

**ENABLING THE TRANSITION FROM PRODUCT
PROVIDER TO SERVICE PROVIDER
AN EMPIRICAL INVESTIGATION IN THE
APPAREL INDUSTRY**

Rivini Mataraarachchi

(128003U)



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Thesis submitted in partial fulfillment of the requirements for the
Degree of Doctor of Philosophy in Textile and Clothing Technology

Department of Textile and Clothing Technology

University of Moratuwa

Sri Lanka

June 2015

DECLARATION

I declare that this is my own work and this thesis/dissertation does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

Also, I hereby grant to University of Moratuwa the non-exclusive right to reproduce and distribute my thesis/dissertation, in whole or in part in print, electronic or other medium. I retain the right to use this content in whole or part in future works (such as articles or books).

Signature:  University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk Date: _____

The above candidate has carried out research for the PhD thesis Dissertation under my supervision.

Signature of the supervisors: _____ Date: _____

UOM Verified Signature

ABSTRACT

Consumers are expressing preferences based upon some degree of product-service differentiation and not simply on cost. This trend is more prominent among apparel consumers in the major markets. In this context, the success of traditional low cost supply bases will be twofold: first, they can further compete in terms of low cost, or second, they can see opportunities to differentiate themselves through upgrading themselves to provide innovative service offerings. This calls into question the upgrading of the traditional low cost supply bases with the evolving consumer needs to provide innovative service offerings.

The strategic management literature domain discusses the need for dynamic capabilities for upgrading the resource base to meet the needs of an evolving market. Hence the stream of literature identifies the need for learning capabilities as an enabler for an industry upgrade. Supply chain management literature emphasizes the need of integrating demand (Market oriented view) and supply (Supply oriented view) to provide the consumer requirements. On the other hand, “Servitization” has been introduced as a concept that describes the process of the industry upgrade for creating customer value. Emphasizing the need for developing super supply chains, this stream of literature also argues the need for knowledge integration for creating customer value. However, neither literature domain provides an appropriate supply network design that enables the industry upgrade to provide the required service offerings. Therefore an opportunity exists to understand an appropriate supply network design that enables the servitization process. The purpose of the thesis is therefore, to link servitization with competitive priorities, network relationships and integrative capabilities.

The research design that was developed to address this opportunity is a case with four embedded units of analysis. This provides the opportunity to look for theoretical replication of the guiding principles and generative mechanisms that underpin the industry upgrade for servitization.

The research concludes that an industry upgrade for service offerings needs supply networks with appropriate integrative capabilities that both link the competitive priorities of the specific market and enable the integration between cross functions, as well as cross organizations, in order to enable the learning required. Accordingly, the thesis contributes to the applied literature domain through providing an empirically refined conceptual framework for an industry upgrade and further contributes to the underpinning theory through providing an empirically refined conceptual framework for upgrading the resource base. The thesis also provides a practical contribution through identifying a framework for industrialists to upgrade with the changing consumer needs. Accordingly, industrialists should consider incorporating appropriate integrative capabilities through processes, structures, organization design and key performance indicators that align with the market requirements.

Finally, the thesis highlights the limitations and proposes further research areas.

This thesis is dedicated to my family

For their endless love, support and encouragement



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

ACKNOWLEDGEMENTS

From the beginning of my doctoral life I had always been aware of the difficult path over which this long journey would be taken. As a young mother with an 18-month old child, I took my first steps towards my PhD application to enter the University of Cranfield, UK. Though I was offered a placement, I was not in a position to study there as a full-time PhD student due both to family commitments and the limitation of funds in hand. Thanks to the HETC Project I was able to gain a scholarship from the Sri Lankan government to study as a 'split' PhD student in an overseas university. I would like to express my sincere gratitude to the Head of Department at that time, Dr. Dharmasri Wickramasinghe, for nominating me for the scholarship and also for accepting to be my supervisor at the University of Moratuwa. It is through him I learned the benefits of academic rigour and attention to detail. His never ending positive force provided me the source of motivation I needed to complete the thesis.

