analysis highlights that category managers consider many different contingencies to procurement maturity tactics included in the maturity model, such as the product or supplier criticality, commonality of products, regulatory requirements and supplier capability.

This indicates that all contingencies considered important by category managers should be included in this research, not only the company strategy (as indicated by

Proposition 1 after the literature review). This is supported by literature on contingency theory, especially the premise that changes in this contingency factor will, over time, cause changes in the organisational characteristics (Donaldson, 2001).

7.3.1.2 How are procurement contextual contingencies related to procurement maturity?

The analysis also indicates that the original conceptual model has to be updated, since target maturity profiles are directly influenced by contingencies and not indirectly via the company strategy. Category 'strategies' can therefore be removed from the conceptual model as a link between target maturity profiles and contextual contingencies.

Moreover, since contextual contingencies influence procurement maturity directly, they should be included in a maturity model.

7.3.2 RQ2: How is procurement maturity conceptualised by procurement managers?

This section will focus on the hypotheses underpinning the maturity model in the conceptual model.

7.3.2.1 How to measure maturity? – Profile or aggregate

The analysis supports hypothesis 2, that procurement maturity should be measured as a profile, as both the self-assessments of category managers and document-based assessments show differences between topics. This indicates that highlighting these can provide additional insight.

This is different from existing literature, which generally focuses on aggregate maturity assessments to assess maturity (see the literature review analysis). However, this analysis shows that the profile provides detailed insight that cannot be delivered by an aggregate measure.

7.3.2.2 Where to measure maturity? – Unit of analysis

The analysis (see sections 7.2.2 RQ2: How is procurement maturity conceptualised by procurement managers? and 7.2.1.3 Contingencies to procurement maturity: Maturity model review by topic) identified additional units of analysis relevant to procurement maturity, other than the category. Maturity could therefore be measured at different units of analysis:

- Functional level, with exception management for categories, suppliers, products, etc.
- Category level, aggregating 'exceptional' products or suppliers
- A lower organisational level – e.g. product, supplier, customer

Lower organisational levels would be infeasible due to the amount of differences having to be implemented for individual products or suppliers – which could be hundreds or thousands. Moreover, in many cases products and suppliers' characteristics are grouped into relatively uniform categories, e.g. FinTech typically covers immature and small suppliers, and innovative products.

At the same time, the functional level may be too high to distinguish between the differences in products or suppliers at all, hence not providing the differentiation clearly required by the interviewees.

This indicates that the category level could be an appropriate unit of analysis, as it provides category-level differences as well as a feasible level for data collection and analysis. In contrast, existing literature demonstrates a clear preference for functional-level assessment. Where academic literature considers differences between segments or categories, the authors often argue that the lower maturity categories should catch up –they even deem these differences “appropriate for the nature of the commodities that both departments purchase and the cost and operational risk that their supply presents” (Deasy *et al.*, 2014, p. 26):

“The increasing recognition is that a strategic perspective of procurement can have considerable cost and performance benefits for all organizations. The consistent implementation and execution of procurement strategy is of paramount importance. [...] the discovery that procurement strategy and practice are asymmetric across a relatively small organization suggests that this may be a common problem.” (Deasy *et al.*, 2014, p. 26)

The findings of this research are somewhat aligned with existing literature on the current maturity assessments, in that categories can differ in the level of maturity they achieved. However, where academic literature argues for a consistent increase of maturity across categories, this research also suggests differences between categories for the target maturity level, as demonstrated for instance by the different requirements with regard to global sourcing or centralisation.

7.3.3 Impact on the conceptual model

Figure 29 demonstrates the impact of analysis findings on the conceptual model: the link between firm, procurement and category strategy could not be supported. Instead, contextual contingencies could be linked directly to the target maturity profile. Whilst the measurement of maturity as a current and target profile could be supported by the analysis, the evidence to support the category as the correct unit of analysis is somewhat conflicting.

Overall, the case supports the conceptual model and no further updates are required.

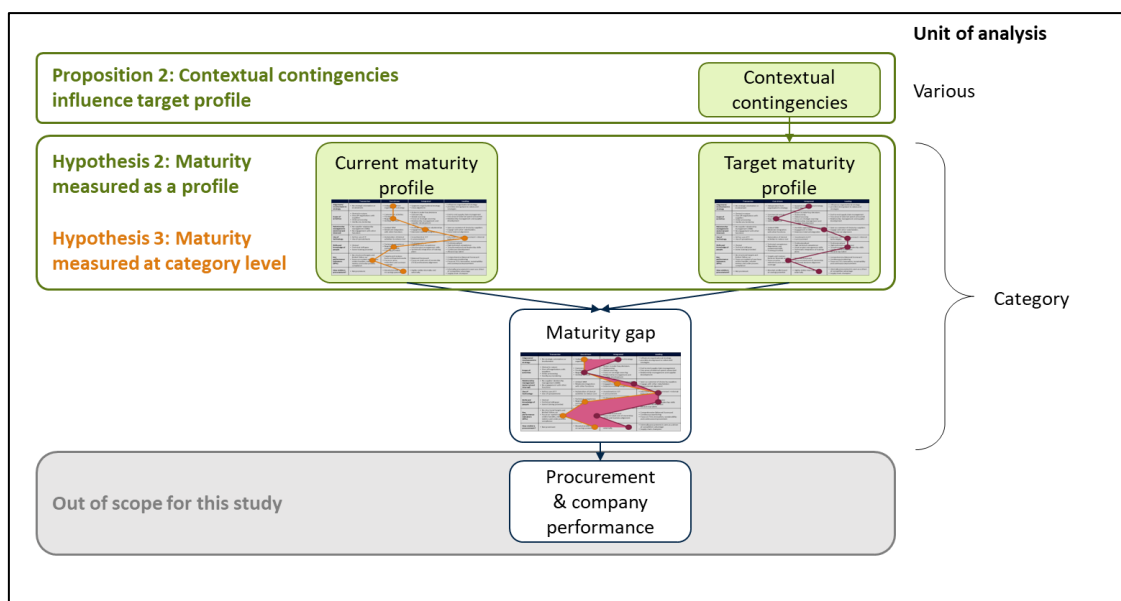


Figure 29: Impact of analysis findings on conceptual model (as updated after A&D case analysis)

7.3.4 BANK Access limitations

BANK was a less 'managed' case study than the other two – access here was not organised by the head of procurement but by the researcher herself, which means that every interviewee had to be onboarded separately. This means that general preparation and follow-up in these interviews was harder to achieve, resulting in a lower number of documents provided for triangulation.

Finally, as with the other two cases, some interviewees did not fully participate in the interview process. Usually these were functional interviewees, which would provide initial insight into and access to the company, but not join in with the detailed interviews.

8 Cross-case analysis

This section focuses on comparing the findings from the three in-depth cases. It will start with a review of the findings towards RQ1, specifically the contingencies to procurement maturity that were identified during the three cases. Subsequently, RQ2 will be reviewed, focusing on the unit of analysis, a general discussion of procurement maturity and finally the development of procurement maturity archetypes.

8.1 RQ1: Procurement maturity contingencies

8.1.1 Procurement maturity contingencies identified

The different case studies have highlighted a number of contingencies mentioned by category managers. The analysis also highlights that some maturity areas are influenced by more contingencies than others. This could be due to the focus for the companies selected or for individual employees. For instance, the difference between direct and indirect categories was an important topic in A&D, where one indirect category was interviewed along with four direct ones, whereas WATER only included direct categories and BANK only indirect categories, so that they would have been less focused on the difference between the two. However, it could also mean that some maturity topics are more universally important than others.

This question will be further analysed in the following section.

Table 56 provides an extract of Table 76 in the appendix (Appendix A Number of references to support contingencies to maturity topics), which summarises the contingencies mentioned for different maturity topics as well as the number of references made in interviews for each of the contingencies. It highlights that for many of the contingencies there is support across two or even all three of the cases, despite the fact that category managers were not directly asked if they supported this contingency, but mentioned it without prompts in the interviews. However, there are also contingencies with less support (e.g. higher organisational complexity which results in a higher requirement to create long-term plans). Whilst these contingencies will be included in this analysis, the differences between the contingencies identified in different cases will be discussed in more detail in Section 8.1.2 Cross-case and unique contingencies.

The analysis also highlights that some maturity areas are influenced by more contingencies than others. This could be due to the focus for the companies selected or for individual employees. For instance, the difference between direct and indirect categories was an important topic in A&D, where one indirect category was interviewed along with four direct ones, whereas WATER only included direct categories and BANK only indirect categories, so that they would have been less focused on the difference between the two. However, it could also mean that some maturity topics are more universally important than others.

This question will be further analysed in the following section.

Table 56: Number of references to support contingencies to maturity topics

Colours indicate the number of references that support the relationship (darker blue colour = more references)

Area	Topic	Influenced aspect	Contingency	Relationship type	Relationship direction	References A&D	References WATER	References BANK
Strategy and planning	Strategic planning	Create long-term plan	Product criticality	Requirement	Higher	4	2	3
					Lower	0	0	1
			Product standardisation	Requirement	Higher	2	2	0
					Lower	2	2	0
			Cost pressure	Requirement	Higher	0	0	3
					Lower	0	0	0
		Create & execute long-term plan	Organisational complexity	Requirement	Higher	0	0	1
					Lower	0	0	0
			Ability to forecast	Ability to achieve	Higher	1	1	1
					Lower	4	2	4
	Strategic alignment	Category strategy alignment to company strategy	Indirect categories	Ability to achieve	Higher	2	0	0
					Lower	2	0	0
			Business has clear priorities	Ability to achieve	Higher	1	1	4
					Lower	0	1	2
			Market maturity	Requirement	Higher	0	0	0
					Lower	1	0	1
			Product criticality	Requirement	Higher	1	2	0
					Lower	0	0	1
			Indirect categories	Requirement	Higher	1	1	1
					Lower	1	0	0

8.1.2 Cross-case and unique contingencies

To enable the comparison of the contingencies mentioned in different cases, Table 57 compares the key contingencies identified in A&D, WATER and BANK. The first three columns highlight the contingencies followed by the different maturity topics they influence.

Table 57: Mapping of contingencies' influence on the maturity topics across all three cases

Colour legend:	A&D only
	WATER only
	BANK only
	Supported in 2 cases (detail in table)
	Supported in all 3 cases

The shading in the last three columns highlights the number of interviewees supporting this relationship; darker shading = more interviewees support the relationship

Unit of analysis	Contingency type	Contingency	Strategy and planning	Organisation and controlling	Status and involvement	Sourcing and supply base mgmt.	Supplier mgmt.	Skills	IT	Other	Total A&D	Total WATER	Total BANK
Product	Product characteristics	Product criticality	all	all	all	all	all			all	36	37	25
		Product complexity		A&D, WATER		WATER	A&D, WATER	all		all	13	12	3
		Product standardisation	A&D, WATER	all		A&D, BANK	all		A&D, BANK		17	8	11
		Product customisation		A&D, WATER	A&D, BANK	A&D, BANK					15	1	3
		Ability to forecast	all							A&D, BANK	9	3	7
		Inability to forecast								all	2	3	3
		Quality is important					A&D				2		
	Service users	Local service requirement				all					2	2	2
		Changes in market				BANK							1
	Supply base	Market maturity	A&D, BANK								1		1
		Size of supply base (large)				all					9	5	4
		Size of supply base (small/limited capacity)				all					4	7	1
		Supplier availability (local)				all					1	1	2
		Disconnected supply chain				A&D, WATER					2	1	
Supplier	Supplier characteristics	Supplier criticality				all	all				14	8	10
		Dependence on supplier					all				4	2	2
		Lacking supplier capability		A&D, WATER		all	all				18	13	9
		Small suppliers				A&D, BANK				WATER, BANK	1	2	5
		Supplier relationship		all					A&D		7	2	2
Category	Category characteristics	Direct categories					BANK						2
		Indirect categories	all								6	1	1
		Business has clear priorities	all								1	2	6
	Stakeholders	Cost pressure	BANK	A&D, BANK			all		WATER, BANK	all	5	6	12
		Customer/stakeholder relationship		WATER								4	
		Local users of service (customer/stakeholder relationship)		all							2	7	4
		Customer/stakeholder		all			all				4	3	2

Unit of analysis	Contingency type	Contingency	Strategy and planning	Organisation and controlling	Status and involvement	Sourcing and supply base mgmt.	Supplier mgmt.	Skills	IT	Other	Total A&D	Total WATER	Total BANK
		requirements											
		Large number of stakeholders							WATER, BANK			1	1
		Stakeholders are interested in cooperation		WATER, BANK								3	2
		Working with difficult stakeholders			all			all			10	12	17
		Working with engineering/in a technical area						all			5	3	2
Company	Procurement context	IT system capabilities		A&D, WATER							1	1	
		Organisational complexity	BANK	all					WATER, BANK		2	9	7
		Single IT system		all			A&D				4	2	3
Industry	Regulatory requirements	Regulatory requirement		all		all	all	all	BANK		10	23	17
		Regulatory requirement - local availability		BANK									3
		Regulatory requirement - local supply				all					4	4	3
Situation	Individual purchase	Enough time available				all					6	1	1
		New product/supplier				A&D, BANK					3		3
		Time pressure/emergency situation		all							1	4	2
	Personal situation	Training requirement						all			1	1	1

The differences in products and the source case characteristics are discussed in the following sections.

8.1.2.1 *Product-level contingencies*

Table 57 demonstrates that product-level contingencies were by far the most mentioned across all three cases. They influence all areas across the maturity model. These contingencies were predominantly raised in A&D, where the product portfolio was very diverse, whereas WATER's and BANK's categories are more service-focused. However, which product characteristics were raised differs from case to case.

The most predominant of all contingencies was product criticality, which was mentioned frequently across all three cases. This could be driven by the case selection, since all three companies were buying critical products in their own way: A&D buys highly complex and security sensitive components, WATER buys products and services that ensure availability of fresh water for millions of customers, and BANK buys services that ensure the stable operations of financial services. However, the three companies vary considerably in their product portfolio and yet all identified some products that are more critical than others.

Similarly, product standardisation was mentioned across all three cases, although somewhat more in A&D than in the other two. This could be due to the high level of product customisation in A&D, due to the engineer-to-order environment, which serves as a contrast to product standardisation. This is supported by the fact that A&D has considerably more references around product customisation than the other two cases, and indicates that whilst product standardisation is a common contingency, product customisation may be more specific to the engineer-to-order environment.

Product complexity was mentioned frequently in A&D and WATER, but less in BANK. This could be related to the products and services bought: where both A&D and WATER were focused on direct categories, BANK was focused on indirect categories. Indirect categories may be less complex, since they are very standardised services that are bought by almost every large company.

Ability to forecast, and its inverse, inability to forecast, were again mentioned across all cases. Ability to forecast was mentioned a little less in WATER, which may be due to the fact that it is less on category managers' minds, since the final service sold to customers has a very stable demand and is therefore rather forecastable.

Finally, the importance of quality as a contingency to supplier management was mentioned by two interviewees in A&D. This could again be driven by the high product complexity in A&D, but it can equally be argued that product quality should be an important consideration in all companies.

Local service requirements as a contingency to global sourcing has been identified by all three case companies, in spite of the relatively low number in total references, this makes it common to all three cases.

Changes in market and the market maturity were only mentioned by very few category managers, so that these contingencies require further research to establish their importance.

However, the size of the supply base was mentioned frequently across all cases, both as a large and a small supply base. This contingency typically impacts activities in sourcing and supply base management, such as the ability to tender, or risk management, since a larger supply base enables a more effective tendering process and implies a lower supplier risk.

Local supplier availability was mentioned in all three cases as a contingency to global sourcing (i.e. locally available suppliers reducing the requirement for global sourcing). In spite of the small number of references overall, this contingency was common across all three cases.

Similarly to a small supply base, a more disconnected supply chain implies a higher risk. This contingency was supported by A&D and WATER, but no references were identified from BANK. It is unclear why this contingency would not apply in BANK's context – indicating a requirement to further research this contingency.

8.1.2.2 Supplier-level contingencies

Supplier-level contingencies focus on maturity areas that are focused on supplier interactions (sourcing and supply base management and supplier management), but are also linked to organisation and controlling, specifically a higher requirement for risk management with a smaller supply base.

The most frequently mentioned contingencies here were supplier criticality and lacking supplier capability. Both contingencies were mentioned across all three cases. This contingency is very similar to product criticality: most companies will have more and less important suppliers, irrespective of the products or services they buy. Similarly,

most companies will have issues with some suppliers, resulting in interviewees mentioning lacking capability as a contingency.

Dependence on the supplier was also mentioned across all three cases, albeit slightly more by A&D, who are often very dependent on suppliers, due to the engineer-to-order context.

Small suppliers are mentioned less frequently, but they are mentioned as a contingency by all three case companies. They influence both risk management and contract management, where more creative approaches may be required to accommodate the lower amount of capital in smaller suppliers. In spite of the low number of quotes, this contingency is common to all three cases.

Finally, all three cases mentioned that a closer supplier relationship requirement drives a higher level of centralisation, in order to ensure a central contact for the supplier. Whilst this contingency is common to all three cases, A&D also mentioned that a closer supplier relationship drives a lower requirement for automation. This was not supported by the other cases, nor can it be explained within the case context, thus also requiring further research.

8.1.2.3 *Category-level contingencies*

First, category-level contingencies include the difference between direct and indirect categories. Only BANK mentioned a higher requirement for supplier development for direct categories, resulting in further research being required to understand if this is a 'true' contingency. However, in all three cases interviewees raised the point that indirect categories have a higher requirement for and ability to achieve strategic planning and strategic alignment.

Apart from the direct/indirect split, category-level contingencies are very focused on stakeholder relationships, which strongly influence the organisational set-up. However, they also influence all other areas in the maturity model with the interesting exceptions of sourcing and supply base management.

Interviewees across all three cases mentioned that strategic planning is enabled by clear priorities provided by the business. As this contingency was most frequently mentioned by BANK, likely due to BANK's high level of maturity in strategic planning. This indicates some robustness in the contingency, in spite of the small number of references.

Cost pressure was another frequently mentioned contingency. However, whilst all three cases supported that cost pressure requires more creative commercial terms and closer supplier evaluation, interviewees also mentioned multiple other areas in the maturity model that were influenced. For instance, BANK identified a higher requirement for long-term planning and outsourcing to identify and implement cost savings opportunities. WATER found that cost pressure requires a higher level of automation, to reduce internal supplier management cost. A&D mentioned that they were reducing cost – amongst others – by centralising procurement functions. It is unclear how these different relationships could be driven by the case company's context; rather, it appears that these relationships are based on current strategic activities: BANK have just outsourced a large amount of procurement operations, WATER are implementing a new procurement system and A&D consider their organisational matrix structure a strategic advantage. This contingency also requires further research.

WATER was the only case in which interviewees stated that when a close customer or stakeholder relationship is required, procurement should be more de-centralised, to enable the procurement function to interact with customers and stakeholders. This could be driven by the high level of services procured within direct procurement, which generally focuses more on relationships. It would not apply to A&D in the same way, since their Indirect functions can be both centralised and close to stakeholders, as these are equally centralised.

Interviewees in all three cases mentioned that the organisation should be more decentralised where there are local users of the service. However, in A&D this was only mentioned by A&D_Function and A&D_Indirect, indicating that this is again driven by the high service element in procurement, which is also true for WATER and BANK.

All three cases supported that customer or stakeholder requirements can drive both de-centralisation and supplier relationships, where these are directly requested.

WATER_Function and BANK_Function 2 stated that more automation in IT systems can be driven by a large amount of stakeholders, as this ensures a faster pay-off of the new system. This contingency is interesting in that it aligns with current strategic initiatives in WATER and BANK. Moreover, A&D did not raise a requirement for more automation. This could be driven by the level of product standardisation and commoditisation across the different companies: A&D generally deals with a small

number of highly complex products, whereas both WATER and BANK procure more standardised and commoditised products and services – and in much larger volumes.

Another contingency that was not raised by A&D was the ability to achieve a higher level of internal integration, where stakeholders are interested in cooperation. Although it could again be argued that this is driven by the type of products purchased, it is more likely that A&D did not raise this contingency because of their project set-up. Stakeholders in A&D are generally interested in cooperation, since there is a high dependency on procurement. It is therefore likely that this contingency is more common than the cases indicate.

Finally, all three cases agree that working with difficult stakeholders raises the requirement for procurement's status in the company. It also means that category managers need to be more skilled in managing these stakeholders. When working with engineering, category managers additionally need to have a higher level of technical understanding, to be able to question engineers and to communicate effectively with suppliers.

8.1.2.4 *Company-level contingencies*

For company-level contingencies, interviewees primarily raised relationships with the organisational set-up.

First, interviewees in A&D and WATER mentioned that a robust IT system enables better supplier evaluation. However, since this was only raised by two interviewees, further research is required to better understand this contingency.

Interviewees also stated that higher levels of organisational complexity drive a higher requirement for process standardisation and documentation, as well as better internal integration. However, BANK also mentioned a requirement for better strategic planning and WATER raised a requirement for better IT systems. These last two relationships were not supported by many interviewees and need to be researched further.

Additional relationships were raised between organisational complexity and strategy and planning (BANK) as well as IT (WATER and BANK). This can be explained by the higher inward focus of WATER and BANK due to the high service level (A&D's complexities are mostly driven by project and product challenges).

Finally, interviewees mentioned that a single IT system is required to achieve a higher level of process automation.

8.1.2.5 *Industry-level contingencies*

Industry-level contingencies (especially regulatory requirements) influence the processes and the supply base management; however, they also influence skills (training requirements), supplier management (regulatory-driven audits) and organisational set-up (esp. process control). There appears to be a high alignment in the impact of regulatory requirements, even though the regulatory requirements driving the different industries are very different: Where A&D focuses on local sourcing (offset) requirements, WATER is primarily driven by EU regulations on water quality and procurement processes, and BANK primarily mentioned regulation around money laundering and customer/supplier visibility.

8.1.2.6 *Situational contingencies*

Finally, the individual situation can influence the supplier selection process: more time available allows for more complex sourcing procedures, such as tenders, whereas an emergency situation often means that standard processes cannot be followed. Similarly, a new product or supplier requires a longer and more thorough sourcing process, since the supply base and supplier are not known to the category manager yet. Finally, the personal situation of the buyer drives their training requirements.

8.1.3 **Summary: A high level of commonality across cases**

This section analysed the extent to which contingencies identified are supported across cases or are unique to individual cases. Table 58 demonstrates that most contingencies are common to all three cases, indicating a high level of alignment between interviewees on contingencies, in spite of the differences in case profiles. This is especially remarkable, since all contingencies were mentioned as unsolicited (i.e. the interviewer did not ask for specific contingencies, but only why certain tactics are more important to the category managers than others). There is therefore likely to be a strong bias towards understating important contingencies, if they were not at the forefront of category managers' thoughts during the interview.