Having little background or experience in this particular area of research and with little access to method skills, in the first few months, I experienced all the hurdles that could be imagined for someone coming from a different background. I consider myself extremely fortunate to have Prof. Janet Godsell as my supervisor from the University of Cranfield. I have insufficient words to express my gratitude to her for considering me not as a split PhD student but as a full-time PhD student at Cranfield University. Through her I was particularly fortunate to obtain research exposure from both the Cranfield and Warwick research communities. Even though she was in a far off location, I did not feel it because of the very close supervision I had from her. It was an honour and also a privilege to become a student of such supervisor, who is an expertise in the area of research and method skills. She encouraged me to jump over the hurdles. In fact, she is the one responsible for bringing me into the true world of academia. With Prof. Janet it has always been a learning experience starting from the basics of research in the beginning to the publication level at later stages. I have a great deal of respect for and gratitude towards her for being a mentor, supervisor, and most importantly a wise friend with an abundance of thoughtfulness. In the last three years, she has genuinely been a part of my life changing experience.

Thirdly, my heartiest thank is to the chairman of the research panel, Prof. W.A.Wimalaweera for giving his valuable advice for the thesis. Fourthly, I would like to thank Dr. Ujithe Gunsekara, research Coordinator at the University of Moratuwa for all the support and advice regarding all aspects of administrative support throughout my doctoral journey. I would also like to thank Lynne Hudston, and Vivienne Tsimbili, research administrators at Cranfield and Warwick Universities, respectively. I would be ungrateful if I forgot to thank the PhD students and other staff members at the Universities of Moratuwa, Cranfield and Warwick for being so very supportive and helpful. Especially, I would like to thank Alex for helping me with the thesis formatting.

This thesis would not be successful if I did not get the access to a critical case company to collect the empirical data. Therefore my sincere thanks go to the ApparelCo top management team for their generous support in providing the access to data collection for the research. Also I would like to give my sincere thanks to all the staff in ApparelCo who were supported in providing the data required.

On the whole, I would like to dedicate this thesis to my family. I have no words to thank my mother, father and sister enough for their never ending support and patience with me. Especially to my mother for being like a second mother to my daughter, all the time when I was working with my thesis and for being so close to her when I travelled to the UK. Last but not least my sincere thanks are for my husband. He brought love and happiness into my doctoral life. Thanks for being such a wonderful husband who was really thoughtful, kind and patient. Though I tried to balance my work and family life I know the role I played as a wife and a mother even as a daughter was not always successful. I look forward to enjoying a happy life with my husband Thushara, my daughter Osandi and the forthcoming new baby, who is the other output of my PhD, with a great care to my parents.

TABLE OF CONTENTS

ABSTRACT	iii
LIST OF FIGURES	xi
LIST OF TABLES.....	xiv
LIST OF ABBREVIATIONS	xx
APPENDICES	xx
1 Introduction	1
<i>1.1 Introduction to the chapter.....</i>	<i>1</i>
<i>1.2 Background of the study.....</i>	<i>2</i>
1.2.1 Evolving needs of the apparel consumer	2
1.2.2 Upgrading the manufacturing base.....	3
<i>1.3 Context of the study.....</i>	<i>7</i>
1.3.1 Introduction to the Sri Lankan apparel industry	7
1.3.2 Upgrading the Sri Lankan apparel industry	8
<i>1.4 Thesis route map</i>	<i>12</i>
1.4.1 Positioning the research.....	12
1.4.2 Aim of the research	13
1.4.3 Value of the research	14
1.4.4 Structure of the thesis	15
<i>1.5 Summary of the chapter</i>	<i>17</i>
2 Underpinning theory.....	19
<i>2.1 Introduction to the chapter.....</i>	<i>19</i>
<i>2.2 Theories of competitive strategy development</i>	<i>20</i>
2.2.1 Industrial Organization (IO) view	20
2.2.2 Resource Based Theory (RBT)	22
2.2.3 Comparison of IO view and RBV	25
<i>2.3 Dynamic theory for the evolutionary environment.....</i>	<i>29</i>
2.3.1 The importance of dynamic theory	29
2.3.2 Dynamic Capability for evolutionary environment.....	31
2.3.3 Hierarchical view of dynamic capabilities.....	39
<i>2.4 Developing the conceptual framework for the study</i>	<i>45</i>
2.4.1 Capabilities for industry upgrade	45
2.4.2 Enablers for industry upgrade	47
<i>2.5 Further conceptualization of learning capabilities.....</i>	<i>52</i>
<i>2.6 Summary of the chapter</i>	<i>55</i>
3 Literature review	57
<i>3.1 Introduction to the chapter.....</i>	<i>57</i>
<i>3.2 Value chain as a framework to represent the business model</i>	<i>58</i>
3.2.1 Business model for static environment.....	59
3.2.2 Business model for evolutionary environments.....	62
3.2.3 Representation of the value chain model for the thesis	66