Some contingencies appeared to be more relevant for specific contexts – thus possibly only generalisable to these contexts. Product complexity seems more relevant for

direct than indirect categories, the customer/stakeholder relationship and the existence of local service users appear more relevant in a service procurement context and a large number of stakeholders driving IT automation was found to be more relevant for standardised and commoditised product portfolios.

Finally, there are also some contingencies that require further research (e.g. market maturity), where the small amount of references provided, and only in one or two cases, did not provide enough information to assess commonality or reasons for lacking commonality.

Table 58: Contingencies and source case characteristics

<i>Common to all three cases</i>			
<i>More relevant for some categories</i>			
<i>Requires further research</i>			

Unit of analysis	Contingency type	Contingency	Source case characteristics
Product	Product characteristics	Product criticality	Common to all three cases
		Product complexity	More relevant for direct categories
		Product standardisation	Common to all three cases
		Product customisation	Engineer-to-order environment
		Ability to forecast	Common to all three cases
		Inability to forecast	Common to all three cases
		Quality is important	Requires further research
	Service users	Local service requirement	Common to all three cases
	Supply base	Changes in market	Requires further research
		Market maturity	Requires further research
		Size of supply base (large)	Common to all three cases
		Size of supply base (small/limited capacity)	Common to all three cases
		Supplier availability (local)	Common to all three cases
		Disconnected supply chain	Requires further research
Supplier	Supplier characteristics	Supplier criticality	Common to all three cases
		Dependence on supplier	Common to all three cases
		Lacking supplier capability	Common to all three cases
		Small suppliers	Common to all three cases
		Supplier relationship	Common to all three cases (centralisation) Requires further research (IT)
Category	Category characteristics	Direct categories	Requires further research
	Stakeholders	Indirect categories	Common to all three cases
		Business has clear priorities	Common to all three cases
		Cost pressure	Common to all three cases (supplier evaluation and commercial terms) Requires further research (all other)
		Customer/stakeholder relationship	More relevant where there is a high amount of services procured
		Local users of service (customer/stakeholder relationship)	More relevant where there is a high amount of services procured
		Customer/stakeholder requirements	Common to all three cases
		Large number of stakeholders	More relevant for standardised and commoditised product portfolios
		Stakeholders are interested in cooperation	Only mentioned by WATER and BANK, but likely to be more common
		Working with difficult stakeholders	Common to all three cases
		Working with engineering/in a technical area	Common to all three cases

Unit of analysis	Contingency type	Contingency	Source case characteristics
Company	Procurement context	IT system capabilities	Requires further research
		Organisational complexity	Common to all three cases (process standardisation and internal integration) Requires further research (all other)
		Single IT system	Common to all three cases
Industry	Regulatory requirements	Regulatory requirement	Common to all three cases
		Regulatory requirement - local availability	Requires further research
		Regulatory requirement - local supply	Common to all three cases
Situation	Individual purchase	Enough time available	Common to all three cases
		New product/supplier	Common to all three cases
		Time pressure/emergency situation	Common to all three cases
	Personal situation	Training requirement	Common to all three cases

8.2 Procurement maturity advancement

This section will analyse the developments to procurement maturity that can be made based on the three cases, starting with the enhancement of the procurement maturity model and followed by the development of specific procurement maturity archetypes.

8.2.1 Considerations on units of analysis

Table 59 summarises the ranges of maturity scores across the different units of analyses. The first three columns after the maturity area and topic show the average maturity score for each case company, with the range of scores (i.e. minimum and maximum score) in brackets. The next three columns indicate the differences within each case, but across categories, by showing the ranges across categories within each case (i.e. maximum maturity score for this topic – minimum maturity score for this topic). They are highlighted in shades of blue, with larger ranges coloured in darker blue. The last column indicates the differences across cases, by showing the range in average maturity scores across the three case companies (i.e. the highest average score – the lowest average score). This column is highlighted in shades of purple, again with a darker colour indicating a larger difference.

Table 59: Comparison of maturity results across units of analysis

The shading of the ranges indicates the size of the range (the darker the colour, the larger the range)

Area	Topic	Average & range by case company			Ranges across categories			Range across companies
		A&D	WATER	BANK	A&D	WATER	BANK	
Strategy and planning	Strategic planning	2.8 (2-3.5)	1.4 (1-2)	3.3 (1-4)	1.5	1.0	3.0	1.9
	Strategic alignment	2.9 (2-4)	2.5 (1.5-4)	3.7 (2-4)	2.0	2.5	2.0	1.2
Organisation and controlling	Organisational structure	2.9 (2-3.5)	3 (2-4)	3.3 (2.5-4)	1.5	2.0	1.5	0.5
	Purchasing process	3.7 (3.5-4)	2.9 (2-4)	3.2 (3-3.5)	0.5	2.0	0.5	0.8
	Controlling / Performance Measurement	2.5 (2.5-2.5)	2 (2-2)	3.5 (3.5-3.5)	0.0	0.0	0.0	1.5
	Internal integration	2.9 (2-3.5)	2 (2-2)	3.3 (2-4)	1.5	0.0	2.0	1.3
Status and involvement	Status and Recognition	3.4 (3-4)	2.6 (2-3)	2.8 (2-3.5)	1.0	1.0	1.5	0.8
	Involvement	3.1 (0-4)	2.6 (2-4)	3.3 (2-4)	4.0	2.0	2.0	0.6
Sourcing and supply base management	Supplier selection	3 (3-3)	2.9 (2-3)	3 (2-4)	0.0	1.0	2.0	0.1
	Supply base management	3.1 (3-3.5)	1.9 (1-2)	2.3 (2-3)	0.5	1.0	1.0	1.2
	Global sourcing	2.8 (1-4)	1.1 (1-1.5)	3.5 (2.5-4)	3.0	0.5	1.5	2.4
	Risk management	2.5 (2.5-2.5)	2.5 (2.5-2.5)	3.3 (2-3.5)	0.0	0.0	1.5	0.8
Supplier management	Supplier relationship	3.3 (3-4)	3.6 (2-4)	2.8 (2-3)	1.0	2.0	1.0	0.7
	Supplier development	2.8 (2.5-3)	1.1 (1-1.5)	2.3 (1-3)	0.5	0.5	2.0	1.7
	Supplier evaluation	2.6 (2.5-3)	1.3 (1-2)	3 (3-3)	0.5	1.0	0.0	1.7
Skills	Existing skills	3 (3-3)	2.7 (2-4)	3.3 (3-3.5)	0.0	2.0	0.5	0.6
	Training and development	3 (3-3)	2 (2-2)	2.5 (2.5-2.5)	0.0	0.0	0.0	1.0
IT	IT systems	2 (2-2)	2.5 (2.5-2.5)	2.5 (2.5-2.5)	0.0	0.0	0.0	0.5

8.2.1.1 Differences within cases and across categories

Table 58 demonstrates that differences between categories are generally quite large, ranging from a minimum range of 0 to maximum range of 4.0.

Some topics don't have any differences across categories. These include primarily controlling and performance measurement, training and development, and IT. This is due to the fact that all three topics were driven by the company or procurement function. In all three cases, category managers' targets and process controls were set by the functional organisation and performance was assessed uniformly across the procurement function. Similarly, training plans and development opportunities were defined based on a standardised approach. All categories within a case used the same IT system, resulting in the same score across categories. Moreover, risk management had a high level of alignment across categories. Again, risk management procedures were defined by the head of procurement or a central function for all three cases, to ensure risks were recorded and monitored coherently across the function. The

exception here was BANK, where all categories had a very risk management score of 3.5, following internal procedures, except for FinTech. Due to the small size of suppliers, this category had to use a more creative approach to risk management, resulting in a lower score.

It can also be seen that there are considerable differences between the cases in terms of the range across categories. These differences across categories are generally driven by the different case contexts. For example, A&D has very large differences in involvement, due to the organisational set-up of project-based and central categories – with those categories involved in projects also being much more involved in early design decisions. On the other hand A&D shows no differences in supplier selection, due to a high level of standardisation in the sourcing process driven by the central procurement capabilities team. WATER on the other hand shows high differences in the level of alignment and skills across categories. The differences in alignment are driven by some category managers having started individual efforts to increase their alignment to the corporate and functional strategy, whereas most categories have relatively low scores, possibly due to the lack of category strategies. The differences in skills are likely to be based on the small team sizes (usually one to two people) in each category. On the other hand, WATER category scores are highly aligned on global sourcing, since all categories source predominantly locally, due to the service-type products and local service requirement. BANK shows substantial differences in strategic planning, which are again driven by FinTech, who do not have a category plan, due to the immaturity of the market, whilst all other categories achieve very high scores.

This analysis also provides further insight on hypotheses 2 and 3. Hypothesis 2 (The most appropriate measurement type for procurement maturity is the maturity profile, not an aggregate maturity measure) was already strongly supported in the individual cases. However, the differences in maturity topics and contingencies demonstrated in this discussion again underline the wealth of information provided by maturity profiles. In contrast, hypothesis 3 (The most appropriate unit of analysis for procurement maturity is the procurement category) had some support in the individual cases, but without final conclusions being drawn. The analysis above clearly highlights that maturity has to be measured at the category level, due to the considerable differences in scores between categories.

However, it also has to be said that not all similarities across categories are shown in Table 59; for example, it demonstrates ranges of 0.5 or 2.0 for the three cases in the purchasing process. However, in all three cases, purchasing processes were defined at a functional level. The differences in scores were based on the extent to which these defined processes were followed by different categories. Whilst this does not negate the requirement for assessing maturity, at least partially, at category level, it also indicates that further detail is required in the maturity model to distinguish between approach (e.g. process definition) and execution (e.g. following of processes).

8.2.1.2 *Differences across cases*

The average score per topic (across categories within a case) differs between the three cases for all topics in the maturity model. However, some topics are much more similar than others. The largest differences can be seen in global sourcing, strategic planning, supplier development and supplier evaluation; all four differences are driven by the diversity in case companies, thus also demonstrating that they are meaningful differences and not spurious.

First, the large difference in global sourcing is driven by the service level on the one hand and the size of the companies on the other hand. A&D has a large amount of global sourcing, being a global company that attempts to select the globally best supplier. WATER on the other hand is a much smaller, regionally-focused company, sourcing mostly services to be delivered locally, thus prioritising local suppliers. Whilst BANK also had a high service element in their categories, it is a global company itself, thus requiring these services to be executed globally.

Differences in strategic planning appear to be driven by the size of the company as well as the procurement team. Since the lack of a category plan does not stop procurement operations, it could be considered secondary to other sourcing activities, as might be the case in WATER, which is a much smaller company and with a smaller procurement team than the other two cases. The lower score in strategic planning achieved by WATER could also be driven by the organisational set-up, in which category managers in WATER are not responsible for the framework management after a supplier is selected. However, it is also possible that WATER generally has a lower level of maturity. This could be argued, since many of the categories interviewed are extremely critical to WATER and the contingencies indicate a higher requirement for strategic planning for these categories.

Differences in supplier development are driven by the type of product sourced: A&D with the highest score in this topic has the highest share of physical products (components for radars and lasers), whereas BANK and WATER have a much higher share of services procured. However, similarly to strategic planning, WATER scores lower than would be expected, since the services procured are nonetheless direct procurement. This could again be due to the organisational set-up: Since supplier development usually occurs during framework management, this would not be considered a core requirement by the category managers in WATER.

This organisational set-up also drives WATER's low score in supplier evaluation. BANK achieves a higher score than A&D in this topic, since A&D considers supplier evaluation important, but, due to the engineer-to-order context, A&D has a very strong focus on on-time delivery to ensure any dependent activities in the project can progress.

8.2.2 Procurement maturity model enhancement

The maturity model review in the three cases provided a comparison of the current maturity model and interviewees' comments on the importance of different topics, their content and the contingencies they consider when selecting tactics. These comments highlighted that categories work at more granular level of detail, for instance distinguishing between the development of a formal plan or process and the execution or adherence to the plan. To include procurement maturity contingencies, the maturity model has to provide this additional detail.

Relying on the discussion in sections section 5.2.1.5, 6.2.1.3 and 7.2.1.3 (Maturity model review by topic for each case respectively) as well as sections 8.1 (RQ1: Procurement maturity contingencies) and 8.2.1 (Considerations on units of analysis), this research provides an updated procurement maturity model (see Appendix B Final contingency-maturity model (after case studies)). It includes the additional topic on contracts/commercials (under sourcing and supply base management) as well as the contingencies indicated by interviewees that were common to all three cases.

These contingencies were included for several reasons. First, they serve as a communication tool to start discussing contingencies and the possibility that higher maturity levels are not generally desirable. This enables category managers to gain a better understanding of when they are or aren't applicable. It is expected that future research will build on this to create a robust model defining clearly which contingencies influence which maturity topics.

Second, it serves as a first step to overcome the subjectivity in defining the target maturity profile. Most interviewees were influenced in some way by the traditional set-up of maturity models (i.e. stages that form a roadmap from 'bad' to 'good'). The hope is that the clear depiction of contingencies will influence users of the maturity model to think about their specific circumstances when setting targets rather than simply stating that "it should be four – we all strive for perfection" (A&D_Indirect). Other comments supporting this point were:

"I like to think there's always room for improvement, but that's probably a fair reflection of where we are. I'd like to think we could be best practice, which would be stage four." (A&D_Indirect)

"Personally, myself, I would always like to strive for the next stage, but from a business point of view, the tangible benefit, when you are growing, when you are meeting customer expectations..." (A&D_Mechanical)

"I always think we should be higher." (A&D_Optics)

"It's probably quite high, but I've always had the view that everything can be done better. I would never put anything in the end column because there's always room to improve..." (A&D_Optics)

"I don't think any company would be able to say we are 100% and there's nothing else we can do – so I guess you have to take that as a measure as well, and you've got four stages there so..." (WATER_Chemicals)

"To be honest I can't explain why I said that, but with regard to risk management, I think you can always do a bit more can't you?" (WATER_Services portfolio)

"I think in HR because we're a small team, we're probably quite good at both of those, but there's always room for improvement." (BANK_HR)

Thirdly, as demonstrated in Section 8.2.1 (Considerations on units of analysis), descriptions for each topic appear to be too generic for accurate and objective assessment. This is demonstrated – for example – by the differences in assessments for Global Sourcing in the Mechanicals Category, where A&D_Function focused on the existence of a clear global sourcing strategy, and A&D_Mechanical focused on the extent to which the supply base is global. Both interpretations are somewhat supported by the description in the maturity model. Similarly, not all of these sub-topics were found to have contingencies. In the Global sourcing examples, several contingencies were identified as using more global or more local suppliers, but not one interviewee mentioned that it wouldn't be beneficial to have a clearly defined strategy on global sourcing. The updated procurement maturity model therefore includes this

additional separation of approach and execution, to make future assessments more accurate.

One interesting finding has to be mentioned specifically: In Internal integration the definition of interfaces and responsibilities towards other functions was considered to be contingent on the organisational complexity. However, interviewees argued that complex organisations require both a higher and a lower level of maturity in this area. Whilst this initially seems paradoxical, interviewees stated that the requirement is to increase documentation of interfaces and key contacts, but allow for a level of flexibility in the relationships and responsibilities between different functions. This could indicate a requirement to further split this topic. However, instead the paradox remains the maturity model, but a comment was included to explain the difference.

Procurement maturity archetypes

The contingencies included in the maturity model in Appendix B Final contingency-maturity model (after case studies) can be further aggregated into a set of procurement maturity archetypes, especially since some contingencies are included much more frequently than others. This is shown in Table 60, which highlights how many areas of the maturity model are influenced by each of the contingencies reviewed.

The following analysis will focus on the 'top 9' contingencies that influence more than two maturity areas, since these will show the most cohesive maturity archetypes. These contingencies are highlighted in a red frame. However, Table 60 also demonstrates that some of the contingencies are related to, and in fact can be grouped with, other contingencies. These contingencies are in bold and equally highlighted with a red frame. As these contingencies are directly related to other contingencies, they actually influence a much higher number of maturity areas and should also be included in the archetype analysis. All contingencies with a red frame will be discussed in this section.

The archetypes discussed apply at a category level, i.e. a category could identify multiple archetypes that are relevant. For example, a category could cover products that are critical to the business, whilst also working with highly customised products and a small supply base. However, with the information collected in the three in-depth cases, these archetypes can only indicate a 'higher' or 'lower' requirement for each maturity topic, they cannot define exact maturity levels required.

Table 60: Number of topics influenced by different contingencies

The colour coding indicates the impact; a darker colour means more maturity areas are influenced

Rows in bold indicate contingencies that are related to another contingency in the table

The red border indicates the contingencies that will be included in the following analysis

ID	Contingency	Areas of maturity model that are influenced by this contingency	Comment
1	Product criticality	12	
2	Regulatory requirement	10	Can be aggregated together with other regulatory contingencies (IDs 23 and 33)
3	Product complexity	7	
4	Product standardisation	6	Inverse to product customisation (ID 8)
5	Cost pressure	6	
6	Organisational complexity	5	
7	Lacking supplier capability	5	
8	Product customisation	4	Inverse to product standardisation (ID 4)
9	Supplier criticality	4	
10	Working with difficult stakeholders	2	
11	Supplier relationship	2	
12	Ability to forecast	2	Inverse to inability to forecast (ID 42)
13	Indirect categories	2	Inverse to direct categories (ID 37)
14	Customer/stakeholder requirements	2	
15	Single IT system	2	
16	Size of supply base (large)	2	Inverse to small supply base (ID 17)
17	Size of supply base (small/limited capacity)	2	Inverse to large supply base (ID 16)
18	Small suppliers	2	
19	Dependence on supplier	2	
20	Business has clear priorities	1	
21	Market maturity	1	
22	Customer/stakeholder relationship	1	
23	Regulatory requirement - local availability	1	Can be aggregated together with other regulatory contingencies (IDs 4 and 33)
24	Local users of service (customer/stakeholder relationship)	1	
25	Time pressure/emergency situation	1	
26	IT system capabilities	1	
27	Stakeholders are interested in cooperation	1	
28	Enough time available	1	
29	New product/supplier	1	
30	Changes in market	1	
31	Disconnected supply chain	1	
32	Disconnected supply chain	1	
33	Regulatory requirement - local supply	1	Can be aggregated together with other regulatory contingencies (IDs 4 and 23)
34	Geopolitical uncertainty	1	
35	Supplier availability (local)	1	
36	Local service requirement	1	
37	Direct categories	1	Inverse to indirect categories (ID 13)
38	Quality is important	1	
39	Working with engineering/in a technical area	1	
40	Training requirement	1	
41	Large number of stakeholders	1	
42	Inability to forecast	1	Inverse to ability to forecast (ID 12)

8.2.2.1 Product criticality

Table 61 demonstrates the archetype for critical products; these include products that are critical to the business, for example because of their high value or their high risk impact. Critical products influence several areas across the maturity model, especially in strategy and planning, organisation and controlling, sourcing and supply base management, and supplier management. In general this high level of impact demonstrates that special attention should be paid to critical products, ensuring a strategy and organisation are in place, whilst working closely with internal stakeholders and suppliers to ensure best outcomes for procurement.

Table 61: Product criticality archetype

The colour coding indicates the impact; green colours indicate a 'high' requirement, red colours indicate a 'low' requirement. Grey topics have not been mentioned in relation to this contingency.

Area	Topic		1	2	3	4
Strategy and planning	Strategic planning	Create long-term plan				
		Create & execute long-term plan				
		Execute long-term plan				
	Strategic alignment	Category strategy alignment to company strategy				
Organisation and controlling	Organisational structure	Centralisation				
		De-centralised				
	Purchasing process	Lower process standardisation				
		Higher process standardisation				
	Controlling / performance management	Automation of performance measurement				
		Measure complex performance				
	Internal integration	Working closely with other functions				
		Document interfaces				
Status and involvement	Status and Recognition	Higher Status				
	Involvement	Involvement in critical product decision				
Sourcing and supply base management	Supplier selection	Tendering contracts				
		Longer / more complex RFQ process				
		Criteria considered				
	Supply base management	Proactive supply base management				
		Supply base visibility				
	Global sourcing	Global suppliers				
		Local suppliers				
	Risk management	Risk management				
Supplier management	Supplier relationship	Close relationship / co-operation				
		Supplier consolidation				
		Less relationship / co-creation opportunities				
	Supplier development	Develop suppliers				
	Supplier evaluation	Close supplier management / frequent performance review				
Skills	Existing skills	Technical skills				
		Level of skills				
		Procurement / management skills				
	Training and development	Training requirement				
IT	IT systems	Higher level of automation				
		IT system				
Other	Commercials / contract management	Lower level of automation				
		Contract flexibility				
		Contract length				
		Contract complexity / comprehensiveness				
	Outsourcing	More creative contract terms & contract management				
		Insourcing				
		Outsource				

8.2.2.2 Regulatory requirement

Table 62 demonstrates that regulatory requirements have a considerable impact on procurement maturity. Working in a highly regulated industry generally means that category managers need to be in better control of their processes, that they have to consider more – or sometimes even predefined – criteria when selecting suppliers, and that they need to ensure a level of supply chain visibility and traceability. They also drive a higher training requirement, since procurement staff need to be aware of any changes to regulations.

Of course, regulatory requirements can also become more specific. For example, A&D often works with offset requirements, which dictate a certain amount of local supply for any product, thus directly impacting global vs. local sourcing.

Table 62: Regulatory requirement archetype

The colour coding indicates the impact; green colours indicate a 'high' requirement, red colours indicate a 'low' requirement. Grey topics have not been mentioned in relation to this contingency.

Area	Topic	Influenced aspect	1	2	3	4
Strategy and planning	Strategic planning	Create long-term plan				
		Create & execute long-term plan				
		Execute long-term plan				
	Strategic alignment	Category strategy alignment to company strategy				
Organisation and controlling	Organisational structure	Centralisation				
		De-centralised				
	Purchasing process	Lower process standardisation				
		Higher process standardisation				
	Controlling / performance management	Automation of performance measurement				
		Measure complex performance				
	Internal integration	Working closely with other functions				
Document interfaces						
Status and involvement	Status and Recognition	Higher Status				
	Involvement	Involvement in critical product decision				
Sourcing and supply base management	Supplier selection	Tendering contracts				
		Longer / more complex RFQ process				
		Criteria considered				
	Supply base management	Proactive supply base management				
		Supply base visibility				
	Global sourcing	Global suppliers				
		Local suppliers				
Risk management	Risk management					
	More creative risk management					
Supplier management	Supplier relationship	Product traceability				
		Close relationship / co-operation				
		Supplier consolidation				
		Less relationship / co-creation opportunities				
	Supplier development	Develop suppliers				
	Supplier evaluation	Close supplier management / frequent performance review				
		Have consistent measures				
Skills	Existing skills	Technical skills				
		Level of skills				
	Procurement / management skills					
Training and development	Training requirement					
IT	IT systems	Higher level of automation				
		IT system				
Other	Commercials / contract management	Lower level of automation				
		Contract flexibility				
		Contract length				
		Contract complexity / comprehensiveness				
	Outsourcing	More creative contract terms & contract management				
		Insource				
	Outsource					

8.2.2.3 Product complexity

Table 63 demonstrates that complex products have a high impact on the relationship to both stakeholders and suppliers – generally, they require category managers to work more closely with stakeholders to ensure a close supplier management. The table also shows that these types of products typically require a higher level of skills from the category manager. Finally, a higher level of product complexity can result both in a requirement to insource or outsource – depending on whether the complexity is a core strength of the company or the supplier:

“Some of them are fairly complex, most of them are built to print, so the supplier will build whatever we design. In some cases, we will outsource the design to the supplier within the categories. But in our IPTs, the designs are ours with the categories and they tend to be more complex.” (A&D_Laser_1)

“If we have an internal benchmark, then we can see if they are more costly than our internal benchmark and/or if the service is as good as we can provide internally and when we have that benchmark, if they are good, then I am going to structure the contract so that we can back out gracefully and say, ‘ok, you are better than us – have it back’ and if it is the other way, we can structure it so we can gradually take more...” (WATER_Services portfolio)

Table 63: Product complexity archetype

The colour coding indicates the impact; green colours indicate a ‘high’ requirement, red colours indicate a ‘low’ requirement. Grey topics have not been mentioned in relation to this contingency.

Area	Topic	Influenced aspect	1	2	3	4
Strategy and planning	Strategic planning	Create long-term plan				
		Create & execute long-term plan				
		Execute long-term plan				
	Strategic alignment	Category strategy alignment to company strategy				
Organisation and controlling	Organisational structure	Centralisation				
		De-centralised				
	Purchasing process	Lower process standardisation				
		Higher process standardisation				
	Controlling / performance management	Automation of performance measurement				
		Measure complex performance				
	Internal integration	Working closely with other functions				
Status and involvement	Status and Recognition	Document interfaces				
		Remain flexible in approach				
	Involvement	Higher Status				
		Involvement in critical product decision				
Sourcing and supply base management	Supplier selection	Tendering contracts				
		Longer / more complex RFQ process				
		Criteria considered				
	Supply base management	Proactive supply base management				
		Supply base visibility				
	Global sourcing	Global suppliers				
		Local suppliers				
	Risk management	Risk management				
Supplier management	Supplier relationship	More creative risk management				
		Product traceability				
	Supplier development	Close relationship / co-operation				
		Supplier consolidation				
	Supplier evaluation	Less relationship / co-creation opportunities				
Skills	Existing skills	Develop suppliers				
		Close supplier management / frequent performance review				
		Have consistent measures				
	Training and development	Technical skills				
IT	IT systems	Level of skills				
		Procurement / management skills				
	Outsourcing	Training requirement				
Other	Commercials / contract management	Higher level of automation				
		IT system				
		Lower level of automation				
		Contract flexibility				
	Outsourcing	Contract length				
		Contract complexity / comprehensiveness				
		More creative contract terms & contract management				
		Insource				
		Outsource				

8.2.2.4 Product standardisation & product customisation

Product standardisation can be understood as the inverse of product customisation, hence the two contingencies have inverse maturity profiles. Table 64 provides the archetype for product standardisation, which is also the inverse archetype of product customisation (i.e. where product standardisation is shown as 'high' (i.e. green), product customisation would be 'low' (i.e. red) and vice versa).

Standardised products are easier to plan and they drive higher benefits in centralisation, global sourcing and supplier consolidation. Customised products on the other hand require more flexibility, often through decentralisation and more proactive stakeholder and supply base engagement.

Table 64: Product standardisation archetype (inverse to product customisation)

The colour coding indicates the impact; green colours indicate a 'high' requirement, red colours indicate a 'low' requirement. Grey topics have not been mentioned in relation to this contingency.

Area	Topic	Influenced aspect	1	2	3	4
Strategy and planning	Strategic planning	Create long-term plan				
		Create & execute long-term plan				
		Execute long-term plan				
	Strategic alignment	Category strategy alignment to company strategy				
Organisation and controlling	Organisational structure	Centralisation				
		De-centralised				
	Purchasing process	Lower process standardisation				
		Higher process standardisation				
	Controlling / performance management	Automation of performance measurement				
		Measure complex performance				
	Internal integration	Working closely with other functions				
		Document interfaces				
Status and involvement	Status and Recognition Involvement	Higher Status				
		Involvement in critical product decision				
Sourcing and supply base management	Supplier selection	Tendering contracts				
		Longer / more complex RFQ process				
		Criteria considered				
	Supply base management	Proactive supply base management				
		Supply base visibility				
	Global sourcing	Global suppliers				
		Local suppliers				
	Risk management	Risk management				
Supplier management	Supplier relationship	More creative risk management				
		Product traceability				
	Supplier development	Develop suppliers				
	Supplier evaluation	Close supplier management / frequent performance review				
Skills	Existing skills	Have consistent measures				
		Technical skills				
		Level of skills				
	Training and development	Procurement / management skills				
IT	IT systems	Training requirement				
		Higher level of automation				
		IT system				
Other	Commercials / contract management	Lower level of automation				
		Contract flexibility				
		Contract length				
		Contract complexity / comprehensiveness				
	Outsourcing	More creative contract terms & contract management				
		Insourcing				
		Outsource				

8.2.2.5 Cost pressure

If the category is under a lot of pressure to deliver cost savings, this also drives certain procurement requirements, as demonstrated in Table 65. Specifically, this drives a higher requirement for strategic planning, centralisation, IT automation and possibly outsourcing. It can also determine more creative contract terms, such as gainshare contracts that determine a rationale to share benefits for both companies, often together with a closer supplier evaluation.

Table 65: Cost pressure archetype

The colour coding indicates the impact; green colours indicate a 'high' requirement, red colours indicate a 'low' requirement. Grey topics have not been mentioned in relation to this contingency.

Area	Topic	Influenced aspect	1	2	3	4
Strategy and planning	Strategic planning	Create long-term plan				
		Create & execute long-term plan				
		Execute long-term plan				
	Strategic alignment	Category strategy alignment to company strategy				
Organisation and controlling	Organisational structure	Centralisation				
		De-centralised				
	Purchasing process	Lower process standardisation				
		Higher process standardisation				
	Controlling / performance management	Automation of performance measurement				
		Measure complex performance				
	Internal integration	Working closely with other functions				
Document interfaces						
Status and involvement	Status and Recognition	Higher Status				
	Involvement	Involvement in critical product decision				
Sourcing and supply base management	Supplier selection	Tendering contracts				
		Longer / more complex RFQ process				
		Criteria considered				
	Supply base management	Proactive supply base management				
		Supply base visibility				
	Global sourcing	Global suppliers				
		Local suppliers				
Risk management	Risk management	Risk management				
	More creative risk management					
	Product traceability					
Supplier management	Supplier relationship	Close relationship / co-operation				
		Supplier consolidation				
		Less relationship / co-creation opportunities				
	Supplier development	Develop suppliers				
Skills	Supplier evaluation	Close supplier management / frequent performance review				
		Have consistent measures				
		Technical skills				
	Existing skills	Level of skills				
Procurement / management skills						
Training and development	Training requirement					
	Higher level of automation					
IT	IT systems	IT system				
		Lower level of automation				
Other	Commercials / contract management	Contract flexibility				
		Contract length				
		Contract complexity / comprehensiveness				
		More creative contract terms & contract management				
	Outsourcing	Insource				
		Outsource				

8.2.2.6 Organisational complexity

Table 66 demonstrates the archetype for organisational complexity. More complex organisations tend to require a higher level of strategic planning in procurement, together with higher process standardisation, better systems and closer internal integration.

Table 66: Organisational complexity archetype

The colour coding indicates the impact; green colours indicate a 'high' requirement, red colours indicate a 'low' requirement. Grey topics have not been mentioned in relation to this contingency.

Area	Topic	Influenced aspect	1	2	3	4
Strategy and planning	Strategic planning	Create long-term plan				
		Create & execute long-term plan				
		Execute long-term plan				
	Strategic alignment	Category strategy alignment to company strategy				
Organisation and controlling	Organisational structure	Centralisation				
		De-centralised				
	Purchasing process	Lower process standardisation				
		Higher process standardisation				
	Controlling / performance management	Automation of performance measurement				
		Measure complex performance				
	Internal integration	Working closely with other functions				
		Document interfaces				
Status and involvement	Status and Recognition	Higher Status				
	Involvement	Involvement in critical product decision				
Sourcing and supply base management	Supplier selection	Tendering contracts				
		Longer / more complex RFQ process				
		Criteria considered				
	Supply base management	Proactive supply base management				
		Supply base visibility				
	Global sourcing	Global suppliers				
		Local suppliers				
	Risk management	Risk management				
Supplier management	Supplier relationship	More creative risk management				
		Product traceability				
		Close relationship / co-operation				
	Supplier development	Supplier consolidation				
		Less relationship / co-creation opportunities				
Skills	Existing skills	Develop suppliers				
		Close supplier management / frequent performance review				
		Have consistent measures				
	Training and development	Technical skills				
IT	IT systems	Level of skills				
		Procurement / management skills				
Other	Commercials / contract management	Training requirement				
		Higher level of automation				
		IT system				
		Lower level of automation				
	Outsourcing	Contract flexibility				
		Contract length				
		Contract complexity / comprehensiveness				
		More creative contract terms & contract management				
		Insourcing				
		Outsourcing				

8.2.2.7 Lacking supplier capability

Table 67 demonstrates that less capable suppliers generally determine a requirement for more centralisation, global sourcing and a higher amount of risk management. It also drives more supplier management, both in terms of a higher amount of supplier development, but also in terms of supplier evaluation.

Table 67: Lacking supplier capability archetype

The colour coding indicates the impact; green colours indicate a 'high' requirement, red colours indicate a 'low' requirement. Grey topics have not been mentioned in relation to this contingency.

Area	Topic	Influenced aspect	1	2	3	4
Strategy and planning	Strategic planning	Create long-term plan				
		Create & execute long-term plan				
		Execute long-term plan				
	Strategic alignment	Category strategy alignment to company strategy				
Organisation and controlling	Organisational structure	Centralisation				
		De-centralised				
	Purchasing process	Lower process standardisation				
		Higher process standardisation				
	Controlling / performance management	Automation of performance measurement				
		Measure complex performance				
	Internal integration	Working closely with other functions				
Document interfaces						
Remain flexible in approach						
Status and involvement	Status and Recognition	Higher Status				
	Involvement	Involvement in critical product decision				
Sourcing and supply base management	Supplier selection	Tendering contracts				
		Longer / more complex RFQ process				
		Criteria considered				
	Supply base management	Proactive supply base management				
		Supply base visibility				
	Global sourcing	Global suppliers				
		Local suppliers				
Risk management	Risk management					
	More creative risk management					
	Product traceability					
Supplier management	Supplier relationship	Close relationship / co-operation				
		Supplier consolidation				
		Less relationship / co-creation opportunities				
	Supplier development	Develop suppliers				
		Close supplier management / frequent performance review				
Skills	Existing skills	Have consistent measures				
		Technical skills				
		Level of skills				
	Training and development	Procurement / management skills				
		Training requirement				
IT	IT systems	Higher level of automation				
		IT system				
Other	Commercials / contract management	Lower level of automation				
		Contract flexibility				
		Contract length				
		Contract complexity / comprehensiveness				
	Outsourcing	More creative contract terms & contract management				
		Insource				
		Outsource				

8.2.2.8 Supplier criticality

Table 68 highlights that supplier criticality exclusively impacts across sourcing and supply base management as well as supplier management. Higher supplier criticality results in higher requirement for supply base visibility. Similarly to lacking supplier capability, it also results in closer supplier management, including not only supplier development and evaluation, but also a stronger relationship between the company and the supplier.

Table 68: Supplier criticality archetype

The colour coding indicates the impact; green colours indicate a 'high' requirement, red colours indicate a 'low' requirement. Grey topics have not been mentioned in relation to this contingency.

Area	Topic	Influenced aspect	1	2	3	4
Strategy and planning	Strategic planning	Create long-term plan				
		Create & execute long-term plan				
		Execute long-term plan				
	Strategic alignment	Category strategy alignment to company strategy				
Organisation and controlling	Organisational structure	Centralisation				
		De-centralised				
	Purchasing process	Lower process standardisation				
		Higher process standardisation				
	Controlling / performance management	Automation of performance measurement				
		Measure complex performance				
	Internal integration	Working closely with other functions				
Document interfaces						
Status and involvement	Status and Recognition	Higher Status				
	Involvement	Involvement in critical product decision				
Sourcing and supply base management	Supplier selection	Tendering contracts				
		Longer / more complex RFQ process				
		Criteria considered				
	Supply base management	Proactive supply base management				
		Supply base visibility				
	Global sourcing	Global suppliers				
		Local suppliers				
Risk management	Risk management	Risk management				
	More creative risk management					
	Product traceability					
Supplier management	Supplier relationship	Close relationship / co-operation				
		Supplier consolidation				
		Less relationship / co-creation opportunities				
	Supplier development	Develop suppliers				
	Supplier evaluation	Close supplier management / frequent performance review				
		Have consistent measures				
Skills	Existing skills	Technical skills				
		Level of skills				
		Procurement / management skills				
	Training and development	Training requirement				
IT	IT systems	Higher level of automation				
		IT system				
		Lower level of automation				
Other	Commercials / contract management	Contract flexibility				
		Contract length				
		Contract complexity / comprehensiveness				
		More creative contract terms & contract management				
	Outsourcing	Insource				
Outsource						

8.2.2.9 Ability to forecast & inability to forecast

Table 69 demonstrates that a higher ability to forecast enables better strategic planning and longer, more standardised contracts. On the other hand, a non-forecastable product requires more creativity in contract terms to ensure requirements can be fulfilled at a reasonable cost.

Table 69: Ability to forecast archetype

The colour coding indicates the impact; green colours indicate a 'high' requirement, red colours indicate a 'low' requirement. Grey topics have not been mentioned in relation to this contingency.

Area	Topic	Influenced aspect	1	2	3	4
Strategy and planning	Strategic planning	Create long-term plan				
		Create & execute long-term plan				
		Execute long-term plan				
	Strategic alignment	Category strategy alignment to company strategy				
Organisation and controlling	Organisational structure	Centralisation				
		De-centralised				
		Lower process standardisation				
	Purchasing process	Higher process standardisation				
		Controlling / performance management	Automation of performance measurement			
		Measure complex performance				
	Internal integration	Working closely with other functions				
Document interfaces						
Remain flexible in approach						
Status and involvement	Status and Recognition	Higher Status				
	Involvement	Involvement in critical product decision				
Sourcing and supply base management	Supplier selection	Tendering contracts				
		Longer / more complex RFQ process				
		Criteria considered				
	Supply base management	Proactive supply base management				
		Supply base visibility				
	Global sourcing	Global suppliers				
		Local suppliers				
Risk management	Risk management					
	More creative risk management					
	Product traceability					
Supplier management	Supplier relationship	Close relationship / co-operation				
		Supplier consolidation				
		Less relationship / co-creation opportunities				
	Supplier development	Develop suppliers				
		Supplier evaluation	Close supplier management / frequent performance review			
		Have consistent measures				
Skills	Existing skills	Technical skills				
		Level of skills				
		Procurement / management skills				
	Training and development	Training requirement				
IT	IT systems	Higher level of automation				
		IT system				
		Lower level of automation				
Other	Commercials / contract management	Contract flexibility				
		Contract length				
		Contract complexity / comprehensiveness				
		More creative contract terms & contract management				
	Outsourcing	Insource				
		Outsource				

8.2.2.10 Indirect categories & direct categories

Table 70 demonstrates that indirect categories often have a higher ability to achieve strategic plans. Their ability to align to the company strategy is also considered higher by category managers. However, due to the nature of the product, category managers consider the requirement for supplier development to be lower. This is a higher requirement in direct categories, where the suppliers' product and quality will directly influence the company's end product as well.

Table 70: Indirect categories archetype

The colour coding indicates the impact; green colours indicate a 'high' requirement, red colours indicate a 'low' requirement. Grey topics have not been mentioned in relation to this contingency.

Area	Topic	Influenced aspect	1	2	3	4
Strategy and planning	Strategic planning	Create long-term plan				
		Create & execute long-term plan				
		Execute long-term plan				
	Strategic alignment	Category strategy alignment to company strategy				
Organisation and controlling	Organisational structure	Centralisation				
		De-centralised				
	Purchasing process	Lower process standardisation				
		Higher process standardisation				
	Controlling / performance management	Automation of performance measurement				
		Measure complex performance				
	Internal integration	Working closely with other functions				
Document interfaces						
Status and involvement	Status and Recognition	Higher Status				
	Involvement	Involvement in critical product decision				
Sourcing and supply base management	Supplier selection	Tendering contracts				
		Longer / more complex RFQ process				
		Criteria considered				
	Supply base management	Proactive supply base management				
		Supply base visibility				
	Global sourcing	Global suppliers				
		Local suppliers				
Risk management	Risk management					
	More creative risk management					
	Product traceability					
Supplier management	Supplier relationship	Close relationship / co-operation				
		Supplier consolidation				
		Less relationship / co-creation opportunities				
	Supplier development	Develop suppliers				
	Supplier evaluation	Close supplier management / frequent performance review				
		Have consistent measures				
Skills	Existing skills	Technical skills				
		Level of skills				
	Training and development	Procurement / management skills				
Training requirement						
IT	IT systems	Higher level of automation				
		IT system				
Other	Commercials / contract management	Lower level of automation				
		Contract flexibility				
		Contract length				
		Contract complexity / comprehensiveness				
	Outsourcing	More creative contract terms & contract management				
		Insource				
	Outsource					

8.2.2.11 Size of supply base (large & small/limited capacity)

Table 71 shows the archetype for a large supply base. Where the supply base is large, category managers have a higher ability to achieve benefits out of tendering contracts. In contrast, the requirement for risk management and proactive supply base management is somewhat lower, since the size of the supply base provides a fall-back option in case any issues occur with the current supplier.

Table 71: Size of supply base (large) archetype

The colour coding indicates the impact; green colours indicate a 'high' requirement, red colours indicate a 'low' requirement. Grey topics have not been mentioned in relation to this contingency.

Area	Topic	Influenced aspect	1	2	3	4
Strategy and planning	Strategic planning	Create long-term plan				
		Create & execute long-term plan				
		Execute long-term plan				
Organisation and controlling	Strategic alignment	Category strategy alignment to company strategy				
	Organisational structure	Centralisation				
		De-centralised				
	Purchasing process	Lower process standardisation				
		Higher process standardisation				
	Controlling / performance management	Automation of performance measurement				
		Measure complex performance				
	Internal integration	Working closely with other functions				
Document interfaces						
Status and involvement	Status and Recognition	Higher Status				
	Involvement	Involvement in critical product decision				
Sourcing and supply base management	Supplier selection	Tendering contracts				
		Longer / more complex RFQ process				
		Criteria considered				
	Supply base management	Proactive supply base management				
		Supply base visibility				
	Global sourcing	Global suppliers				
		Local suppliers				
	Risk management	Risk management				
More creative risk management						
Supplier management	Supplier relationship	Product traceability				
		Close relationship / co-operation				
		Supplier consolidation				
		Less relationship / co-creation opportunities				
	Supplier development	Develop suppliers				
Supplier evaluation	Close supplier management / frequent performance review					
	Have consistent measures					
Skills	Existing skills	Technical skills				
		Level of skills				
		Procurement / management skills				
	Training and development	Training requirement				
IT	IT systems	Higher level of automation				
		IT system				
Other	Commercials / contract management	Lower level of automation				
		Contract flexibility				
		Contract length				
		Contract complexity / comprehensiveness				
	Outsourcing	More creative contract terms & contract management				
		Insource				
	Outsource					

8.2.3 Summary: Differences across topics and categories indicate that maturity should be measured as a profile, primarily at category level

This section has demonstrated the differences between categories in maturity assessments and the importance of contingencies. This indicates a requirement to update the procurement maturity model developed from the literature. This section has provided this updated procurement maturity model as well as maturity archetypes based on category contingencies.

Whilst some topics appear to be generic to categories within a company, the majority of topics have been shown to score very differently in different categories. Moreover, it has been demonstrated that these differences are not just spurious or random, but they can be explained by the context of the category, such as the product type or the organisational structure. The differences in scores both across topics and across categories has provided further support for hypotheses 2 and 3, indicating that maturity should be measured as a profile and at least primarily at category level.

However, the analysis has also demonstrated that some topics may be common to all categories, such as IT or training and development. Moreover, some topics that may be generic cannot be identified with the current maturity model, since it does not currently split topics into approach (e.g. process definition) and execution (e.g. the extent to which defined processes are followed).

To accommodate these findings as well as the identified contingencies, the maturity model has been updated. The updated procurement maturity model includes both the identified contingencies and the additional topic on contracts/commercials identified during interviews. Whilst requiring further research to increase the robustness of contingencies, this model provides a communication tool to initiate a discussion, both in academia and in practice, on contingencies linked to procurement maturity. Moreover, this model enables a more objective setting of the target maturity level, as it provides some guidance on setting target maturity levels beyond the subjectivity category that managers demonstrated during the assessments. Finally, the updated procurement maturity model enables the distinction between approach and execution (e.g. defining a sourcing strategy vs. executing the strategy, or defining global and local sourcing requirements vs. actually sourcing globally). This is important to enable a detailed assessment of requirements and clearer communication between category managers.

Moreover, this section provided procurement maturity archetypes for different contingencies. These are to further support category managers in defining their target maturity level. Whilst these archetypes do not yet provide clear indications of which level of maturity is required for each topic, depending on the specific combination of contingencies, it does help procurement managers to identify their key focus topics in the maturity model, based on the contingencies they consider relevant for their category.

9 Discussion

This section will discuss the findings from all three case studies in relation to existing literature. The section is organised along the two research questions and their related hypotheses and propositions:

1. RQ1: How do procurement managers achieve strategic alignment?
 - a. *H1: Procurement category strategies should be aligned with the firm and procurement strategy and determine the target maturity profile*
 - b. *P1 (replacing H1): Procurement and category strategies are dependent on contextual contingencies.*
 - c. *P2 (replacing P1): The target maturity profile is dependent on contextual contingencies.*
2. RQ2: How is procurement maturity conceptualised by procurement managers?
 - a. *H2: The most appropriate measurement type for procurement maturity is the maturity profile, not an aggregate maturity measure.*
 - b. *H3: The most appropriate unit of analysis for procurement maturity is the procurement category.*

9.1 RQ1: How to achieve strategic alignment?

Research question one aims to better understand category managers' strategies and how they achieve alignment with the company strategy.