3.2.4 Scope of the study	68
3.3 Conceptualizing demand and supply planning process as integrative planning of marketing strategy and supply chain strategy	68
3.3.1 Literature related to supply chain management	69
3.3.2 Literature related to Servitization	73
3.3.3 Capabilities for integrative planning	77
3.4 Conceptual framework for the study based on Chapters 2 and 3	79
3.4.1 Operationalizing the integrative capabilities.....	80
3.5 Extending the conceptual framework for different stages in the industry upgrade continuum for servitization	87
3.5.1 Evolution of the value chain activities along the industry upgrade continuum	87
3.5.2 Evolution of the offering along the industry upgrade continuum	91
3.5.3 Evolution of the competitive priorities	96
3.5.4 Collaboration intensity between supply network partners.....	100
3.5.5 Level of demand and supply integration	102
3.5.6 Evolution of integrative capabilities.....	103
3.6 Summary of the chapter	113
4 Research design.....	114
4.1 Introduction to the chapter.....	114
4.2 Research Philosophies and researcher.....	115
4.3.1 Ontological positions.....	115
4.3.2 Epistemological positions	116
4.3.3 Methodological positions.....	117
4.3.4 Author's philosophical position and methodology selection.....	118
4.3 Methodology.....	123
4.4.1 Why case study research?	123
4.4 Process for conducting case study research	124
4.5.1 Define research parameters	124
4.5.2 Instrument development	129
4.5.3 Data Gathering	139
4.5.4 Data Analysis	141
4.5.5 Reporting case studies	144
4.5 Ensuring the rigour of the research design.....	145
4.6 Summary of the chapter	146
5 Pilot Case: investigation of the stage 1 of the industry upgrade continuum.....	148
5.1 Introduction to the chapter.....	148
5.2 Case Context.....	148
5.2.1 Business context	149
5.2.2 Overview of supply network.....	151
5.2.3 Planning cycle of ProdCo with respect to selected customer and supplier ..	153

5.2.4 Case Focus	154
5.3 Results of the study.....	155
5.3.1 Product Offering.....	155
5.3.2 Competitive Priorities.....	157
5.3.3 Collaboration intensity with supply partners	159
5.3.4 Demand supply integration	161
5.3.5 Integrative capabilities.....	165
5.4 Summary of the chapter	172
6 Case 2: Investigation of the stage 2 of the industry upgrade continuum	174
6.1 Introduction to the chapter.....	174
6.2 Case context	174
6.2.1 Business context.....	174
6.2.2 Overview of the supply network	177
6.2.3 Planning cycle of FashionCo	178
6.2.4 Case focus	179
6.3 Results of the study.....	179
6.3.1 Offering.....	179
6.3.2 Competitive priorities	181
6.3.3 Collaboration intensity.....	185
6.3.4 Level of demand and supply integration	187
6.3.5 Level of integrative capabilities.....	191
6.4 Summary of the chapter.....	204
7 Case 3: Investigation of the stage 3 of the industry upgrade continuum	207
7.1 Introduction to the chapter.....	207
7.2 Case context	207
7.2.1 Business context.....	207
7.2.2 Overview of the supply network	210
7.2.3 Planning cycle of InnoCo	211
7.2.4 Case focus	212
7.3 Results of the study.....	213
7.3.1 Offering.....	213
7.3.2 Competitive priorities	214
7.3.3 Collaboration intensity.....	216
7.3.4 Level of demand supply integration	219
7.3.5 Level of integrative capabilities	222
7.4 Summary of the chapter	232
8 Case 4: investigation of the stage 4 of the industry upgrade continuum	236
8.1 Introduction to the chapter.....	235
8.1 Case context	237
8.1.1 Business context.....	237
8.1.2 Overview of the supply network	239

8.1.3 Planning cycle of AdvanceCo	240
8.1.4 Case focus	241
8.2 Results of the study.....	241
8.2.1 Offering.....	241
8.2.2 Competitive priorities	242
8.2.3 Collaboration intensity.....	244
8.2.4 Level of demand supply integration	247
8.2.5 Level of integrative capabilities	250
8.3 Summary of the chapter	259
9 Cross-case comparison.....	263
9.1 Introduction to the chapter.....	263
9.2 Case context	264
9.2.1 Business context	264
9.2.2 Overview of the supply network	265
9.2.3 Planning cycle	266
9.2.4 Case focus	266
9.3 Results of the study.....	267
9.3.1 Evolution of the offering.....	267
9.3.2 Evolution of the competitive priorities	268
9.3.3 Evolution of the collaboration intensity	270
9.3.4 Evolution of the Level of Demand supply integration.....	272
9.3.5 Evolution of the integrative capabilities.....	274
9.3.6 Link between competitive priorities, collaboration intensity and integrative capabilities.....	284
9.4 Summary of the chapter	289
10 Conclusion	292
10.1 Introduction to the chapter.....	292
10.2 Review of aims and questions.....	293
10.3 Contribution to theory and practice.....	296
10.3.1 Contribution to underpinning theory	296
10.3.2 Contribution to applied theory	302
10.3.3 Contribution to practice	309
10.4 Limitations and further research.....	311
10.5 Summary of the chapter	313
REFERENCES	315

LIST OF FIGURES

Chapter 1

Figure 1-1 Breakdown of Chapter 1	2
Figure 1-2 Positioning the research	13
Figure 1-3 Structure of the thesis.....	15

Chapter 2

Figure 2-1 Topic breakdown of Chapter 2.....	20
Figure 2-2 Framework for competitive advantage	24
Figure 2-3 Resources vs. Capabilities vs. Activities	29
Figure 2-4 Linking dynamic capabilities to resources	34
Figure 2-5 Coevolution of the markets and the business enterprise	36
Figure 2-6 Linking dynamic capabilities to resources	39
Figure 2-7 Linking dynamic capabilities to environmental states.....	42
Figure 2-8 Conceptual framework to represent the capabilities for an industry upgrade based on Chapter 2.....	47
Figure 2-9 Modified conceptual framework for the thesis based on Chapter 2	52

Chapter 3

Figure 3-1 Topic breakdown of Chapter 3.....	58
Figure 3-2 Value chain vs. Value system.....	60
Figure 3-3 Extended supply chain	61
Figure 3-4 Value chain as integrating demand chain and supply chain processes	63
Figure 3-5 Value chain framework for the purpose of this thesis	66
Figure 3-6 Value chain = Demand chain + Supply chain	67
Figure 3-7 Scope of the study.....	68
Figure 3-8 Demand and supply process integration	70
Figure 3-9 Strategic level integration between network partners.....	72
Figure 3-10 Visual portrayal of the key elements of DSI	74
Figure 3-11 DSI as a knowledge-based process.....	75
Figure 3-12 Value co creation networks	76