9.1.1 H1: Procurement category strategies should be aligned with the firm and procurement strategy and determine the target maturity profile

Hypothesis 1 was deduced from the literature, especially from procurement strategic alignment literature (Baier *et al.*, 2008; González-Benito, 2007; Watts *et al.*, 1992), resulting in a procedural concept of strategic alignment in which the firm strategy drives the procurement strategy, which in turn determines category strategies and as a result the target maturity profile.

However, the initial exploratory mini-cases demonstrated that whilst industry perceptions align with the three premises of contingency theory (Donaldson, 2001), practitioners included a wide range of contextual contingencies, including internal,

external and product- or supply-based contingencies instead of only the firm strategy, as was initially expected.

Moreover, practitioners contradicted the procedural concept of alignment described in academic literature. Instead, procurement strategies were based on a number of contingencies, including the company culture, industry requirements or the supplier market. These contingencies were often expressed as problems that do not only concern procurement, but that the company faces as a whole, thus indicating a more tacit concept of alignment, in which procurement is subject to the same contingencies as the rest of the company.

Hypothesis 1 was therefore updated to reflect the improved understanding of procurement strategic alignment to Proposition 1.

9.1.2 P1: Procurement and category strategies are dependent on contextual contingencies

The initial proposition researched under research question 1 was Proposition 1 (Procurement and category strategies are dependent on contextual contingencies). This was analysed by first reviewing procurement and category strategies.

Strategic alignment generally refers to the “consistency between strategic goals, metrics and activities” with a focus on “strategic alignment of functional and business strategies” (Skipworth *et al.*, 2015). This definition requires a company’s practices and processes to be consistent with the strategic goals – thus focusing alignment on the company strategy. This concept of alignment has been adopted in procurement literature, most notably by González-Benito (2007) and Baier *et al.* (2008), who have adapted the theory of production competence for the purchasing domain. They define procurement strategic alignment as the consistency of procurement’s strategy and activities with the firm’s objectives (Baier *et al.*, 2008).

In alignment with previous literature, the original conceptual model replicated this alignment process through the proposed link between company strategy and category strategies via the functional procurement strategy. However, this link requires clearly formulated procurement and category strategies.

Table 71 summarises the functional and category strategies provided by procurement managers across all three cases.

Table 72: Comparison of ‘strategies’ across case studies

Type	Strategy content	A&D references	WATER references	BANK references
Alignment	Support business strategy	Support the business strategy (A&D_Optics)	Stakeholder engagement and supplier relationships (WATER_Chemicals); Strategy aligned to stakeholders (WATER_Assets & Instrumentation)	Support the business/stakeholder strategy (BANK_HR, BANK_FinTech); Stakeholder relationship management (BANK_HR); Being seen as a trusted advisor (BANK_CRE)
Functional set-up	Structure (differentiation)	Matrix function (A&D_Function)	Integrating sourcing and framework management (WATER_Function)	Team set-up (BANK_HR)
	Ways of working	Standard processes and governance (A&D_Function)	Standard processes (WATER_Assets & Instrumentation)	Ways of working & operational compliance (BANK_HR)
Category/supply base improvement	Improvement programme	Continuous improvement conference (A&D_Function); Top 10 improvement priorities (A&D_Indirect); Supply base and procurement improvement programmes (A&D_Mechanical)	IT implementation (WATER_Function)	IT implementation (BANK_Function)
	Resilient supply chain	Build a robust supply base (A&D_Optics)	Management of considerable changes (WATER_Chemicals)	Risk management (BANK_Function); Considering risk during scale up (BANK_FinTech)
Service delivery	Project delivery	Project delivery: risk management (A&D_Radar); Project delivery: supply base management (A&D_Laser_1)		
	Ensure delivery of water services		Delivering water and wastewater services to customers (WATER_Function_2); Planning to get the best solution for the business (WATER_Tankering & Jetting); Decision on what to tender (scope) and how to break the volume into lots to obtain most interest (WATER_Water Materials); Ensure the correct product is available from the correct suppliers (WATER_Services Portfolio)	
	Cost savings			Achieve cost savings through digitisation, demise, automation (BANK_Ops); Obtaining the best deal for the bank (BANK_Cyber); Delivering cost savings (BANK_CRE, BANK_Function)

The term ‘strategy’ has been defined in several different ways, generally focusing on a long-term plan to achieve competitive advantage through the use of a company’s resources:

“Strategy is the direction and scope of an organisation over the long-term, which achieves advantage in a changing environment through its configuration of resources and competencies, with the aim of fulfilling stakeholder expectations.” (Johnson *et al.*, 2009, p. 3)

For procurement strategies to fulfil this definition, they would have to impact the scope and direction of the company – or at least support the organisation itself to achieve this. However, the ‘strategies’ provided above focus on improving procurement’s KPIs (cost, quality, delivery etc.). Procurement managers demonstrate different ways of doing this:

Supporting the business strategy is implemented as procurement getting closer to key stakeholders and supporting their objectives – such as improving supplier relationships to ensure better outputs.

Similarly, the functional set-up and ways of working usually focus on ensuring better procurement efficiency. For instance, WATER plans to merge sourcing and framework management to ensure a better handover and overall better contract management. The exception here is A&D, who have decided on a matrix set-up in procurement, to be closer to projects and thus the end-customer. This decision could be considered strategic, as it directly impacts the project and thus customer delivery. It also brings procurement much closer to customer expectations, thus enabling a higher effectiveness – and accepting that this may result in cost efficiency gains. However, this set-up is a decision that can only be taken at a procurement functional level, not at a category level.

Finally, both improvement programmes and operational delivery focus on increasing the efficiency of operational procurement, albeit through different means – from cost savings to project delivery.

Whilst the category ‘strategies’ across the different cases do not appear immensely strategic, they do enable important improvements for procurement in the different case companies. Porter (1996) explains the difference between operational effectiveness (i.e. the efficient use of operational activities resources) and strategic positioning, which is about differentiation from competitors:

“Operational Effectiveness (OE) means performing similar activities *better* than rivals perform them. Operational effectiveness includes but is not limited to efficiency. It refers to any number of practices that allow a company to better utilize its inputs by, for example, reducing defects in products or developing better products faster. In contrast, strategic positioning means performing *different* activities from rivals’ or performing similar activities in *different ways*.” (Porter, 1996)

This explanation demonstrates that the strategies provided by category managers in all three case studies showed that strategies are more similar to operational effectiveness as defined by Porter (1996).

Further, the analysis shows considerable similarities between category “strategies” and maturity model tactics in all three cases indicating a requirement to update the original conceptual model, so that procurement maturity tactics are directly influenced by contextual contingencies, instead of indirectly via the category strategy (see Sections 5.2.1.5, 6.2.1.3 and 7.2.1.3 – Contingencies to procurement maturity: Maturity model review by topic). The analysis of contextual contingencies related to procurement maturity will be discussed in the following section. The detailed changes to the conceptual model will be discussed at the end of this chapter.

In summary, Proposition 1 (Procurement and category strategies are dependent on contextual contingencies) was discarded, since it relied on the existence of procurement and category strategies. This proved to be a false assumption, since category strategies in particular are more like procurement tactics in a maturity model. Proposition 1 was therefore replaced by Proposition 2: The target maturity profile is dependent on contextual contingencies.

9.1.3 P2: The target maturity profile is dependent on contextual contingencies

The case analysis went on to analyse the contextual contingencies that influence target maturity profiles to test Proposition 2 (The target maturity profile is dependent on contextual contingencies), which was introduced after the first case to account for the similarities between category ‘strategies’ and maturity model tactics.

The analysis has demonstrated strong support for this proposition, to the extent that many of the contingencies identified were common to all three cases (see Table 73). Product characteristics contingencies in particular have found strong support throughout the three cases, although some contingencies were also found to be more relevant in direct or ETO environments. Similarly, supplier characteristics were found to be common across all three cases, whereas category-level contingencies were more subject to the environment, especially the amount of services procured. Company-, industry- and situational contingencies were also supported by all three cases, albeit further research is required for many of the contingencies. Table 73 also demonstrated that there is strong support for Proposition 2.

Table 73: Contingencies and source case characteristics

Common to all three cases			
More relevant for some categories			
Requires further research			
Unit of analysis	Contingency type	Contingency	Source case characteristics
Product	Product characteristics	Product criticality	Common to all three cases
		Product complexity	More relevant for direct categories
		Product standardisation	Common to all three cases
		Product customisation	Engineer-to-order environment
		Ability to forecast	Common to all three cases
		Inability to forecast	Common to all three cases
		Quality is important	Requires further research
	Service users	Local service requirement	Common to all three cases
	Supply base	Changes in market	Requires further research
		Market maturity	Requires further research
		Size of supply base (large)	Common to all three cases
		Size of supply base (small/limited capacity)	Common to all three cases
		Supplier availability (local)	Common to all three cases
Supplier	Supplier characteristics	Disconnected supply chain	Requires further research
		Supplier criticality	Common to all three cases
		Dependence on supplier	Common to all three cases
		Lacking supplier capability	Common to all three cases
		Small suppliers	Common to all three cases
Category	Category characteristics	Supplier relationship	Common to all three cases (centralisation) Requires further research (IT)
		Direct categories	Requires further research
	Stakeholders	Indirect categories	Common to all three cases
		Business has clear priorities	Common to all three cases
		Cost pressure	Common to all three cases (supplier evaluation and commercial terms) Requires further research (all other)
		Customer/stakeholder relationship	More relevant where there is a high amount of services procured
		Local users of service (customer/stakeholder relationship)	More relevant where there is a high amount of services procured
		Customer/stakeholder requirements	Common to all three cases
		Large number of stakeholders	More relevant for standardised and commoditised product portfolios
		Stakeholders are interested in cooperation	Only mentioned by WATER and BANK, but likely to be more common
		Working with difficult stakeholders	Common to all three cases
		Working with engineering/in a technical area	Common to all three cases
Company	Procurement context	IT system capabilities	Requires further research
		Organisational complexity	Common to all three cases (process standardisation and internal integration) Requires further research (all other)
		Single IT system	Common to all three cases
Industry	Regulatory requirements	Regulatory requirement	Common to all three cases
		Regulatory requirement - local availability	Requires further research
		Regulatory requirement - local supply	Common to all three cases
Situation	Individual purchase	Enough time available	Common to all three cases
		New product/supplier	Common to all three cases
		Time pressure/emergency situation	Common to all three cases
	Personal situation	Training requirement	Common to all three cases

This induced proposition is a large deviation from existing academic literature, since contingency theory (and thus contingencies in general), is not usually considered in either procurement maturity or strategic purchasing literature (see Section 2.4.1 How should procurement strategic alignment be conceptualised in procurement maturity models?). Some attempts have been made to conceptualise procurement strategic alignment with the help of contingency theory (Baier *et al.*, 2008; David *et al.*, 2002; Pohl and Förstl, 2011). However, all of these papers focus on a linear alignment process, in which procurement practices are based on the procurement strategy, which in turn is based on the company strategy. Similarly, Narasimhan and Carter (1998) focus on the alignment between company and purchasing strategy, by inducing procurement strategic profiles. Kroes and Ghosh (2010) research the alignment between firm strategy and outsourcing drivers and David *et al.* (2002) research the alignment between procurement's level of centralisation and the firm's strategic objectives. Closest to the findings in this research is Plantinga *et al.*'s (2020) conceptualisation of public procurement alignment, which focuses on the alignment between company strategies and procurement practices ("procurement instrument design"). In contrast, this research finds that procurement practices are primarily driven by different contingencies, specifically the product, supplier, category, company, industry, or individual situation. The only contingency mentioned during the interviews in this research that resembles a firm or procurement strategy is 'cost pressure' – but this is one of the many contingencies identified.

The high commonality of contingencies influencing category tactics across cases highlighted in Section 8.1.2 (Cross-case and unique contingencies) indicates that these contingencies may be applicable beyond the three cases. However, the research design does not ensure that the list of contingencies is comprehensive, but instead includes those that emerged through the semi-structured interviewing process. Therefore, whilst it has become clear that there is no 'category strategy' as a link between the company procurement strategy and category tactics, the lack of any mentions of the company or procurement strategy as an important contingency to category tactics, does not mean that this research disagrees with previous research. In fact, it is very possible that the company and procurement strategy are still important contingencies, even though they have not clearly been raised as such.

Moreover, company and procurement strategies could still drive factors outside of the maturity model. For example, the maturity model does not comprehensively specify

the measures that should be used, both in internal and supplier performance measurement; instead, it specifies the *type* of measures used. Although not specified in the maturity model, these exact performance indicators have been linked to the company's strategic priorities (Pohl and Förstl, 2011).

In summary, this research provides strong support for a multitude of contingencies influencing different aspects of the maturity model, providing strong support for Proposition 2, that procurement contextual contingencies influence procurement maturity. Whilst this is a considerable shift from procurement maturity literature, it draws on and extends findings from procurement strategic alignment literature.

9.2 RQ2: How is procurement maturity conceptualised?

This section will review the hypotheses focusing on maturity in the conceptual model, i.e. hypotheses 2 and 3.

9.2.1 H2: The most appropriate measurement type for procurement maturity is the maturity profile, not an aggregate maturity measure

Hypothesis 2, that procurement maturity should be measured as a profile, was supported by the data in all three cases. The proposition was initially based on Strategy&'s and Baier *et al.*'s research (Baier *et al.*, 2008; Houston *et al.*, 2012). Both the current and target maturity assessments demonstrated clear differences between topics (see Section 8.2.1 Considerations on units of analysis), highlighting that additional insight can be gained from profiles in comparison to aggregate assessments. Moreover, the contingencies identified to the different maturity topics (see Section 8.1 RQ1: Procurement maturity contingencies) highlight differences in higher and lower requirements, providing additional support for this hypothesis.

The majority of published studies on procurement maturity use aggregate maturity measures, such as an average value, across different topics considered (53% of studies identified in the SLR, compared to 38% using a profile). Often this is used to assess the link to performance or other business characteristics (e.g. Cousins *et al.*, 2006; Ellram *et al.*, 2002; Paulraj *et al.*, 2006). Where a profile is used, this is limited to a 'current' maturity profile and the reasons for differences in topics are typically not explored further.

Although many previous publications have used profiles (38% of published studies), they are typically in papers that focus on the development and testing of the maturity model itself. The maturity models, and the assessed profiles, are therefore not used for further analyses, such as the testing of the relationship to better performance. These studies tend to assume that higher maturity levels are generically desirable (e.g. Bemelmans *et al.*, 2013; van Lith *et al.*, 2015; Reck and Long, 1988).

The analysis in this study clearly highlights that the profile provides additional and relevant detail that an aggregate measure cannot deliver, thus supporting Strategy&'s and Baier *et al.*'s approach to measuring maturity by comparing a current maturity profile with a target maturity profile to identify areas for development (Baier *et al.*, 2008; Houston *et al.*, 2012). Whilst Houston *et al.* (2012) demonstrate that different categories rely on different sourcing levers (price, cost, demand, value), Baier *et al.* (2008) use maturity profiles to link procurement priorities to different company strategies in order to test the 'fit' between the procurement priorities and the company strategy. Their research is thus highly aligned with the findings of this study as well as the premises of contingency theory – as also evidenced by their study being based on the theory of production competence, a sub-theory of contingency theory.

9.2.2 H3: The most appropriate unit of analysis for procurement maturity is the procurement category

This research has found strong support for hypothesis 3, that procurement maturity should be measured at the category level. The study originally set out to compare two units of analysis: The procurement function and the procurement category. The hypothesis was analysed by comparing the maturity profiles across categories and companies (see Section 8.2.1 Considerations on units of analysis). The analysis clearly indicates that the category level is a more appropriate unit of analysis, as it provides category-level differences as well as a feasible level for data collection and analysis.

Whilst hypothesis 3 aligns with some existing research, the proposed measurement at category level shifts considerably from existing literature, which demonstrates a clear preference for functional-level assessment (78% of studies identified in the SLR). In fact, only two studies could be identified that measure procurement maturity at a category level and thus consider differences between segments or categories (Beukers *et al.*, 2006; Deasy *et al.*, 2014). However, in both studies the authors argue that the lower maturity categories should catch up – although they deem the differences between categories “appropriate for the nature of the commodities that both

departments purchase and the cost and operational risk that their supply presents” (Deasy *et al.*, 2014).

It can be concluded that the findings of this research are somewhat aligned with existing literature on the current maturity assessments, in that categories can differ in the level of maturity they achieved. However, academic literature argues for a consistent increase of maturity across categories to ensure performance benefits, this can be achieved from implementing strategic purchasing in the organisation:

“In the examined case, the implementation of the procurement strategy was inconsistent. At a time when attention is being drawn to the control of public spending, the increasing recognition is that a strategic perspective of purchasing can have considerable cost and performance benefits for all organizations. The consistent implementation and execution of purchasing strategy is of paramount importance.” (Deasy *et al.*, 2014, p. 26)

In contrast, this research also suggests differences between categories for the target maturity level. In fact, the identified contingencies demonstrate that the differences between categories are both meaningful and required, so that a ‘symmetric’ improvement of procurement maturity across categories would not only be likely to result in higher cost and effort, but also potentially negatively impact procurement performance. For example, if BANK_HR with its focus on local services was forced to consider global suppliers, this would increase the effort spent in completing a tender – and if a global supplier was actually chosen, the result is likely to be a worse service locally, since they are less likely to specialise in local regulations and could even have a smaller portfolio of candidates.

Moreover, the cases highlight that contingencies exist at multiple units of analysis, including the industry, company, category, product and supplier, but also the individual situation. This is a shift from traditional contingency theory, which generally focuses contingencies on the environment, organisational size and strategy (Donaldson, 2001).

However, these contingencies raise the question if the unit of analysis should be lower than the category, such as the product or the supplier. This would however be difficult to maintain as products and suppliers are not always consistent, as the same supplier might provide multiple products – or a product could be multi-sourced by several suppliers. Moreover, an analysis at product or supplier level would be infeasible in most organisations due to the large number of products and suppliers, so that this can be excluded as a feasible unit of analysis.

On the other hand, clear differences were identified between categories, not only in the maturity assessments, but also in the contingency analysis, indicating that, similarly to the aggregate measure of maturity, important information would not be captured at this level if maturity was measured at a functional or business level.

The answer to this may be related to the set-up of the maturity model itself – as for example, demonstrated by the discussion around global sourcing. There may be a generic element to global sourcing maturity, which defines that each category or function should have a global sourcing strategy defined, but there are differences between categories in the extent to which the supply base is global or local.

In summary, this research identifies the category level as the most appropriate level of analysis, as well as an updated procurement maturity model that allows the distinction between functional and category level assessments.

9.3 Development of the conceptual model

In alignment with the evolution of the hypotheses described above, this section will cover the development of the conceptual model, from the literature review to the final model after the case studies.

9.3.1 Initial conceptual model after the literature review

Figure 28 shows the initial conceptual model after the literature review. This demonstrates that strategic alignment can be achieved if the procurement strategy is based on the company strategy and the category strategy is based on the procurement strategy. The category strategy then determines the target maturity profile, which indicates the required level of maturity for a category. The gap between the current and the target maturity profile can then be linked to performance.

Figure 28 also highlights the two additional hypotheses deduced, that maturity should be measured at a category instead of functional level and that maturity should be measured as a profile, to enable the calculation of the maturity gap.

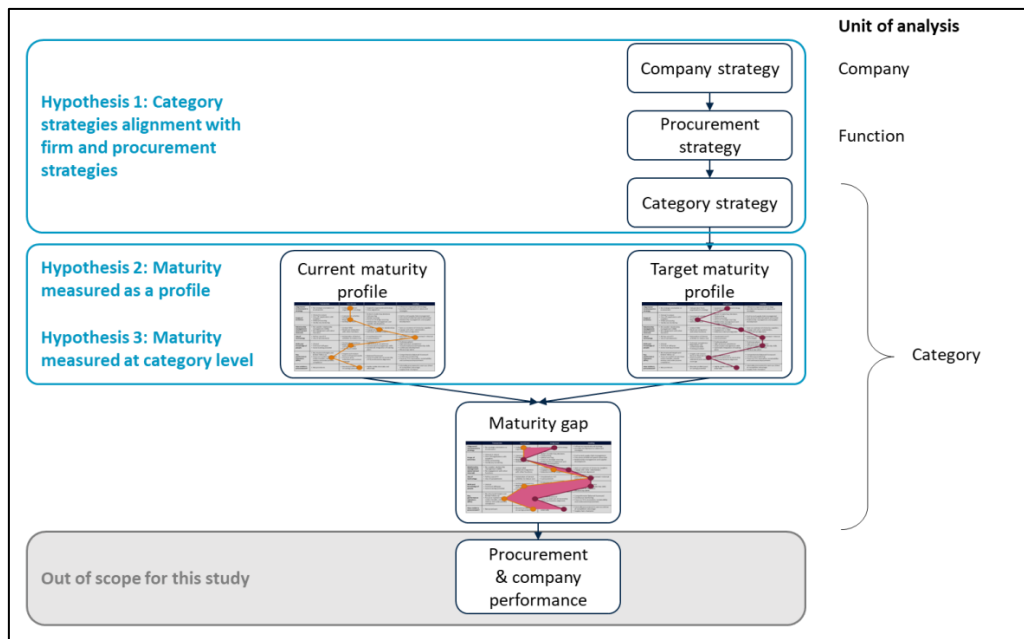


Figure 30: Conceptual model after the literature review

9.3.2 Impact of exploratory mini-cases on the conceptual model

Figure 29 demonstrates how the mini-case findings impact the conceptual model. Whilst hypotheses 2 and 3 were supported by the exploratory cases, hypothesis 1 could not be supported.