Figure 3-13 Conceptual framework for the thesis based on Chapters 2 and 3.....	79
Figure 3-14 Operationalizing integrative capabilities using customer value criteria	81
Figure 3-15 Integrative capabilities - Related to OW/OQ criteria	81
Figure 3-16 Business alignment model.....	82
Figure 3-17 Modified Conceptual framework for the thesis based on chapter 2 and chapter 3.....	87
Figure 3-18 Expanding the value chain by adding value through intangible activities	89
Figure 3-19 Manufacturer movement to service based activities.....	90
Figure 3-20 Integrated framework for the development of focused supply chains Source: (Childerhouse et al., 2002)	91
Figure 3-21 Operationalizing the supply chain offering using customer value criteria	93
Figure 3-22 Evolution of competitive priorities	97
Figure 3-23 Extended conceptual framework for the thesis	111
Chapter 4	
Figure 4-1 Topic breakdown of Chapter 4	115
Figure 4-2 Critical Realist: Moving from empirical to real domain	122
Figure 4-3 Focus of the study	129
Figure 4-4 Scope of the study.....	129
Figure 4-5 Layout of the contact summary sheet	140
Chapter 5	
Figure 5-1 Topic breakdown of chapter 5.....	148
Figure 5-2 Positioning of the Product division.....	149
Figure 5-3 Scope of the study.....	155
Chapter 6	
Figure 6-1 Topic Breakdown of chapter 6	174
Figure 6-2 Positioning and strategy	175
Figure 6-3 Scope of the study: VarietyCo.....	179

Chapter 7

Figure 7-1 Topic breakdown of chapter 7	207
Figure 7-2 Positioning of Launch division.....	209
Figure 7-3 Scope of the study: LaunchCo.....	212

Chapter 8

Figure 8-1 Breakdown of Chapter 8	236
Figure 8-2 Positioning of AdvanceCo	238
Figure 8-3 Scope of the study.....	241

Chapter 9

Figure 9-1 Breakdown of Chapter 9	263
Figure 9-2 Focus of the four embedded units of analysis	267

Chapter 10

Figure 10-1 Topic breakdown of chapter 10.....	292
Figure 10-2 Refined conceptual framework: Underpinning theory	301
Figure 10-3 Refined conceptual framework: Applied theory-1.....	303
Figure 10-4 Refined conceptual framework & Applied theory 2.....	309



LIST OF TABLES

Chapter 1

Table 1-1 Textile and apparel exports	8
---	---

Chapter 2

Table 2-1 Stages in the strategy development process - IO view.....	22
Table 2-2 Resources classification	22
Table 2-3 Characteristics of the resources that provide competitive advantage	23
Table 2-4 Stages in the strategy development process: RBV	25
Table 2-5 Comparison between the two approaches	26
Table 2-6 Resources vs. capabilities/competencies.....	27
Table 2-7 Need for strategic theory for evolutionary environment.....	30
Table 2-8 RBV vs Dynamic capabilities.....	32
Table 2-9 Defining dynamic capability linking to resources as the source of competitive advantage	34
Table 2-10 Dimensions of dynamic capabilities.....	35
Table 2-11 Defining dynamic capability linking to knowledge/routines as the source of competitive advantage.....	38
Table 2-12 Defining perceived stable environment vs. dynamic environments	41
Table 2-13 Comparison of Hierarchical view of dynamic capabilities adapted by different authors	44
Table 2-14 Hierarchy of Dynamic capabilities (DC) to support different environment states	45
Table 2-15 Defining different levels of learning.....	49
Table 2-16 Comparison of different levels of learning.....	50
Table 2-17 Enablers for dynamic capabilities	51
Table 2-18 Learning capabilities as processes	54
Table 2-19 Learning capabilities- Processes & Organization structure.....	55

Chapter 3

Table 3-1 Marketing vs. Supply chain: Traditional view	62
Table 3-2 Marketing vs. Demand chain: Contemporary view	64

Table 3-3 Characteristics of the two different value chains.....	66
Table 3-4 Demand and supply process integration- Activity level	71
Table 3-5 Conceptualization of demand and supply planning as knowledge integration processes.....	78
Table 3-6 Learning capabilities vs. integrative capabilities.....	80
Table 3-7 Types of coordination structures.....	84
Table 3-8 Phases of value migration and the need for value innovation	88
Table 3-9 Evolution of a manufacturer’s activities	90
Table 3-10 Description of DWV3 criteria that determine offering	92
Table 3-11 Description of supply chain offerings	94
Table 3-12 Classification of approaches in determining the supply chain offering ...	94
Table 3-13 Evolution of the offering	96
Table 3-14 Competitive priorities.....	98
Table 3-15 Evolution of the competitive priorities of the manufacturer	100
Table 3-16 Evolution of collaboration intensity.....	102
Table 3-17 Level of demand and supply integration	104
Table 3-18 Integrative capabilities - Process dimension	107
Table 3-19 Integrative capabilities - Governance and decision making structures ..	108
Table 3-20 Integrative capabilities - Organization design	109
Table 3-21 Integrative capabilities - KPIs	110
Chapter 4	
Table 4-1 Different ontological positions	116
Table 4-2 Different philosophical positions.....	116
Table 4-3 Different Epistemological positions.....	117
Table 4-4 Different methodological positions.....	118
Table 4-5 Layers of reality	119
Table 4-6 Research Hypotheses	1266
Table 4-7 Embedded units of analysis	127
Table 4-8 Embedded units of analysis for the study.....	133

Table 4-9 Phases of the study	136
Table 4-10 Topic Guide- Scoping studies 1 & 2	137
Table 4-11 Topic guide-Main study	138
Table 4-12 Summary of the case study database: ProdCo.....	142
Table 4-13 Case study tactics for four design tests	146
Chapter 5	
Table 5-1 Planning cycle: ProdCo	154
Table 5-2 Offering: ProdCo	156
Table 5-3 Competitive priorities: ProdCo.....	158
Table 5-4 Hypothesis 1a: Offering and competitive priorities: ProdCo	159
Table 5-5 Collaboration intensity between customer and supplier: ProdCo.....	161
Table 5-6 Hypothesis 2a: Collaboration intensity: ProdCo	161
Table 5-7 Level of demand supply integration: ProdCo.....	165
Table 5-8 Hypothesis 3a: Level of demand and supply integration: ProdCo	165
Table 5-9 Integrative capabilities- Process dimension: ProdCo.....	168
Table 5-10 Integrative capabilities- Governance and decision making structure: ProdCo.....	169
Table 5-11 Integrative capabilities- Organization Design: ProdCo	170
Table 5-12 Integrative capabilities- KPIs: ProdCo.....	171
Table 5-13 Hypothesis 4a: Integrative capabilities : ProdCo.....	171
Table 5-14 Test of hypotheses against the empirical evidence: ProdCo	172
Chapter 6	
Table 6-1 Planning cycle: VarietyCo.....	178
Table 6-2 Offering: VarietyCo	181
Table 6-3 Competitive priorities-VarietyCo	184
Table 6-4 Hypothesis 1b: Offering and competitive priorities: VarietyCo.....	185
Table 6-5 Collaboration intensity : VarietyCo	187
Table 6-6 Hypothesis 2b: Collaboration intensity: VarietyCo	187
Table 6-7: Demand and Supply integration: VarietyCo	190

Table 6-8 Hypothesis 3b: Level of demand and supply integration (VarietyCo)	191
Table 6-9 Integrative capabilities - Processes: VarietyCo	197
Table 6-10 Integrative capabilities - Governance and decision making structures: VarietyCo	200
Table 6-11 Integrative capabilities- Organization Design:VarietyCo	202
Table 6-12 Integrative capabilities- KPIs: VarietyCo	203
Table 6-13 Hypothesis 4b: Integrative capabilities: VarietyCo	204
Table 6-14 Test of hypotheses against the empirical evidence: VarietyCo	205
Chapter 7	
Table 7-1 Planning cycle: LaunchCo.....	212
Table 7-2 Offering: LaunchCo	214
Table 7-3 Competitive priorities- LaunchCo	215
Table 7-4 Hypothesis 1c: Offering and competitive priorities: LaunchCo.....	216
Table 7-5 Collaboration intensity: LaunchCo	219
Table 7-6 Hypothesis 2c: Collaboration intensity	219
Table 7-7 Demand and supply integration: LaunchCo	222
Table 7-8 Hypothesis 3C: Demand and supply integration: LaunchCo	222
Table 7-9 Integrative capabilities: Processes: LaunchCo	228
Table 7-10 Integrative capabilities: Governance and decision making structures: LaunchCo	229
Table 7-11 Integrative capabilities- Organization Design: LaunchCo	231
Table 7-12 Integrative capabilities- KPIs : LaunchCo	232
Table 7-13 Hypothesis 4c: Integrative capabilities: LaunchCo	232
Table 7-14 Test of hypotheses against the empirical evidence: LaunchCo	234
Chapter 8	
Table 8-1 Planning cycle: AdvanceCo	241
Table 8-2 Offering: AdvanceCo	242
Table 8-3 Competitive priorities: AdvanceCo	244
Table 8-4 Hypothesis 1d: Offering and competitive priorities: AdvanceCo	244
Table 8-5 Collaboration intensity: AdvanceCo	246