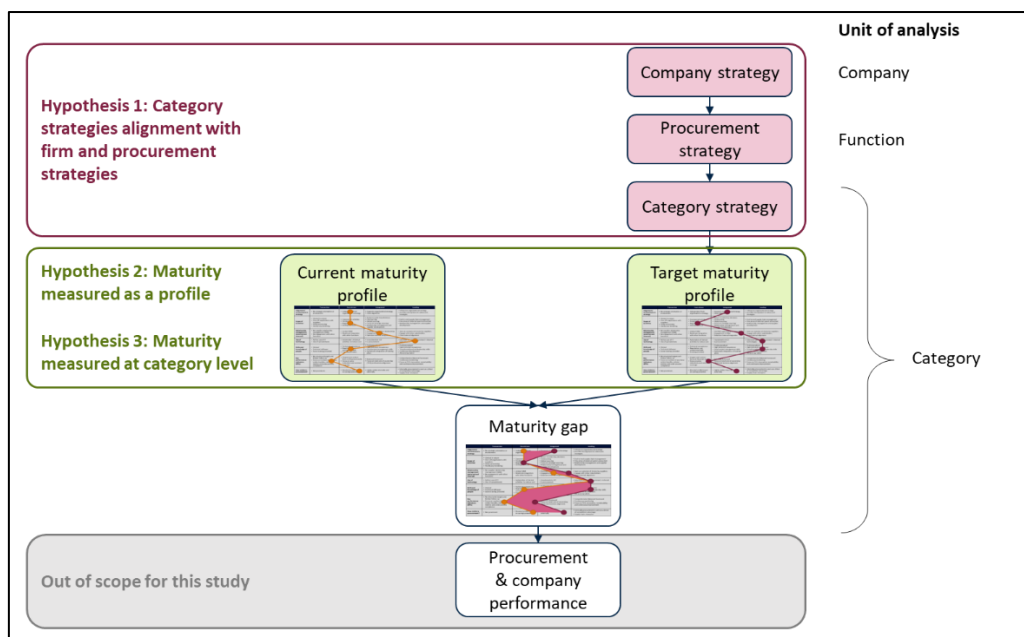


Figure 31: Impact of mini-case findings on conceptual model

The mini-cases demonstrated a more tacit concept of alignment, in which the company and procurement strategy are still an important influence, but where additional contextual contingencies were considered at category strategy level. As the mini-cases were early exploratory studies, they were not sufficient to reject hypothesis 1 entirely, but they indicated a requirement to research contextual contingencies more thoroughly in the in-depth cases. This also resulted in an update of hypothesis 1 and thus an update of the conceptual model, as indicated in Figure 32.

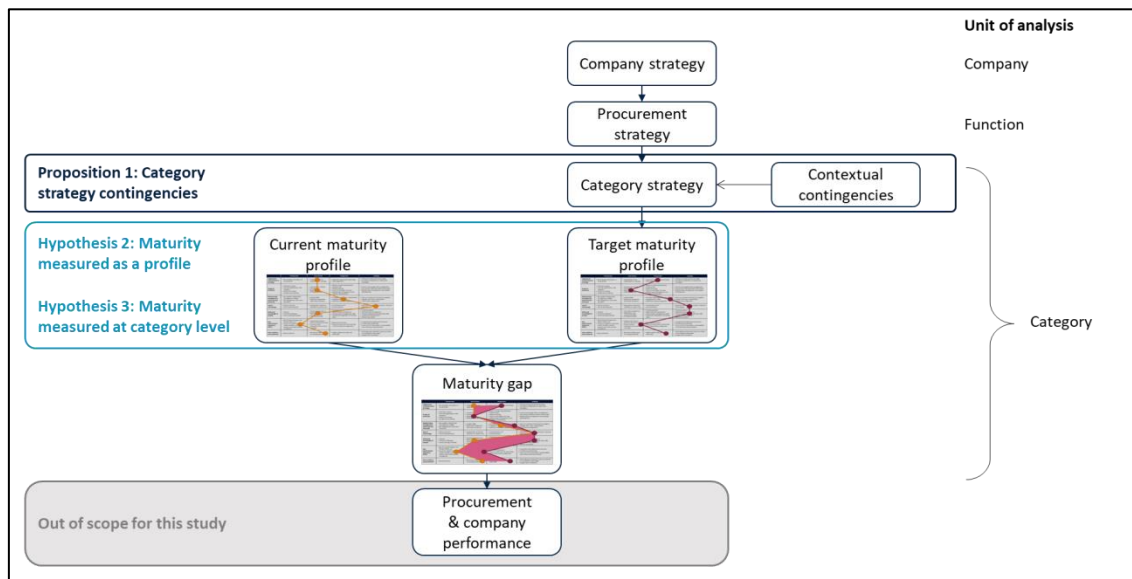


Figure 32: Conceptual model after mini-cases

9.3.3 Impact of case studies on the conceptual model

Figure 33 demonstrates the impact of the analysis findings on the conceptual model after the mini-cases. The pilot study showed that the link between firm, procurement and category strategy (Proposition 1) could not be supported. Instead, contextual contingencies could be linked directly to the target maturity profile. The contingencies identified at the category level in both case studies support the measurement of maturity as a current and target profile rather than as an aggregate (hypothesis 2). Whilst some contingencies were identified at units of analysis other than category, the differences in category maturity profiles and the many contingencies at a unit of analysis function lower than function indicate that the category is a reasonable unit of analysis for measuring maturity. Hypothesis 3 is thus also supported in the case studies. The findings of the pilot case were supported by the two subsequent cases.

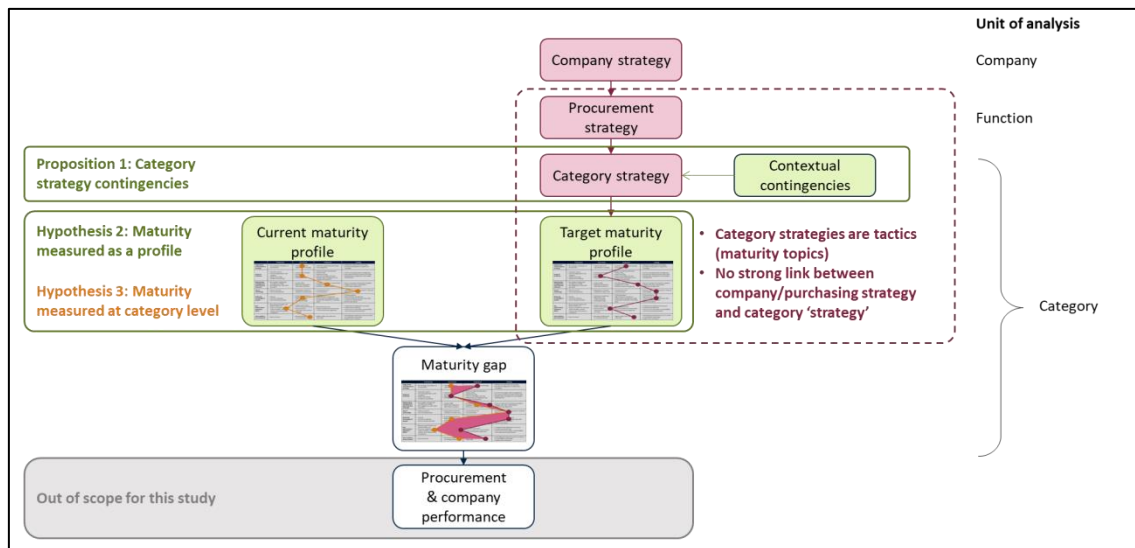


Figure 33: Impact of case study findings on the initial conceptual model (after mini-cases)

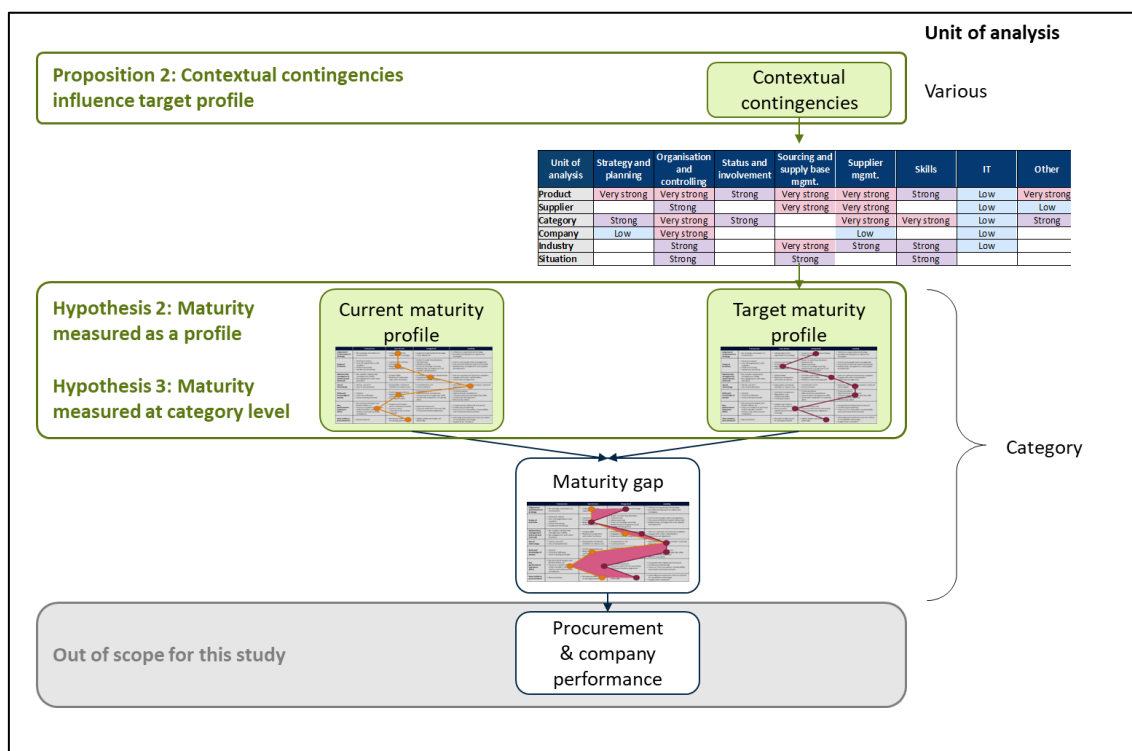
Moreover, the cross-analysis (Section 8.1 RQ1: Procurement maturity contingencies) demonstrated that contingencies at different units of analysis impact the target level of different maturity areas to varying extents. This is summarised in Table 73. This highlights that product characteristics impact across all maturity topics, albeit less strong relationships could be identified for status and involvement and IT. Supplier-level contingencies especially focused on organisation & controlling, sourcing & supply base management and supplier management. Category contingencies strongly influence the target maturity levels, across many different maturity topics and with strong support from various case studies. They have mostly been mentioned for organisation and controlling, supplier management and skills. Company-level contingencies were mostly found for organisation & controlling, whereas industry level contingencies were largely mentioned for sourcing & supply base management.

The colours in Table 73 indicate the strength of the relationship, for example 'very strong' means that two or more contingencies at this unit of analysis could be linked to this topic. Whilst this overview provides a good indication of the strength of the relationship between contingencies and maturity topics, it also has to be analysed with care, since not all units of analysis have the same number of contingencies related to them. Moreover, this was a qualitative study that did not seek to quantify relationships, but rather to explore the different concepts.

Table 74: Relationships between contingency unit of analysis and target levels for the maturity areas

Colour legend:	Very strong - 2+ contingencies							
	Strong - 1 contingency							
	Low - some relationships							
	None							
Unit of analysis	Strategy and planning	Organisation and controlling	Status and involvement	Sourcing and supply base mgmt.	Supplier mgmt.	Skills	IT	Other
Product	Very strong	Very strong	Strong	Very strong	Very strong	Strong	Low	Very strong
Supplier		Strong		Very strong	Very strong		Low	Low
Category	Strong	Very strong	Strong		Very strong	Very strong	Low	Strong
Company	Low	Very strong			Low		Low	
Industry		Strong		Very strong	Strong	Strong	Low	
Situation		Strong		Strong		Strong		

This analysis results in the updated conceptual model depicted in Figure 34. Based on the above discussion, this model is considered as confirmed by the case studies. Figure 34 also includes Table 73 as a link between contextual contingencies and the target maturity profile.

**Figure 34: Updated framework after case studies**

Moreover, the analysis in Sections 8.1.2 (Cross-case and unique contingencies) and 0 (Procurement maturity archetypes) enables the aggregation of archetypes into a high

level overview, by summarising key relationships and similar or opposite contingencies (as demonstrated in detail in Section 0).

Table 74 provides an overview of the key contingencies identified and their influence on maturity areas. It does not show the detailed influence on maturity topics, but rather indicates to what extent the contingency requires following traditional 'best practices' advocated in the academic literature. These traditional best practices are related to the original maturity model used for the case studies and include topics such as centralisation of the procurement function, standardisation of contracts, increasing the use of global suppliers, and developing long-term plans and strategies. On the other hand this research also highlights that some contingencies require a lower level of traditional best practices, but a higher focus on flexibility (e.g. in risk management approaches), creativity (e.g. in contract terms) or local suppliers to ensure the relationship and communication. The colour legend also shows the extent to which this relationship is supported from the case studies (i.e. a darker shading indicates the relationship was supported in more cases/interviews, whereas a lighter shading indicates the relationship was supported in fewer cases/interviews).

It can be seen that whilst most relationships are positive (i.e. indicating a higher requirement for best practices), some contingencies also require less use of best practices. There are also multiple fields where no relationship was found between contingencies and maturity areas, which could equally indicate a lower requirement for best practices. However, it could equally indicate that interviewees just did not think about this relationship, or that other contingencies were more important. The white areas thus have to be considered carefully.

Table 74 only shows archetypes against the original maturity model used for the case studies, but as such it provides an initial indication to both academic research as well as practitioners as to where best practices could be more or less useful. These factors have been taken into account for the updated maturity model (see Appendix B Final contingency-maturity model (after case studies)), which does not only rely on traditional best practices, but also includes elements such as flexibility as well as the contingencies that require higher or lower levels for each of these topics.

Table 75: Mapping of contingencies' influence on the maturity topics across More BP three cases

Colour legend:		More focus on traditional 'best practices' (BP), e.g. standardisation, centralisation, globalisation etc.								
		Less focus on traditional 'best practices' (BP), e.g. flexibility, creativity, localisation etc.								
The shading (depth) of the colouring indicates the support provided in case studies (i.e. darkest if in all three cases, lighter if in fewer cases / interviews)										
UoA	Contingency type	Contingency	Strategy and planning	Organisation and controlling	Status and involvement	Sourcing and supply base mgmt.	Supplier mgmt.	Skills	IT	Other
Product	Product characteristics	Product criticality	More BP	More BP	More BP	More BP	More BP			More BP
		Product complexity		More BP		More BP	More BP	More BP		More BP
		Product standardisation	More BP	More BP		More BP	More BP		More BP	
		Product customisation		Less BP	More BP	More BP				
		Ability to forecast	More BP							More BP
	Service users	inability to forecast								Less BP
		Local service requirement				Less BP				
		Supply base	Size of supply base (large)				More BP			
	Size of supply base (small/limited capacity)					More BP				
	Supplier availability (local)					Less BP				
Supplier	Supplier characteristics	Supplier criticality				More BP	More BP			
		Dependence on supplier					More BP			
		Lacking supplier capability		More BP		More BP	More BP			
		Small suppliers				Less BP				Less BP
		Supplier relationship		More BP					Less BP	
Category	Category characteristics	Direct categories					More BP			
		Indirect categories	More BP				Less BP			
	Stakeholders	Business has clear priorities	More BP							
		Cost pressure	More BP	More BP			More BP		More BP	More BP
		Local users of service (customer/stakeholder relationship)		Less BP						
		Customer/stakeholder requirements		Less BP			More BP			
		Working with difficult stakeholders			More BP			More BP		
		Working with engineering/in a technical area						More BP		
Comp any	Procurement context	Organisational complexity	More BP	More BP					More BP	
Industry	Regulatory requirements	Regulatory requirement		More BP		More BP	More BP	More BP	More BP	
		Regulatory requirement - local supply				Less BP				
Situation	Individual purchase	Enough time available				More BP				
		New product/supplier				More BP				
		Time pressure/emergency situation		Less BP						
	Personal situation	Training requirement						More BP		

10 Conclusion

10.1 Conclusion on research and contribution

This research has differed considerably from previous studies conducted in the field of procurement maturity. In spite of using three hypotheses to guide the research, it followed a more inductive approach, attempting to learn from category managers' experiences rather than only testing predetermined hypotheses. This has resulted in several contributions that add to the existing fields of literature.

10.1.1 Contribution to theory

This research contributes to theory in four key areas:

1. It clearly demonstrates that higher maturity is not a goal in itself, but that target maturity profiles are dependent on contextual contingencies. These contingencies work at different units of analysis (industry, company, category, product, supplier and situation)
2. It provides an improved understanding of procurement maturity, demonstrating that maturity models should include contextual contingencies, and that they should be measured as a profile (i.e. with an individual score for each topic rather than an average score for the function), and at category level rather than functional level
3. It provides an updated contingency procurement maturity model, which includes both deductive elements from the initial development from existing literature, and inductive elements from the three in-depth cases
4. It provides an improved understanding of procurement strategic alignment, as a more tacit concept instead of the procedural concept currently used in academic literature

For procurement researchers, this indicates a requirement to place more emphasis on the applicability and indeed the generalisability of their findings – not only in procurement maturity, but also when researching 'best practices' such as supplier relationships. This research does not question or undermine the importance and benefits of these best practices, but raises the question as to the circumstances under which they should be applied.

For procurement lecturers this research stresses the importance of considering context in teaching. It is important that we equip students not only with the 'right' tools, but also teach under which circumstances they should be applied – or not applied.

These contributions are discussed in more detail in the following sections.

10.1.1.1 *Maturity profiles are contingent upon contextual contingencies*

Firstly, all three cases highlight that the target maturity profile is contingent upon several contextual contingencies. This finding moves beyond current academic literature and in fact contrasts with the large majority of literature, which generally defines procurement maturity as the overall sophistication of procurement at a functional level (Rozemeijer *et al.*, 2003) based on the assumption “that greater maturity is associated with better performance” (Schiele, 2007, p. 274). This assumes a functional unit of analysis and a generic requirement to improve across all maturity topics (aggregate measure) to the same extent.

Some academic studies have started to consider contingencies to procurement. For example, this research aligns with David *et al.*'s (2002) finding that procurement centralisation is contingent upon the firm strategy, in that a cost strategy is well aligned with a centralised structure, whereas a differentiation strategy is better supported by a decentralised structure. However, this research also identifies product standardisation, product criticality, the customer/stakeholder relationship, lacking supplier capability and the supplier relationship, as additional contingencies to centralisation. This research also moves beyond only considering centralisation, but considers a collection of procurement tactics to review their key contingencies. These tactics are combined in a maturity model based on existing literature, thus covering all key topics currently considered important for procurement (see the development of the original maturity in Section 3.4.2.3 Maturity model development).

Further, this research supports Gonzáles-Benito's (2007) and Baier *et al.*'s (2008) argument for contingency theory's premise that purchasing can only support competitive advantage if the purchasing strategy and activities are aligned with the corporate strategy. However, this research demonstrates firstly that 'category strategies' resemble a collection of tactics and therefore resemble the target maturity profile. This study also highlights that multiple contingencies influence maturity directly, with the corporate strategy only being one of many. Specifically, this research identifies contextual contingencies at industry, company, category, product, supplier

and situational level. In fact, the corporate strategy was only rarely mentioned by practitioners, whereas key contingencies at category level were particularly the product and supplier characteristics.

As such, this research refers back to Ellram *et al.*'s conclusion, after their research did not identify the expected relationships between procurement and supply management (PSM) best practices and performance:

"This research also adopts the widely held belief (i.e. Duffy 1999; Carr and Smeltzer 1997; Ellram 1999) that there is a set of PSM 'best practices' that cut across industries and organizations. It may be true that what is a best practice in one industry, such as supplier alliances, may not make sense in another." (Ellram *et al.*, 2002, p. 12)

Whilst supporting Ellram *et al.*'s view that best practices are contingent on the industry, the case studies demonstrate that contingencies exist at additional units of analysis, i.e. the industry, company, category, product, supplier and situation. In fact, this research demonstrates that product and category level contingencies in particular have a strong influence on maturity across multiple topics of the maturity model.

10.1.1.2 *Improved understanding of procurement maturity*

This research also investigates the relationships between procurement practices and contingencies, resulting in a contingent view of procurement maturity that requires a different application of procurement maturity models.

First, this research highlights the importance of contextual contingencies for procurement maturity. This is not something that has been considered in previous procurement maturity literature. Ellram *et al.* (2002) were the first to refer to contingencies as a possible reason when their research did not support the expected relationship between higher maturity and better performance. However, their thought seems to have gone largely unnoticed in the field – or in any case, this was not developed further in later research.

Further, the majority of contingencies identified were at units of analysis below the functional level (i.e. category, product, supplier and situation). To include these contingencies, the unit of analysis for procurement maturity should be the category level, instead of the functional or company level, which is usually used in procurement maturity research. Whilst these lower-level contingencies could also indicate that maturity should be measured at an even lower level of maturity, this would create a lot of additional work, where category seems to be a good compromise of the required level of detail and a feasible level of analysis.

The literature review only identified two papers, which use the purchasing category or segment as their unit of analysis. Moreover, where differences are detected between categories, authors do not conclude that this could indicate that a different approach to procurement maturity is required. Instead, they claim that the “consistent implementation and execution of purchasing strategy is of paramount importance” and that asymmetric purchasing strategy and practice “may be a common problem” (Deasy *et al.*, 2014, p. 26), thus again calling for higher alignment between categories instead of allowing for contextual differences.

Finally, the measurement for procurement maturity should be a profile to enable the identification of which topics are important under which contextual circumstances. Whilst this is not the first research to use a profile instead of an aggregate maturity measure (35% of previous papers have been found to use profiles as well), profiles were often used to achieve higher intra-category alignment rather than to investigate the difference. For example, Beukers *et al.* (2006) base their target profile on the highest maturity score per segment in order to achieve higher intra-segment congruence. This research therefore moves away from the assumption that higher generic maturity levels result in better performance (Schiele, 2007) and instead stresses that categories should seek to identify the relevant topics within the maturity model that will help them improve their procurement, since not all topics require the same level of maturity for a given category.

It is, however, important to state here that this research does not dispute the general relationship between higher maturity and better performance identified by previous research. Instead it demonstrates that using a profile to measure maturity enables further insight into *how* companies can increase their overall maturity level and thus also improve their performance.

10.1.1.3 *Deductive-inductive contingency procurement maturity model*

As a result of the above points, this research provides an updated procurement maturity model that can be used as a basis for further research.

This model is based on an initially deductive approach based on an extensive review of existing literature (see also Section 3.4.2.3 Maturity model development), thus ensuring all relevant topics are included. The model is then updated using an inductive approach of immersion in the three cases and including the learnings from category managers. This inductive element resulted not only in the inclusion of contingencies in

the maturity model, but also demonstrated that an additional level of detail (additional aspects) is required to accurately assess maturity and include contingencies. This is different from previous research, which has predominantly focused on deductive maturity model development (see Section 2.3.1.2 Research methods). As the final maturity model was initially developed by aggregating existing literature, to then include interviewee feedback, this model combines the strengths of deductive and inductive approaches.

The inclusion of contingencies results in a new concept for procurement maturity and a considerable shift from existing literature, since none of the identified existing maturity models includes contingencies. Whilst this research did not look into the relationship between maturity and performance, it does form the basis for further research into procurement maturity contingencies, but also into the relationship between procurement maturity and performance.

10.1.1.4 Improved understanding of procurement strategic alignment

Finally, this research also provides a new perspective on strategic alignment in procurement. Previous research has relied on the theory of production competence to propose a linear top-to-bottom approach, in which procurement tactics follow the procurement strategy, which is based on the company strategy (Baier *et al.*, 2008; González-Benito, 2007). This procedural understanding of alignment is generally accepted in the literature.

Whilst both the theory of production competence and this research are based on contingency theory, this research has demonstrated that the procedural alignment concept is not followed in practice. Indeed, this research questions the existence of 'category strategies', which more closely resemble a collection of procurement practices – or the target maturity profile.

This research demonstrates that contingency theory has to be applied in a less structured, but more tacit manner, in that multiple contingencies apply in parallel and may even counteract each other. Procurement tactics have to support the company strategy, as suggested by previous literature (David *et al.*, 2002; Narasimhan and Carter, 1998), but they also have to align with the company's multiple contextual contingencies.

This alignment with contextual contingencies does not have to overrule the alignment with the company strategy, but could instead be a different method of aligning with

the company strategy – since many of the contingencies identified will impact both the company strategy and procurement categories.

10.1.2 Contribution to practice

This research contributes to practice in three key areas:

1. This research furthers practitioners' understanding of procurement maturity by demonstrating that generic higher maturity is not necessarily better, but that contextual contingencies determine the best practices relevant for each category
2. Through this improved understanding, this research enables practitioners to better identify improvement areas that will truly impact performance
3. To support this identification of performance improvements, this research provides a contingency maturity model that can be used as a self-assessment tool for practitioners

For category managers this research provides an initial direction to understand the context of their category and thus identify the 'best practices' and tools that are relevant to their category based on their contextual contingencies. It supports them in developing category strategies and identifying improvement opportunities that provide real benefits.

For functional procurement leads (in this study generally referred to as 'head of procurement'), this study provides a maturity model that incorporates the contextual knowledge usually applied by consultancies. This research enables procurement teams to assess their procurement processes and define improvement programmes, thus using maturity models without having to pay for expensive consulting services.

These points will be discussed further in the following sections.

10.1.2.1 *Further practitioners' understanding of procurement maturity*

First and foremost, this research furthers both academics' and practitioners' understanding of procurement maturity. By moving beyond the generic higher maturity-better performance link, this research demonstrates that higher maturity is not always better, but instead highly dependent on the category's context. Explicitly, desirable maturity levels are dependent on contextual contingencies, including industry, company, category, product and supplier-level contingencies.

Instead of chasing higher maturity levels at any cost (and thus potentially actually decreasing their overall performance), this research indicates that category and procurement managers should systematically analyse their unique context and identify the practices that are best suited to the same.

10.1.2.2 *Support identification of performance improvements*

Whilst this research does not negate that at a generic higher level of maturity may be linked to better performance, this relationship does not help practitioners identify performance improvement opportunities. In fact, this research indicates that generically increasing maturity levels at all cost is likely to be counterproductive, since some topics may require a lower level of maturity to align practices with the contextual contingencies.

This research provides a first step towards answering the question of *how* procurement managers can improve performance, by providing an initial list of relevant contingencies to be assessed as well as their impact on maturity.

In practice, procurement managers would review the list of contingencies to identify the ones that are relevant for them and subsequently review the key contingencies' impact on maturity. The key maturity topics identified in this way should be focus areas for performance improvements.

10.1.2.3 *A self-assessment tool for practitioners*

To support practitioners, this research has developed a contingency-based maturity model. Although some further research will be required to solidify the exact contingencies included in the contingency-based maturity model, it still represents a considerable move in both academia and practice. Whilst the literature review demonstrated that some consultancies already use profiles in their maturity assessments (e.g. Houston *et al.*, 2012), the category unit of analysis and the clear description of contingencies will enable procurement and category managers to assess their own procurement practice, thus supporting the definition of category strategies.

Using the contingency-maturity model, practitioners can therefore identify improvement opportunities following a four-step approach:

1. Current maturity assessment for each category

The first step to identify improvement opportunities is to assess the current maturity profile for each category. Since the research demonstrated some bias

in the self-assessments, this step should either be led by a facilitator, for example in the form of the procurement manager leading across categories, or categories should challenge each other in their self-assessments.

2. Analysis of contextual contingencies for each category

Each category manager should next work through the list of contextual contingencies identified above and assess their own category. Again, the results should be reviewed by a facilitator or other category managers to ensure bias is minimised.

3. Target maturity assessment for each category

Based on the contingencies identified, the target maturity profile has to be defined. This should follow the 'higher'/'lower' classification provided in the maturity model. Again, the facilitator or other category managers should challenge each category manager's results.

4. Critical review of results

Finally, a critical review of the results, and specifically the gap between current and target profiles, can provide improvement opportunities for each category and the function as a whole. If possible, this should include a cost-benefit analysis defining both the cost of the improvement and the benefit that would be gained for the category and the business as a whole.

As a result, the contingency-maturity model provides more independence to procurement functions in different businesses as well as a robust approach to performance improvement identification.

10.1.3 Generalisability

Although this research is based on only three case studies, the generalisability is expected to be relatively high. The three cases are in very different industries, including project procurement in an engineer-to-order environment in A&D, public procurement in WATER and indirect procurement in BANK. These companies are very different, not only in their industries, but also in their strategies, company and procurement size and procurement organisational set-up. Moreover, 15 different categories were analysed in detail across the three cases, which included both direct and indirect procurement of very different products. Nonetheless, the findings across categories and cases were highly complementary and supported each other, especially in the fact that contingencies existed, but also in the contingencies identified as well as the maturity model set-up (i.e. category unit of analysis and profile measurement). This indicates a relatively high level of generalisability across industries. There is

therefore no reason why the findings would not be applicable to all procurement functions.

Moreover, the findings could potentially be applicable in other business areas. Maturity models are widely used across supply chain but also in areas such as IT or HR. This research has not reviewed the state of knowledge or possible contingencies for these areas. However, it is possible that contextual contingencies are equally important. For example, HR strategies could be dependent on the size of the business, the qualifications required for the position or the size of the talent pool available.

10.2 Research limitations

There are some limitations to the presented research, regarding the case diversity, maturity self-assessments and access limitations.

10.2.1 Limitations due to case diversity

The cases were specifically chosen for the diversity in industry, strategic focus and product range. In spite of the large number of embedded units of analysis, the small number of three cases limits the research in its external validity, thus limiting the inferences that can be made for other companies. Moreover, whilst the case studies support the new conceptual model, individual contingencies differ between cases, which highlights that further research is necessary to substantiate the findings and ensure statistical generalisability.

10.2.2 Limitations due to maturity self-assessments

Maturity assessments were based on interviewees' subjective self-assessments. For the current maturity level, this was reviewed by the researcher, by triangulating interviewees' answers with documentary evidence, but for the target maturity profile no such secondary evidence exists.

The high level of subjectivity can be demonstrated by some of the assessments, such as supplier evaluation in A&D. All interviewees use the same IT system, which enables some automatic supplier evaluation and supports transactional procurement (indicating level 2) – however, interviewees' assessments range from level 2 to level 3. This is also demonstrated in the differences in profiles between A&D_Function and A&D_Capability, when both interviewees were assessing the same functional level.

10.2.3 Access limitations

In all cases there were limitations in access to the case company, as discussed in the individual cases. Moreover, in all three cases there were interviewees that did not fully participate in the interview process. Usually these were functional interviewees, which would provide initial insight into and access to the company, but not join the detailed interviews.

10.2.4 Limitations related to contingencies identified

In spite of the large number of interviews, the study cannot guarantee that the list of contingencies identified is conclusive. This is partially because the interviewer did not specifically ask for contingencies to avoid biasing interviewees. Whilst this results in a high level of robustness of findings regarding the validity of contingencies that were identified, it limits the assessment of generalisability. The lack of mention of a contingency does not mean that this contingency is not important to any category manager, it just means that it wasn't at the forefront of their mind at the time of the interview. Hence this research can only rely on positive relationships (i.e. contingencies that have been identified), but not on missing information in the analysis.

10.2.5 Limitations related to the maturity model developed

The limitations related to the contingencies identified also influence the maturity model, specifically the contingencies included and the archetypes developed. Whilst the existing maturity model clearly proves the importance of considering contingencies in maturity, it only provides an initial indication of those contingencies that influence maturity.

10.3 Considerations on further research

10.3.1 Further research on contingencies

Further research on contingencies is required to complete the contingencies included in the maturity model. It should aim to fulfil two objectives: First, it should test the completeness of the list of contingencies identified, for example in focus groups with experts from academia, industry and consulting. This is especially important since some contingencies identified in previous research (esp. David *et al.*, 2002) were not replicated in this study.

To increase external validity future research should also test the identified contingencies in a large-scale survey. This would provide more information on the generalisability of contingencies by furthering the analysis on common and specific contingencies. This research found that whilst many of the contingencies identified were common to all three cases and are therefore likely to be generalizable to different contexts, others were more relevant in specific contexts and for some, no conclusions could be drawn from the data collected in this study.

10.3.2 Further development of the maturity model

Further research is also necessary to finalise the contingency-maturity model.

First, future research needs to clarify the unit of analysis used for the different maturity topics. Whilst the analysis clearly demonstrates that many topics require assessment at the category level, it also indicates that it may be possible to assess some topics at the functional level (for example the definition of procurement processes).

Further research should also develop the maturity model into a more easy-to-use tool for procurement managers, to remove any subjectivity from the target level assessment. This requires a comprehensive list of contingencies, which are linked more quantitatively to maturity levels. For example, a set of questions around the type of supply base (local vs. global availability and capability) and local service requirements could provide a clear target level for global sourcing.

10.3.3 Further development of the maturity archetypes

Whilst the research has provided initial archetypes based on the contingencies identified, these do not yet combine contingencies into 'typical' category archetypes. Future research should, therefore, aim to further develop these initial archetypes. It would be beneficial, especially for practitioners, to be able to identify with an archetype and thus have with a clear indication of which target maturity level would be required based on their archetype.

10.3.4 Maturity-performance link

The primary limitation of this research is that it could not draw any conclusions on the link between maturity and performance. Future research should test the bottom part of the conceptual model, i.e. the link between a smaller maturity gap and better performance. This could be done in a large-scale survey, albeit this would still be

subject to participants' subjectivity. Another option would be to test the maturity gap-performance link in a longitudinal study. This would overcome any issues related to participants' subjectivity, but would limit findings with regard to external validity.

Hopefully, future research will show a greater consideration of the cost of implementing procurement 'best practice' and focus on providing industry with better indications on the circumstances under which this investment makes sense (i.e. the contingencies):

"There is no one to say that stage 4 is perfection in everything, I'm not sure what the value of that is... What you'd have to do for stage 4, is so much more meetings, so much more tracking, infrastructure, people – there's a cost to all of that and I would question the value returned on some of that investment. The incremental value wouldn't be greater than what you'd be spending both in time and money and then could end up being a bit of a distraction." (BANK_HR)

11 References

- Accenture. (2007), *High performance through procurement: Accenture research and insights into procurement performance mastery*.
- A&D. (2017a), *2016 annual financial report* (accessed 1 September 2017).
- A&D. (2017b), *Company profile 2017* (accessed 31 August 2017).
- Adamson, J. (1980), "Corporate long-range planning must include procurement", *Journal of Purchasing & Materials Management*, Vol. 16 No. 1, pp. 25–32.
- Ahmed, M.U., Kristal, M.M., Pagell, M. and Gattiker, T.F. (2017), "Towards a classification of supply chain relationships: a routine based perspective", *Supply Chain Management*, Vol. 22 No. 4, pp. 341–374.
- Akin Ateş, M., van Raaij, E.M. and Wynstra, F. (2018), "The impact of purchasing strategy-structure (mis)fit on purchasing cost and innovation performance", *Journal of Purchasing and Supply Management*, Vol. 24 No. 1, pp. 68–82.
- Arora, A., Arora, A.S., Sivakumar, K. and Burke, G. (2020), "Strategic sustainable purchasing, environmental collaboration, and organizational sustainability performance: the moderating role of supply base size", *Supply Chain Management: An International Journal*, Vol. 25 No. 6, pp. 709–728.
- A.T. Kearney. (2017), "The Purchasing Chessboard", *The Purchasing Chessboard*, available at: http://www.purchasingchessboard.com/content/en_en/esb/index.php (accessed 27 January 2017).
- Baier, C., Hartmann, E. and Moser, R. (2008), "Strategic alignment and purchasing efficacy: An exploratory analysis of their impact on financial performance", *Journal of Supply Chain Management*, Vol. 44 No. 4, pp. 36–52.
- BANK. (2019a), *Annual report and accounts 2018*.
- BANK. (2019b), *Strategic report*.
- Barry, J., Cavinato, J.L., Green, A. and Young, R.R. (1996), "A development model for effective MRO procurement", *International Journal of Purchasing & Materials Management*, Vol. 32 No. 3, pp. 35–44.

References

- Bemelmans, J., Voordijk, H. and Vos, B. (2013), "Designing a tool for an effective assessment of purchasing maturity in construction", *Benchmarking*, Vol. 20 No. 3, pp. 342–361.
- Bemelmans, J., Voordijk, H., Vos, B. and Buter, J. (2012), "Assessing buyer-supplier relationship management: Multiple case-study in the Dutch construction industry", *Journal of Construction Engineering & Management*, Vol. 138 No. 1, pp. 163–176.
- Bernardes, E.S. and Zsidisin, G.A. (2008), "An examination of strategic supply management benefits and performance implications", *Journal of Purchasing & Supply Management*, Vol. 14 No. 4, pp. 209–219.
- Beukers, M., Versendaal, J., Batenburg, R. and Brinkkemper, S. (2006), "The procurement alignment framework construction and application", *Wirtschaftsinformatik*, Vol. 48 No. 5, pp. 323–330.
- Blaikie, N. (2007), *Approaches to social enquiry: Advancing knowledge*, Polity.
- Blaikie, N. (2009), *Designing social research*, Polity.
- Blascovich, J., Ferrer, A. and Markham, B. (2011), *Follow the procurement leaders: Seven ways to lasting results*, A.T. Kearney.
- Bowen, F.E., Cousins, P.D., Lamming, R.C. and Farukt, A.C. (2001), "The role of supply management capabilities in green supply", *Production & Operations Management*, Vol. 10 No. 2, pp. 174–189.
- Bozarth, C., Handfield, R. and Das, A. (1998), "Stages of global sourcing strategy evolution: An exploratory study", *Journal of Operations Management*, Vol. 16 No. 2/3, pp. 241–255.
- Bozzay, E. and Magina, P. (2020), "Public procurement and infrastructure governance: Initial policy responses to the coronavirus (Covid-19) crisis", *OECD*, available at: <https://www.oecd.org/coronavirus/policy-responses/public-procurement-and-infrastructure-governance-initial-policy-responses-to-the-coronavirus-covid-19-crisis-c0ab0a96/> (accessed 21 July 2021).
- Brandon-Jones, A. and Knoppen, D. (2018), "The role of strategic purchasing in dynamic capability development and deployment", *International Journal of Operations & Production Management*, Vol. 38 No. 2, pp. 446–473.
- Brookshaw, T. and Terziovski, M. (1997), "The relationship between strategic purchasing and customer satisfaction within a total quality management

References

- environment", *Benchmarking for Quality Management & Technology*, Vol. 4 No. 4, pp. 244–258.
- Bryman, A. and Bell, E. (2006), *Business research methods*, Reprint ed., OUP Oxford, New York.
- Caddick, J. r. and Dale, B. g. (1987), "The determination of purchasing objectives and strategies: Some key influences", *International Journal of Physical Distribution & Materials Management*, Vol. 17 No. 3, pp. 5–16.
- Carr, A.S., Keong Leong, G. and Sheu, C. (2000), "A study of purchasing practices in Taiwan", *International Journal of Operations & Production Management*, Vol. 20 No. 12, pp. 1427–1446.
- Carr, A.S. and Pearson, J.N. (1999), "Strategically managed buyer–supplier relationships and performance outcomes", *Journal of Operations Management*, Vol. 17 No. 5, pp. 497–519.
- Carr, A.S. and Pearson, J.N. (2002), "The impact of purchasing and supplier involvement on strategic purchasing and its impact on firm's performance", *International Journal of Operations & Production Management*, Vol. 22 No. 9, pp. 1032–1053.
- Carr, A.S. and Smeltzer, L.R. (1997), "An empirically based operational definition of strategic purchasing", *European Journal of Purchasing & Supply Management*, Vol. 3 No. 4, pp. 199–207.
- Carr, A.S. and Smeltzer, L.R. (1999a), "The relationship among purchasing benchmarking, strategic purchasing, firm performance, and firm size", *Journal of Supply Chain Management*, Vol. 35 No. 4, pp. 51–60.
- Carr, A.S. and Smeltzer, L.R. (1999b), "The relationship of strategic purchasing to supply chain management", *European Journal of Purchasing & Supply Management*, Vol. 5 No. 1, pp. 43–51.
- Carr, A.S. and Smeltzer, L.R. (2000), "An empirical study of the relationships among purchasing skills and strategic purchasing, financial performance, and supplier responsiveness", *Journal of Supply Chain Management*, Vol. 36 No. 2, pp. 40–54.
- Castaldi, C., Kate, C. ten and Braber, R. den. (2011), "Strategic purchasing and innovation: A relational view", *Technology Analysis & Strategic Management*, Vol. 23 No. 9, pp. 983–1000.

References

- Cavinato, J.L. (1999), "Fitting purchasing to the five stages of strategic management", *European Journal of Purchasing & Supply Management*, Vol. 5 No. 2, pp. 75–83.
- Chen, I.J., Paulraj, A. and Lado, A.A. (2004), "Strategic purchasing, supply Management, and firm performance", *Journal of Operations Management*, Vol. 22 No. 5, pp. 505–523.
- Chenini, A., Iqbal, J., Qurrahtulain, K., Mahmood, M.A.H. and Aldehayyat, J.S. (2020), "Strategic procurement, supplier integration, and speed-to-market: The mediating role of procurement lead-time performance and manufacturing performance", *Journal of Public Affairs*, Vol. n/a No. n/a, p. e2248.
- Cho, M., Bonn, M.A., Guinipero, L. and Divers, J. (2018), "Restaurant purchasing skills and the impacts upon strategic purchasing and performance: The roles of supplier integration", *International Journal of Hospitality Management*, Vol. 78, pp. 293–303.
- Colbert, B.A. (2004), "The complex resource-based view: Implications for theory and practice in strategic human resource management", *The Academy of Management Review*, Vol. 29 No. 3, pp. 341–358.
- Cousins, P.D. (2005), "The alignment of appropriate firm and supply strategies for competitive advantage", *International Journal of Operations & Production Management*, Vol. 25 No. 5/6, pp. 403–428.
- Cousins, P.D., Lamming, R.C. and Bowen, F. (2004), "The role of risk in environment-related supplier initiatives", *International Journal of Operations & Production Management*, Vol. 24 No. 6, pp. 554–565.
- Cousins, P.D., Lawson, B. and Squire, B. (2006), "An empirical taxonomy of purchasing functions", *International Journal of Operations & Production Management*, Vol. 26 No. 7, pp. 775–794.
- Coy, S., Adams, J. and Kauffman, R. (2020), "Purchasing development in small and medium enterprises: Empirical research and managerial implications", *Journal of Managerial Issues*, Vol. 32 No. 2, pp. 127–143.
- David, J.S., Hwang, Y., Pei, B.K.W. and Reneau, J.H. (2002), "The performance effects of congruence between product competitive strategies and purchasing management design", *Management Science*, Vol. 48 No. 7, pp. 866–885.

References

- Day, M. and Lichtenstein, S. (2006), "Strategic supply management: The relationship between supply management practices, strategic orientation and their impact on organisational performance", *Journal of Purchasing & Supply Management*, Vol. 12 No. 6, pp. 313–321.
- Deasy, M., White, G.R.T., Parfitt, S. and Ringwald, K. (2014), "Asymmetric procurement in the public sector", *Strategic Change*, Vol. 23 No. 1–2, pp. 21–29.
- Denyer, D. and Tranfield, D. (2009), "Producing a systematic review", *The SAGE Handbook of Organizational Research Methods*.
- Donaldson, L. (2001), *The contingency theory of organizations*, 1st ed., Sage Publications, Incorporated, Thousand Oaks, Calif.
- Dyer, J.H. and Singh, H. (1998), "The relational view: Cooperative strategy and sources of interorganizational competitive advantage", *Academy of Management Review*, Vol. 23 No. 4, pp. 660–679.
- Easton, S., Ferrer, A. and Blascovich, J. (2014), *Procurement-Powered Business Performance*, A.T. Kearney.
- Edmondson, A.C. and McManus, S.E. (2007), "Methodological fit in management field research", *Academy of Management Review*, Vol. 32 No. 4, pp. 1155–1179.
- Eisenhardt, K.M. (1989), "Building theories from case study research", *The Academy of Management Review*, Vol. 14 No. 4, pp. 532–550.
- Ellram, L.M. and Carr, A. (1994), "Strategic purchasing: A history and review of the literature", *International Journal of Purchasing and Materials Management*, Vol. 30 No. 2, pp. 10–18.
- Ellram, L.M., Zsidisin, G.A., Siferd, S.P. and Stanly, M.J. (2002), "The impact of purchasing and supply management activities on corporate success", *Journal of Supply Chain Management*, Vol. 38 No. 1, pp. 4–17.
- Farmer, D. (1981), "Developing purchasing strategies", *International Journal of Physical Distribution & Materials Management*, Vol. 11 No. 2/3, pp. 114–121.
- Foerstl, K., Hartmann, E., Wynstra, F. and Moser, R. (2013), "Cross-functional integration and functional coordination in purchasing and supply management: Antecedents and effects on purchasing and firm performance", *International Journal of Operations & Production Management*, Vol. 33 No. 6, pp. 689–721.

References

- Forbes, Inc. and Statista, Inc. (2016), "America's best management consulting firms 2016", *Forbes*, available at: <http://www.forbes.com/sites/kathryndill/2016/04/20/americas-best-management-consulting-firms/#84589f15b161> (accessed 6 January 2017).
- Freeman, V.T. and Cavinato, J.L. (1990), "Fitting purchasing to the strategic firm: Frameworks, processes, and values", *Journal of Purchasing & Materials Management*, Vol. 26 No. 1, pp. 6–10.
- González-Benito, J. (2007), "A theory of purchasing's contribution to business performance", *Journal of Operations Management*, Vol. 25 No. 4, pp. 901–917.
- Greer, S.L., Klasa, K. and Ginneken, E.V. (2020), "Power and purchasing: Why strategic purchasing fails", *The Milbank Quarterly*, Vol. 98 No. 3, pp. 975–1020.
- Handfield, R.B., Cousins, P.D., Lawson, B. and Petersen, K.J. (2015), "How can supply management really improve performance? A knowledge-based model of alignment capabilities", *Journal of Supply Chain Management*, Vol. 51 No. 3, pp. 3–17.
- Hartley, K. (2014), *The political economy of aerospace industries: A key driver of growth and international competitiveness?*, Edward Elgar Publishing Ltd, Cheltenham, UK.
- Hartmann, A., Roehrich, J., Frederiksen, L. and Davies, A. (2014), "Procuring complex performance: The transition process in public infrastructure", *International Journal of Operations & Production Management*, Vol. 34 No. 2, pp. 174–194.
- Hartmann, E., Kerkfeld, D. and Henke, M. (2012), "Top and bottom line relevance of purchasing and supply management", *Journal of Purchasing & Supply Management*, Vol. 18 No. 1, pp. 22–34.
- Hayes, R.H. and Wheelwright, S.C. (1984), *Restoring our competitive edge: Competing through manufacturing*, John Wiley & Sons, New York.
- Hesping, F.H. and Schiele, H. (2015), "Purchasing strategy development: A multi-level review", *Journal of Purchasing & Supply Management*, Vol. 21 No. 2, pp. 138–150.
- Hesping, F.H. and Schiele, H. (2016), "Matching tactical sourcing levers with the Kraljič matrix: Empirical evidence on purchasing portfolios", *International Journal of Production Economics*, Vol. 177, pp. 101–117.
- van Hoek, R. and Mitchell, A. (2006), "The challenge of internal misalignment", *International Journal of Logistics: Research & Applications*, Vol. 9 No. 3, pp. 269–281.

References

- Houston, P., Turner, M.D., Miller, J. and Thelen, B. (2012), *Supply management at a crossroads: Lessons for success in turbulent times*, strategy&.
- Huang, Y.-Y. and Handfield, R.B. (2015), "Measuring the benefits of ERP on supply management maturity model: A 'Big Data' method", *International Journal of Operations & Production Management*, Vol. 35 No. 1, pp. 2–25.
- Insight Sourcing Group. (n.d.). *Top moves to transform procurement: Creating a valuable, ROI-generating corporate asset*, Insight Sourcing Group.
- Izquierdo, C.C., Samaniego, M.J.G. and Cabezudo, R.S.J. (2015), "How strategic purchasing orientation and transformational leadership impact performance: The mediating role of information and communication technologies", *Journal of Business-to-Business Marketing*, Vol. 22 No. 4, pp. 269–292.
- Johnson, G., Scholes, K. and Whittington, R. (2009), *Exploring corporate strategy: Text & cases*, Pearson Education.
- Kähkönen, A.-K. and Lintukangas, K. (2018), "Key dimensions of value creation ability of supply management", *International Journal of Operations & Production Management*, Vol. 38 No. 4, pp. 979–996.
- Kaufmann, L. and Gaeckler, J. (2015), "On the relationship between purchasing integration and purchasing decision-making speed", *International Journal of Physical Distribution & Logistics Management*, Vol. 45 No. 3, pp. 214–236.
- Keough, M. (1993), "Buying your way to the top", *McKinsey Quarterly*, August, No. 3, pp. 41–62.
- Ketokivi, M. and Choi, T. (2014), "Renaissance of case research as a scientific method", *Journal of Operations Management*, Vol. 32 No. 5, pp. 232–240.
- Khan K, A. and Pillania, R.K. (2008), "Strategic sourcing for supply chain agility and firms' performance: A study of Indian manufacturing sector", *Management Decision*, Vol. 46 No. 10, pp. 1508–1530.
- Khushalani, S. (2013), *FUTUREBUY: The future of procurement - 25 in 25: Delivering procurement value in a complex world*, KPMG LLP.
- Kim, M., Suresh, N.C. and Kocabasoglu-Hillmer, C. (2015), "A contextual analysis of the impact of strategic sourcing and e-procurement on performance", *Journal of Business & Industrial Marketing*, Vol. 30 No. 1, pp. 1–16.

References

- King, N. (2012), "Doing template analysis", Simon, Gillian and Catherine Cassell (Eds.): *Qualitative Organizational Research: Core Methods and Current Challenges*, Sage Publications Ltd, London, pp. 426–450.
- Klasa, K., Greer, S.L. and van Ginneken, E. (2018), "Strategic purchasing in practice: Comparing ten European countries", *Health Policy*, Vol. 122 No. 5, pp. 457–472.
- Knoppen, D. and Sáenz, M.J. (2015), "Purchasing: Can we bridge the gap between strategy and daily reality?", *Business Horizons*, Vol. 58 No. 1, pp. 123–133.
- Kraljic, P. (1983), "Purchasing must become supply management", *Harvard Business Review*, Vol. 61 No. 5, pp. 109–117.
- Kroes, J.R. and Ghosh, S. (2010), "Outsourcing congruence with competitive priorities: Impact on supply chain and firm performance", *Journal of Operations Management*, Vol. 28 No. 2, pp. 124–143.
- Lawson, B., Cousins, P.D., Handfield, R.B. and Petersen, K.J. (2009), "Strategic purchasing, supply management practices and buyer performance improvement: An empirical study of UK manufacturing organisations", *International Journal of Production Research*, Vol. 47 No. 10, pp. 2649–2667.
- Lee, P.K.C. and Humphreys, P.K. (2007), "The role of Guanxi in supply management practices", *International Journal of Production Economics*, Vol. 106 No. 2, pp. 450–467.
- van Lith, J., Voordijk, H., Matos Castano, J. and Vos, B. (2015a), "Assessing maturity development of purchasing management in construction.", *Benchmarking: An International Journal*, Vol. 22 No. 6, pp. 1033–1057.
- van Lith, J., Voordijk, H., Matos Castano, J. and Vos, B. (2015b), "Assessing maturity development of purchasing management in construction", *Benchmarking: An International Journal*, Vol. 22 No. 6, pp. 1033–1057.
- Loppacher, J.S. (2006), "Global sourcing and procurement strategy: A model of interrelated decisions", *Supply Chain Forum*, Vol. 7 No. 12, pp. 34–46.
- Luzzini, D., Longoni, A., Moretto, A., Caniato, F. and Brun, A. (2014), "Organizing IT Purchase: Evidence from a global study", *Journal of Purchasing & Supply Management*, Vol. 20 No. 3, pp. 143–155.

References

- Luzzini, D. and Ronchi, S. (2016), "Cinderella purchasing transformation: Linking purchasing status to purchasing practices and business performance", *Production Planning & Control*, Vol. 27 No. 10, pp. 787–796.
- MarketLine. (2015), *United Kingdom water utilities*, MarketLine, London, UK, available at: <https://advantage.marketline.com/Analysis/ViewasPDF/united-kingdom-water-utilities-29523> (accessed 10 August 2019).
- MarketLine. (2017a), *A&D*, MarketLine, London, UK (accessed 1 September 2017).
- MarketLine. (2017b), *Global aerospace & defense*, MarketLine, London, UK.
- MarketLine. (2018), *Global water utilities*, MarketLine, London, UK, available at: <https://advantage.marketline.com/Analysis/ViewasPDF/global-water-utilities-64369> (accessed 10 August 2019).
- MarketLine. (2019a), *United Kingdom banks*, MarketLine, London, UK, available at: <https://advantage.marketline.com/Analysis/ViewasPDF/united-kingdom-banks-76915> (accessed 13 August 2019).
- MarketLine. (2019b), *Global banks*, MarketLine, London, UK, available at: <https://advantage.marketline.com/Analysis/ViewasPDF/global-banks-76879> (accessed 14 August 2019).
- Matthews, D. (2005), "Strategic procurement in the public sector: A mask for financial and administrative policy", *Journal of Public Procurement*, Vol. 5 No. 3, pp. 388–399.
- Mikalef, P., Batenburg, R., Pateli, A. and Van de Wetering, R. (2014), "Business alignment in the procurement domain: A study of antecedents and determinants of supply chain performance", *International Journal of Information Systems and Project Management*, Vol. 2 No. 1, pp. 43–59.
- Mikalef, P., Pateli, A., Batenburg, R.S. and Rogier van de Wetering. (2015), "Purchasing alignment under multiple contingencies: A configuration theory approach", *Industrial Management & Data Systems*, Vol. 115 No. 4, pp. 625–645.
- Miles, R.E. and Snow, C.C. (1984), "Fit, failure and the hall of fame", *California Management Review*, Vol. 26 No. 3, pp. 10–28.
- Mitchell, P. and Dowling, P. (2010), *The CIPSA-Hackett Group procurement value, Performance and Capability Study*, The Hackett Group.

References

- Mol, M.J. (2003), "Purchasing's strategic relevance", *Journal of Purchasing & Supply Management*, Vol. 9 No. 1, pp. 43–50.
- Monczka, R.M. and Trent, R.J. (1991), "Global sourcing: A development approach", *International Journal of Purchasing & Materials Management*, Vol. 27 No. 2, pp. 2–8.
- Mpeera Ntayi, J. and Mugume, E. (2014), "A taxonomy of strategic sourcing for defense forces in Sub-Saharan Africa", *World Journal of Entrepreneurship, Management and Sustainable Development*, Vol. 10 No. 1, pp. 13–32.
- Narasimhan, R. and Carter, J.R. (1998), "Linking business unit and material sourcing strategies", *Journal of Business Logistics*, Vol. 19 No. 2, pp. 155–171.
- Narasimhan, R. and Das, A. (2001), "The impact of purchasing integration and practices on manufacturing performance", *Journal of Operations Management*, Vol. 19 No. 5, pp. 593–609.
- National Audit Office. (2015), *The economic regulation of the water sector*, London, UK, available at: <https://www.nao.org.uk/wp-content/uploads/2014/07/The-economic-regulation-of-the-water-sector.pdf> (accessed 10 August 2019).
- Ogden, J.A., Rossetti, C.L. and Hendrick, T.E. (2007), "An exploratory cross-country comparison of strategic purchasing", *Journal of Purchasing & Supply Management*, Vol. 13 No. 1, pp. 2–16.
- Paik, S.-K., University, C.S., Bagchi, P.K., Business, S. of, Skjøtt-Larsen, T., School, C.B., Adams, J., et al. (2009), "Purchasing development in small and medium-sized enterprises (SMEs)", *Supply Chain Forum*, Vol. 10 No. 18, pp. 91–107.
- Paulraj, A. (2011), "Understanding the relationships between internal resources and capabilities, sustainable supply management and organizational sustainability", *Journal of Supply Chain Management*, Vol. 47 No. 1, pp. 19–37.
- Paulraj, A. and Chen, I.J. (2005), "Strategic supply management and dyadic quality performance: A path analytical model", *Journal of Supply Chain Management*, Vol. 41 No. 3, pp. 4–18.
- Paulraj, A. and Chen, I.J. (2007), "Environmental uncertainty and strategic supply management: A resource dependence perspective and performance implications", *Journal of Supply Chain Management*, Vol. 43 No. 3, pp. 29–42.

References

- Paulraj, A., Chen, I.J. and Flynn, J. (2006), "Levels of strategic purchasing: Impact on supply integration and performance", *Journal of Purchasing & Supply Management*, Vol. 12 No. 3, pp. 107–122.
- Pearson, J.N. and Gritzmacher, K.J. (1990), "Integrating purchasing into strategic management", *Long Range Planning*, Vol. 23 No. 3, pp. 91–99.
- Plantinga, H., Voordijk, H. and Dorée, A. (2020), "Clarifying strategic alignment in the public procurement process", *International Journal of Public Sector Management*, Vol. 33 No. 6/7, pp. 791–807.
- Pohl, M. and Förstl, K. (2011), "Achieving purchasing competence through purchasing performance measurement system design - A multiple-case study analysis", *Journal of Purchasing & Supply Management*, Vol. 17 No. 4, pp. 231–245.
- Porter, M.E. (1985), *Competitive Advantage: Creating and sustaining superior performance*, Free Press, New York; London.
- Porter, M.E. (1996), "What Is strategy?", *Harvard Business Review*, available at: <http://www.hbs.edu/faculty/Pages/item.aspx?num=10698> (accessed 7 March 2014).
- Potage, J. (2017), "Managing procurement value creation with a maturity model", *Logistique & Management*, Vol. 25 No. 4, pp. 303–315.
- Preez, H.C. du and Folinas, D. (2019), "Procurement's contribution to the strategic alignment of an organisation: findings from an empirical research study", *Supply Chain Forum: An International Journal*, Vol. 20 No. 3, pp. 159–168.
- Pressey, A., Tzokas, N. and Winklhofer, H. (2007), "Strategic purchasing and the evaluation of 'problem' key supply relationships: What do key suppliers need to know?", *Journal of Business & Industrial Marketing*, Vol. 22 No. 4/5, pp. 282–294.
- Pressey, A.D., Winklhofer, H.M. and Tzokas, N.X. (2009), "Purchasing practices in small-to medium-sized enterprises: An examination of strategic purchasing adoption, supplier evaluation and supplier capabilities", *Journal of Purchasing & Supply Management*, Vol. 15 No. 4, pp. 214–226.
- Prida, B. and Gutierrez, G. (1996), "Supply management: From purchasing to external factory management", *Production & Inventory Management Journal*; Alexandria, Vol. 37 No. 4, pp. 38–43.

References

- Quayle, M. (1998), "The impact of strategic procurement in the UK government sector", *International Journal of Public Sector Management*, Vol. 11 No. 5, p. 397.
- Quayle, M. and Quayle, S. (2000), "The impact of strategic procurement in the UK further and higher education sectors", *International Journal of Public Sector Management*, Vol. 13 No. 3, pp. 260–284.
- Rajagopal, S. and Bernard, K.N. (1993a), "Strategic procurement and competitive advantage", *International Journal of Purchasing and Materials Management*, Vol. 29 No. 3, pp. 12–20.
- Rajagopal, S. and Bernard, K.N. (1993b), "Globalization of the procurement process", *Marketing Intelligence & Planning*, Vol. 11 No. 7, pp. 44–56.
- Ramsay, J. (2001), "Purchasing's strategic irrelevance", *European Journal of Purchasing & Supply Management*, Vol. 7 No. 4, pp. 257–263.
- Ramsay, J. and Croom, S. (2008), "The impact of evolutionary and developmental metaphors on purchasing and supply management: A critique", *Journal of Purchasing & Supply Management*, Vol. 14 No. 3, pp. 192–204.
- Rebolledo, C. and Jobin, M.-H. (2013), "Manufacturing and supply alignment: Are different manufacturing strategies linked to different purchasing practices?", *International Journal of Production Economics*, Vol. 146 No. 1, pp. 219–226.
- Reck, R.F. and Long, B.G. (1988), "Purchasing: A competitive weapon", *Journal of Purchasing & Materials Management*, Vol. 24 No. 3, pp. 2–8.
- Rendon, R.G. (2008), "Procurement process maturity: Key to performance measurement", *Journal of Public Procurement*, Vol. 8 No. 2, pp. 200–214.
- Revilla, E. and Knoppen, D. (2015), "Building knowledge integration in buyer-supplier relationships: The critical role of strategic supply management and trust", *International Journal of Operations & Production Management*, Vol. 35 No. 10, pp. 1408–1436.
- Rodríguez-Escobar, J.A. and González-Benito, J. (2017), "The effect of strategic alignment on purchasing management", *Management Research Review: MRN*, Vol. 40 No. 11, pp. 1175–1200.
- Rossetti, C.L. and Choi, T.Y. (2005), "On the dark side of strategic sourcing: Experiences from the aerospace industry", *Academy of Management Executive*, Vol. 19 No. 1, pp. 46–60.

References

- Rozemeijer, F.A., van Weele, A. and Weggeman, M. (2003), "Creating corporate advantage through purchasing: Toward a contingency model", *Journal of Supply Chain Management*, Vol. 39 No. 1, pp. 4–13.
- Rozemeijer, F.A. and van Weele, A.J. (1998), "Professionalising purchasing in organisation: Toward a purchasing development model", presented at the Seventh International IPSERA Conference, *Gerco Rietveld*, London, pp. 515–523.
- Sadiq, A.-A. and Kessa, R. (2020), "U.S. Procurement in the Age of COVID-19: Challenges, Intergovernmental Collaboration, and Recommendations for Improvement", *The American Review of Public Administration*, Vol. 50 No. 6–7, pp. 635–641.
- Sánchez-Rodríguez, C. (2009), "Effect of strategic purchasing on supplier development and performance: A structural model", *Journal of Business & Industrial Marketing*, Vol. 24 No. 3/4, pp. 161–172.
- Schiele, H. (2007), "Supply-management maturity, cost savings and purchasing absorptive capacity: Testing the procurement–performance link", *Journal of Purchasing & Supply Management*, Vol. 13 No. 4, pp. 274–293.
- Semuel, H., Siagian, H. and Arnius, R. (2018), "The effects of strategic purchasing on organization performance through negotiation strategy and buyer-supplier relationship", *International Journal of Business and Society*, Vol. 19 No.2, pp. 323–334.
- Seyedghorban, Z., Samson, D. and Tahernejad, H. (2020), "Digitalization opportunities for the procurement function: pathways to maturity", *International Journal of Operations & Production Management*, Vol. 40 No. 11, pp. 1685–1693.
- Skipworth, H., Godsell, J., Wong, C.Y., Saghiri, S. and Julien, D. (2015), "Supply chain alignment for improved business performance: An empirical study", *Supply Chain Management: An International Journal*, Vol. 20 No. 5, pp. 511–533.
- Søgaard, B., Skipworth, H.D., Bourlakis, M., Mena, C. and Wilding, R. (2019), "Facing disruptive technologies: aligning purchasing maturity to contingencies", *Supply Chain Management: An International Journal*, Vol. 24 No. 1, pp. 147–169.
- Sousa, R. and Voss, C.A. (2008), "Contingency research in operations management practices", *Journal of Operations Management*, Vol. 26 No. 6, pp. 697–713.

References

- Spekman, R.E. (1989), "A strategic approach to procurement planning", *Journal of Purchasing & Materials Management*, Vol. 25 No. 1, pp. 3–10.
- Spekman, R.E. and Hill, R. (1980), "Strategy for effective procurement in the 1980s", *Journal of Purchasing & Materials Management*, Vol. 16 No. 1, pp. 2–6.
- Su, J. (2013), "Strategic sourcing in the textile and apparel industry", *Industrial Management & Data Systems*, Vol. 113 No. 1, pp. 23–38.
- Tassabehji, R. and Moorhouse, A. (2008), "The changing role of procurement: Developing professional effectiveness", *Journal of Purchasing & Supply Management*, Vol. 14 No. 1, pp. 55–68.
- Tranfield, D., Denyer, D. and Smart, P. (2003), "Towards a methodology for developing evidence-informed management knowledge by means of systematic review", *British Journal of Management*, Vol. 14 No. 3, pp. 207–222.
- Trent, R.J. and Monczka, R.M. (2002), "Pursuing competitive advantage through integrated global sourcing", *The Academy of Management Executive*, Vol. 16 No. 2, pp. 66–80.
- Trim, P.R.J. (2005), "The integrated strategic purchasing and focused outsourcing approach", *Strategic Change*, Vol. 14 No. 7, pp. 381–390.
- Tsang, R., Sinha, A. and Mattios, G. (2013), *Winning with procurement in Asia*, Bain & Company.
- Úbeda, R., Alsua, C. and Carrasco, N. (2015), "Purchasing models and organizational performance: A study of key strategic tools", *Journal of Business Research*, Vol. 68 No. 2, pp. 177–188.
- van Weele, A.J. (2018), *Purchasing and Supply Chain Management: Analysis, Strategy, Planning and Practice*, 7th revised edition., Cengage Learning EMEA, Andover.
- Versendaal, J., Akker, M. van den, Xing, X. and Bevere, B. de. (2013), "Procurement maturity and IT-alignment models: Overview and a case study", *Electronic Markets*, Vol. 23 No. 4, pp. 295–306.
- Vickery, S.K. (1991), "A theory of production competence revisited", *Decision Sciences*, Vol. 22 No. 3, pp. 635–643.
- Wallace, W. (1971), *The logic of science in sociology*, Aldine Transaction, New Brunswick u.a.

References

- WATER. (2018), *Business plan 2020-2025*.
- WATER. (2019a), *WATER annual report and consolidated financial statements*.
- WATER. (2019b), *WATER supply chain operations manual*.
- WATER. (2019c), *WATER organisation structure*.
- Watson, R., Wilson, H., MacDonald, E. and Smart, P. (2015), "Engaging stakeholders in innovation for environmental sustainability: A capability-based framework", *Academy of Management Proceedings*, Vol. 2015 No. 1, p. 14662.
- Watts, C.A., Kim, K.Y. and Hahn, C.K. (1992), "Linking purchasing to corporate competitive strategy", *International Journal of Purchasing & Materials Management*, Vol. 31 No. 2, pp. 2–8.
- White, G.R.T., Parfitt, S., Lee, C. and Mason-Jones, R. (2016), "Challenges to the development of strategic procurement: A meta-analysis of organizations in the public and private sectors", *Strategic Change*, Vol. 25 No. 3, pp. 285–298.
- Wong, C., Skipworth, H., Godsell, J. and Achimugu, N. (2012), "Towards a theory of supply chain alignment enablers: A systematic literature review", *Supply Chain Management: An International Journal*, Vol. 17 No. 4, pp. 419–437.
- Yeung, A.C.L. (2008), "Strategic supply management, quality initiatives, and organizational performance", *Journal of Operations Management*, Vol. 26 No. 4, pp. 490–502.
- Yeung, K., Cheng, T.C.E. and Lee, P.K.C. (2015), "Buyers' perceptions on the impact of strategic purchasing on dyadic quality performances", *International Journal of Production Economics*, Vol. 168, pp. 321–330.
- Yin, R.K. (1994), *Case study research: Design and methods*, 1st ed., SAGE Publications, Inc, Thousand Oaks.
- Yin, R.K. (2018), *Case study research and applications*, Sixth edition., SAGE Publications, Inc, Los Angeles.
- Zsidisin, G.A. and Ellram, L.M. (2001), "Activities related to purchasing and supply management involvement in supplier alliances", *International Journal of Physical Distribution & Logistics Management*, Vol. 31 No. 9, pp. 629–646.

Appendix

Appendix A Number of references to support contingencies to maturity topics

Table 76: Number of references to support contingencies to maturity topics

Colours indicate the number of references that support the relationship (darker blue colour = more references)

Area	Topic	Influenced aspect	Contingency	Relationship type	Relationship direction	References A&D	References WATER	References BANK
Strategy and planning	Strategic planning	Create long-term plan	Product criticality	Requirement	Higher	4	2	3
					Lower	0	0	1
			Product standardisation	Requirement	Higher	2	2	0
					Lower	2	2	0
			Cost pressure	Requirement	Higher	0	0	3
					Lower	0	0	0
			Organisational complexity	Requirement	Higher	0	0	1
					Lower	0	0	0
		Create & execute long-term plan	Ability to forecast	Ability to achieve	Higher	1	1	1
					Lower	4	2	4
			Indirect categories	Ability to achieve	Higher	2	0	0
					Lower	2	0	0
	Strategic alignment	Category strategy alignment to company strategy	Business has clear priorities	Ability to achieve	Higher	1	1	4
					Lower	0	1	2
			Market maturity	Requirement	Higher	0	0	0
					Lower	1	0	1
			Product criticality	Requirement	Higher	1	2	0
					Lower	0	0	1
			Indirect categories	Requirement	Higher	1	1	1
					Lower	1	0	0
Organisation and controlling	Organisational structure	Centralisation	Product standardisation	Requirement	Higher	3	0	1
					Lower	1	0	0
			Product criticality	Requirement	Higher	1	4	2
					Lower	0	2	1
			Customer / stakeholder relationship	Requirement	Higher	0	4	0
					Lower	0	0	0
			Cost pressure	Requirement	Higher	1	1	3
					Lower	0	0	0
			Lacking supplier capability	Requirement	Higher	1	1	0
					Lower	2	0	0
			Supplier relationship	Requirement	Higher	3	1	2
					Lower	0	0	0
		De-centralised	Regulatory requirement - local availability	Requirement	Higher	0	0	3
					Lower	0	0	0
			Local users of service (customer / stakeholder relationship)	Requirement	Higher	2	7	4
					Lower	0	0	0
			Product customisation	Requirement	Higher	2	0	0
					Lower	0	0	0
	Purchasing process	Lower process standardisation	Customer / stakeholder requirements	Requirement	Higher	1	1	1
					Lower	0	0	0
			Time pressure / emergency situation	Requirement / Ability to achieve	Higher	1	4	2
					Lower	0	0	0

Appendix

Area	Topic	Influenced aspect	Contingency	Relationship type	Relationship direction	References A&D	References WATER	References BANK
		Higher process standardisation	Regulatory requirement	Requirement	Higher Lower	0 0	2 1	1 0
			Single IT system	Requirement / Ability to achieve	Higher Lower	2 0	2 0	1 2
			Regulatory requirement	Requirement	Higher Lower	2 0	3 0	3 0
			Product criticality	Requirement	Higher Lower	1 0	3 2	1 1
			Organisational complexity	Requirement	Higher Lower	0 0	2 0	2 0
			Automation of performance measurement	Product standardisation	Higher Lower	1 0	1 0	0 1
			Measure complex performance	IT system capabilities	Higher Lower	0 1	0 1	0 0
	Internal integration	Working closely with other functions	Product customisation	Requirement	Higher Lower	7 0	1 0	0 0
			Product criticality	Requirement	Higher Lower	1 0	2 0	1 0
			Product complexity	Requirement	Higher Lower	4 0	2 0	0 0
			Stakeholders are interested in cooperation	Ability to achieve	Higher Lower	0 0	1 2	2 0
			Document interfaces	Organisational complexity	Higher Lower	0 0	2 0	2 0
			Remain flexible in approach	Organisational complexity	Higher Lower	2 0	4 0	1 0
		Higher Status	Working with difficult stakeholders	Requirement	Higher Lower	3 0	3 0	2 0
			Product criticality	Requirement	Higher Lower	3 1	2 0	5 1
		Involvement	Involvement in critical product decision	Product customisation	Higher Lower	4 0	0 0	2 0
			Enough time available	Ability to achieve	Higher Lower	5 1	0 1	1 0
Sourcing and supply base management	Supplier selection	Tendering contracts	Size of supply base (large)	Ability to achieve	Higher Lower	2 4	2 2	1 3
			New product / supplier	Requirement	Higher Lower	2 1	0 0	3 0
			Product complexity	Requirement	Higher Lower	0 0	2 0	0 0
			Product criticality	Requirement	Higher Lower	4 2	4 0	1 1
		Criteria considered	Regulatory requirement	Requirement	Higher Lower	1 0	5 0	0 0
			Proactive supply base management	Requirement	Higher Lower	2 0	0 0	1 0
		Supply base management	Size of supply base (small / limited capacity)	Requirement	Higher Lower	3 0	3 0	1 0
			Supplier criticality	Requirement	Higher Lower	4 0	1 0	1 0
			Changes in market	Ability to achieve	Higher Lower	0 0	0 0	0 1
			Disconnected supply chain	Requirement	Higher Lower	2 0	1 0	0 0
			Regulatory requirement	Requirement	Higher Lower	2 0	2 0	0 0

Appendix

Area	Topic	Influenced aspect	Contingency	Relationship type	Relationship direction	References A&D	References WATER	References BANK
	Global sourcing	Global suppliers	Lacking supplier capability	Requirement	Higher	2	0	1
			Product standardisation	Benefit to be gained	Lower	0	1	0
					Higher	2	0	2
					Lower	2	0	0
		Local suppliers	Regulatory requirement - local supply	Requirement	Higher	4	2	2
					Lower	0	2	1
			Geopolitical uncertainty	Requirement	Higher	1	1	0
					Lower	0	0	0
			Supplier availability (local)	Ability to achieve	Higher	1	1	2
					Lower	0	0	0
			Local service requirement	Requirement	Higher	2	2	2
					Lower	0	0	0
	Risk management	Risk management	Product criticality	Requirement	Higher	4	4	2
					Lower	1	0	0
			Lacking supplier capability	Requirement	Higher	1	2	2
					Lower	0	0	0
			Size of supply base (small / limited capacity)	Requirement	Higher	1	2	0
					Lower	0	0	0
			Size of supply base (large)	Ability to achieve	Higher	1	0	0
					Lower	2	1	0
			Regulatory requirement	Requirement	Higher	0	3	4
					Lower	0	0	0
		More creative risk management	Small suppliers	Requirement	Higher	1	0	2
					Lower	0	0	0
		Product traceability	Regulatory requirement	Requirement	Higher	2	2	4
					Lower	0	0	0
Supplier management	Supplier relationship	Close relationship / co-operation	Customer/ stakeholder requirements	Requirement	Higher	3	2	1
					Lower	0	0	0
			Product criticality	Requirement	Higher	5	4	1
					Lower	0	0	0
			Dependence on supplier	Requirement	Higher	4	2	1
					Lower	0	0	0
			Product complexity	Requirement	Higher	2	3	0
					Lower	0	0	0
			Regulatory requirement	Requirement	Higher	1	1	1
					Lower	0	0	0
			Supplier criticality	Requirement	Higher	2	2	4
					Lower	0	0	0
		Supplier consolidation	Product standardisation	Benefit to be gained	Higher	2	2	1
					Lower	0	1	2
		Less relationship / co-creation opportunities	Dependence on supplier	Ability to achieve	Higher	0	0	1
					Lower	0	0	0
	Supplier development	Develop suppliers	Supplier criticality	Requirement	Higher	3	0	1
					Lower	0	0	0
			Direct categories	Requirement	Higher	0	0	1
					Lower	0	0	1
		Lacking supplier capability		Requirement	Higher	5	5	3
					Lower	1	0	2
	Supplier evaluation	Close supplier management / frequent performance reviews	Product complexity	Requirement	Higher	4	2	0
					Lower	0	0	0
			Product criticality	Requirement	Higher	2	2	0
					Lower	0	0	0
			Lacking supplier capability	Requirement	Higher	5	4	1
					Lower	1	0	0
		Cost pressure		Requirement	Higher	2	1	1
					Lower	0	0	0

Appendix

Area	Topic	Influenced aspect	Contingency	Relationship type	Relationship direction	References A&D	References WATER	References BANK		
			Regulatory requirement	Requirement	Higher	1	4	1		
					Lower	0	0	0		
			Supplier criticality	Requirement	Higher	5	5	4		
					Lower	0	0	0		
			Quality is important	Requirement	Higher	2	0	0		
					Lower	0	0	0		
		Have consistent measures	Single IT system	Ability to achieve	Higher	2	0	0		
					Lower	0	0	0		
		Skills	Existing skills	Technical skills	Working with engineering / in a technical area	Requirement	Higher	5	3	2
							Lower	0	0	0
Level of skills	Product complexity			Requirement	Higher	1	1	1		
					Lower	0	0	0		
Procurement / management skills	Working with difficult stakeholders			Requirement	Higher	2	3	6		
					Lower	0	0	0		
Training and development	Training requirement		Regulatory requirement	Requirement	Higher	1	1	1		
					Lower	0	0	0		
			Training requirement	Requirement	Higher	1	1	1		
					Lower	0	0	0		
IT systems	Higher level of automation		Cost pressure	Requirement	Higher	0	1	1		
					Lower	0	0	0		
			Product standardisation	Benefit to be gained	Higher	0	0	2		
					Lower	2	0	1		
			Large number of stakeholders	Requirement	Higher	0	1	1		
					Lower	0	0	0		
			IT system	Regulatory requirement	Requirement	Higher	0	0	2	
						Lower	0	0	0	
		IT system	Organisational complexity	Requirement	Higher	0	1	1		
					Lower	0	0	0		
			Supplier relationship	Requirement	Higher	3	0	0		
					Lower	1	0	0		
Other	Commercials / contract management	Contract flexibility	Inability to forecast	Requirement	Higher	2	3	3		
					Lower	0	0	0		
		Contract length	Ability to forecast	Ability to achieve	Higher	2	0	1		
					Lower	2	0	1		
		Contract complexity / comprehensive ness	Product criticality	Requirement	Higher	2	2	0		
					Lower	0	0	1		
		More creative contract terms & contract management	Small suppliers	Requirement	Higher	0	2	3		
					Lower	0	0	0		
			Cost pressure	Requirement	Higher	2	4	3		
					Lower	0	0	0		
		Outsourcing	Insource	Product criticality	Requirement	Higher	2	1	0	
						Lower	2	0	1	
	Product complexity			Ability to do	Higher	1	0	0		
					Lower	1	0	2		
	Outsource		Product complexity	Ability to do	Higher	0	1	0		
					Lower	0	1	0		
	Cost pressure	Requirement	Higher	0	0	1				
			Lower	0	0	0				

Appendix B Final contingency-maturity model (after case studies)

Area	Topic	Questions for analysis	Maturity level				Contingency differentiation	
			Stage 1	Stage 2	Stage 3	Stage 4	Lower	Higher
Strategy and planning	Strategic planning	How would you describe your sourcing strategy?	We do not define a formal sourcing strategy for our category	We have a documented sourcing strategy for our category	We have a documented sourcing strategy with defined objectives. We have a cross-functionally agreed technology roadmap	Our sourcing strategy is defined as a roadmap, regularly updated and includes measurable targets. Results can be tracked in relation to strategies	• Less critical products • More customised products	• More critical products • More standardised products
		How would you describe your strategy execution?	Strategy adherence / execution differs depending on individual customer requirements	We consider individual customer requirements, but generally aim to adhere to the overall strategy	Our procurement staff generally adheres to the overall strategy	Any exceptions (where procurement staff does not adhere to the strategy) are discussed and signed off cross-functionally	• Less stable / forecastable categories	• Stable / forecastable categories
	Strategic alignment	How well is the procurement strategy aligned to corporate strategy?	Procurement is not informed about changes in corporate strategy, and the corporate strategy is not considered during the category strategy definition	We are informed about the company strategy and attempt to include corporate objectives in the category strategy	We know the company strategy and are informed about any changes. Category strategies are derived out of the corporate strategy	All procurement staff know the company strategy. Category strategies are derived out of the corporate strategy and regularly updated to reflect changes	• Less critical products • Direct categories	• Critical products • Indirect categories
Organisation and controlling	Organisational structure	Is a procurement organisation established for your category? Are responsibilities defined?	Procurement responsible people are named, but the procurement organisation is insufficiently established	A formal procurement organisation is in place, with several procedures defined	A procurement organisation is established, with a comprehensive policy is described and implemented	The procurement organisation is continuously further developed and audited regularly. More than 80% is purchased centrally		
		What is the level of centralisation of procurement?	Procurement is fully decentralised through local procurement (e.g. project, factory, branch, ...)	We try to set up contracts centrally, but local procurement managers can decide whether to draw on these or use different suppliers	More than 50% (in value) is purchased centrally	We are mostly centrally organised (more than 80% of value purchased centrally)	• Less critical products • More customised products • Local users of the service (that possibly also own the supplier relationship)	• More critical products • More standardised products • Where the stakeholder or supplier relationship is important

Appendix

Area	Topic	Questions for analysis	Maturity level				Contingency differentiation	
			Stage 1	Stage 2	Stage 3	Stage 4	Lower	Higher
	Procurement process	How is the procurement process defined (across product specification, product selection, contracting and ordering)?	There is no procurement process definition in place or procurement processes are documented insufficiently	We have internally developed and documented the procurement process	The defined procurement process is cross-functionally accepted	The procurement process is agreed and aligned to other processes. We continuously improve our procurement process	Less critical products	- Critical products - Process control is regulatory requirement - Complex organisation
		To what extent are agreed processes followed by procurement staff?	We usually don't follow standard processes	The process is followed sometimes (less than 60% of the volume)	The process is followed for the majority of volume (60-80%)	The process is followed for almost all of the volume (>80%)	Emergency situations	Where required from regulators or other stakeholders
	Controlling / Performance Measurement	How would you describe your process control mechanisms?	Action is taken when the internal customer requests it	Routine status checks: The delivery date is checked some days before expected arrival	Advanced status check: Progress is controlled throughout the supplier process based on earlier defined milestones	Automated control: The supplier operates as an integrated part in the process (e.g. direct delivery to the production line)	More customised products	More standardised products
		How is procurement performance measured?	Procurement performance is not measured consistently	Procurement performance is assessed according to operational KPIs (product price and procurement process cost savings, delivery, quality)	Procurement performance is assessed according to complex savings (TCO) and internal customer satisfaction	Procurement performance is assessed based on the complete value chain contribution		
	Internal integration	How is procurement integrated cross-functionally?	Our category is not very integrated with other functions	Procurement categories across the company are integrated and work closely together	Procurement has some loose relationships with product design and other supply chain functions	We are integrated with all relevant business functions and work together to identify business opportunities	- Less critical products - Less complex or customised products	- More critical products - Complex and/or customised products
		Are interfaces and responsibilities towards partner functions defined?	There are no defined interfaces between our category and other functions	Interfaces of our category are defined and tasks are partially described	Interfaces and tasks are defined and documented	Tasks and responsibilities are cross-functionally agreed and coordinated	Complex organisations (remain flexible)	Complex organisations (document interfaces)

Appendix

Area	Topic	Questions for analysis	Maturity level				Contingency differentiation	
			Stage 1	Stage 2	Stage 3	Stage 4	Lower	Higher
Status and involvement	Status and Recognition	How is your category perceived by the organisation?	We are perceived as an important function ("Isolated ineffective paper pushers")	Our views are considered important on selected topics by some managers	We are recognised by both top management and other functions as an important contributor	Top management and other functions consider us to be a vital part of our corporate strategy	Less critical products	- Critical products - When working with difficult stakeholders
	Involvement	How is your category involved in board meetings and/or other processes (e.g. New Product Development, Marketing or Logistics/Production)?	We are sometimes invited to meetings with other functions but integration depends on single persons	We are regularly invited to meetings with other functions	We are regularly invited to meetings with other functions and provide information to support key decisions. We sometimes provide information for board meetings	We are an integrative part in the development of other functions' strategies and influence key decisions, including board meetings	More standardised products	Customised products
Sourcing and supply base management	Supplier selection	Is supplier selection carried out systematically?	Our supplier selection process is not or only partly described	Our selection process is fully defined and mostly adhered to	The supplier selection process involves other functions and traceable decisions	The supplier selection process is continuously adjusted to latest requirements		Where supplier selection is regulated
		How are suppliers selected?	Supplier selection is based on product price, experience and gut-feeling	It is based on operational priorities (e.g. price, delivery time and quality)	Decisions are based on market research and defined business requirements	Decision criteria include TCO (Total Cost of Ownership) and risk analysis	Less critical products	Critical products
	Commercials / contract management	How do you design your contracts?	We set up contracts individually for each purchase	We have some standard T&C's we can include in our contracts	We set up standard contracts for our key suppliers	Most of our suppliers are covered under standard contracts	Small suppliers	Large suppliers
		How do you manage your contracts?	We avoid rigid contracts	We use contracts to manage the base volume and buy ad-hoc for peaks	We have fixed contracts, but try to keep an element of flexibility	Our contracts are generally fixed volume and long-term	- Less critical products - Customised and less forecastable products	- Critical products - Standardised and forecastable products
	Supply base management	How would you describe your supply market analysis?	We don't analyse our supply base systematically	We conduct some supply market analysis during supplier selection processes	We have segmented our supply base together with clear information on supplier capability and capacity	We continuously update our supply base segmentation based on regular supply market analysis	Less critical suppliers	- Critical suppliers - Where visibility is regulatory requirement

Appendix

Area	Topic	Questions for analysis	Maturity level				Contingency differentiation	
			Stage 1	Stage 2	Stage 3	Stage 4	Lower	Higher
		How do you manage your supply base?	We don't actively manage our supply base	We follow some supply base management processes for key suppliers	We actively manage our supply base to ensure alignment with our strategy	We actively manage our supply base in alignment with other functions (in-/outsourcing)	- Large supply base - Standardised products	- Small supply base (due to number of suppliers, overall capacity or capability) - Customised products
	Global sourcing	Do you have an international sourcing strategy defined?	No international sourcing targets or strategy are currently in place	We are pursuing some global sourcing initiatives, focusing on price reduction	We have a clearly formulated strategy focusing on risk spreading and/or access to certain markets	Our global sourcing strategy is aligned with long term business plans and technology roadmap		
		To what extent do you source globally?	We only source locally	We have some international suppliers	A large amount of our volume is sourced internationally (>50% of value)	Most of our products are sourced internationally (>80% of volume)	- Where local service requirement - Where regulatory requirements are local supply	- Standardised products - Where local capability is lacking
	Risk management	To what level do you have visibility of risks in the supply chain?	No visibility of risk	We have a risk register focusing on tier 1 suppliers	We have visibility of risks for all tier 1 and some second tier suppliers	We have visibility of risks across the whole supply chain		- Where regulatory requirement is visibility - Where supply base is very small
		How do you manage risk in your supply chain?	We fight issues after they occur	We include contingencies into our financial plans	We monitor risks and attempt to engage before issues occur	We proactively manage risk through risk sharing approaches	Less critical products	- Higher requirement for critical products - Where suppliers are lacking capabilities
	Supplier management	How would you describe your supplier segmentation?	We don't segment our suppliers	We know from experience who our key suppliers are	Some key commodities are segmented to define key suppliers	The whole supplier base is segmented to define key suppliers		
		How would you describe your supplier network?	We work with many suppliers	Some effort is made to reduce suppliers and consolidate volumes in order to increase leveraging power	We have targeted efforts to consolidate our supplier base	We have clearly defined single-/dual-sourcing strategies, with limited further opportunities for consolidation	Customised products	Standardised products

Appendix

Area	Topic	Questions for analysis	Maturity level				Contingency differentiation	
			Stage 1	Stage 2	Stage 3	Stage 4	Lower	Higher
		How would you describe your supplier relationships?	Our supplier relationships are mostly adversarial	Our supplier relationships are focused on delivery performance	We have established closer relationships with some key suppliers	Our supplier relationships are cooperative across our supplier base	• Less critical products • Less complex products • Less critical suppliers	• Critical products • Complex products • Critical suppliers / where there is a high dependence on the supplier
	Supplier development	Do you visit the sites of your suppliers and/or perform trainings and workshops with your suppliers?	Some selective visits occur at key suppliers	Trainings and workshops at supplier are periodically realised	On demand resources are available to support projects, training and implementation at the supplier site	Professional consulting, projects and trainings take place regularly, with permanent on-site support where required	• Capable suppliers • Less critical suppliers	• Critical suppliers • Less capable suppliers
	Supplier evaluation	Is there a systematic procedure for supplier evaluation in place?	Supplier performance is not measured	Procurement managers individually measure performance according to defined criteria	Key measures are reported automatically (through a central system)	Performance is measured automatically with exception reporting where issues occur	• Less critical suppliers • Less critical products • Less complex products	• Critical suppliers • Critical products • Complex products
		How are suppliers evaluated?	No measures are defined	Performance measurement focuses on operational measures (e.g. cost, quality, delivery)	Supplier performance is measured according to the contribution to organisational goals	Supplier performance measurement focuses on the improvement of the full value chain		
		What feedback do suppliers receive?	There is not feedback to suppliers	Some suppliers are informed about results	All suppliers are informed and evaluation results are discussed with selected suppliers	A detailed root cause analysis is conducted with suppliers that had issues	• Less critical suppliers • Capable suppliers (no issues)	• Critical suppliers • Less capable suppliers (frequent issues)
	Skills	What are the procurement / commercial skills in your category?	No or very limited procurement / commercial skills	Our staff have strong procurement skills	Our staff have strong procurement and communication skills	Our staff combine strong procurement and communication with project management skills	• Less complex products • Less difficult stakeholders	• Complex products • Difficult stakeholders
		What are the typical qualifications of procurement	Less than 20% of staff have a procurement formation and/or	20-40% of staff have a procurement formation and/or	40-60% of staff have a procurement formation and/or	More than 80% of staff have a procurement	Based on interviews this criterion is irrelevant for a capable procurement manager	

Appendix

Area	Topic	Questions for analysis	Maturity level				Contingency differentiation	
			Stage 1	Stage 2	Stage 3	Stage 4	Lower	Higher
		professionals in your category?	university degree	university degree	university degree	formation and/or university degree		
		What are the technical (engineering) skills in your category?	No or very limited engineering skills	Our key staff have basic technical understanding	Our staff understands the engineering requirements in the category	Most of our staff have an engineering background	When not working with engineering	When working with engineering or in a technical area
	Training and development	How are procurement professionals trained to develop their skills?	No systematic procurement training or talent development program in place	Some basic procurement training (under 5 days/year). No systematic determination of training requirements	Individual determination of training needs, focusing on internal courses (between 5 and 15 days/year)	Individually optimised training, following a company-wide standard combining internal courses, external programmes and job rotation (more than 15 days/year)		- More regulated business area - Where individual category managers have less experience or specific training requirements
Information technology	IT systems	To what extent are your procurement processes supported by information technology?	IT systems (if any) support generic administrative processes, the procurement runs via traditional channels (telephone, fax)	IT systems are directed towards the automation of transactional processes (procure to pay)	IT systems focus on the automate the internal processes (RFPs and supplier evaluation) and support e-tendering and e-auctioning	The (fully) automated procurement processes are integrated with the organisation and supplier's processes (e-procurement and business intelligence)	Customised products	Fast-moving, standard products

Note: Outsourcing has not been included in the updated maturity model, due to the discrepancies in commentary as to when to insource / outsource