Table 8-6 Hypothesis 2d: Collaboration intensity: AdvanceCo	247
Table 8-7 Demand and supply integration: AdvanceCo	249
Table 8-8 Hypothesis 3d: Level of demand and supply integration: AdvanceCo	250
Table 8-9 Integrative capabilities-Processes: AdvanceCo	254
Table 8-10 Integrative Capabilities- Governance and decision making structure: AdvanceCo	256
Table 8-11 Integrative capabilities- Organization Design: AdvanceCo	258
Table 8-12 Integrative capabilities-KPI: AdvanceCo	258
Table 8-13 Hypothesis 4d: Integrative capabilities: AdvanceCo	259
Table 8-14 Test of hypotheses against the empirical evidence: AdvanceCo	261
Chapter 9	
Table 9-1 Business context: Cross case analysis	265
Table 9-2 Overview of the supply network: Cross case analysis	266
Table 9-3 Planning cycle: Cross case analysis	266
Table 9-4 Offering: Cross-case	268
Table 9-5 Competitive priorities: Cross-case	269
Table 9-6 Hypothesis 1; Offerings and competitive priorities: Cross case	269
Table 9-7 Hypothesis 1: Key insights	270
Table 9-8 Collaboration intensity: Cross-case	271
Table 9-9 Hypothesis 2: Collaboration intensity: Cross case	271
Table 9-10 Hypothesis 2: Key insights	272
Table 9-11 Demand and supply integration: Cross-case	273
Table 9-12 Hypothesis 3: Level of demand and supply integration: Cross case	273
Table 9-13 Hypothesis 3: Key insights	274
Table 9-14 Integrative capabilities: Process: Cross case	277
Table 9-15 Integrative capabilities-Governance and decision making structures: Cross case	278
Table 9-16 Integrative capabilities: Organization Design: Cross case	280
Table 9-17 Integrative capabilities – KPI - Cross-case	281
Table 9-18 Hypothesis 4: Level of Integrative capabilities: Cross case	281

Table 9-19 Hypothesis 4: Key insights	283
Table 9-20 Hypothesis 5: Linkage between competitive priorities, collaboration intensity and integrative capabilities	288
Table 9-21 Test of hypotheses against the empirical evidence: Key insights.....	291



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

LIST OF ABBREVIATIONS

MFA	Multi Fibre Agreement
JAAF	Joint Apparel Association Forum
CRSC	Customer Responsive Supply Chains
DSI	Demand and Supply Integration
IO	Industrial Organization
SCP	Structure-Conduct-Performance
RBT	Resource Based Theory
RBV	Resource Based View
KBV	Knowledge Based View
DC	Dynamic capabilities
DSI	Demand and Supply Integration
KPI	Key Performance Indicators
SCOR	Supply Chain Operations Reference
SC	Supply Chain
SCM	Supply Chain Management
OW	Order Winner
OQ	Order Qualifier
CMT	Cut, Make And Trim
ODM	Original Design Manufacturer
OBM	Original Brand Manufacturer
R&D	Research and Development
CPFR	Collaborative Planning And Forecasting Replenishment
4PL	Fourth party logistics provider
KAM	Key Account Manager
COE	Chain Of Evidence
SMV	Standard Minute Value
R&D	Research and Development
PLC	Product Life Cycle
CPFR	Collaborative Planning And Forecasting Replenishment
ISW	In Store Week
IST	In Store Test



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

RM	Raw Material
JV	Joint Venture
DRA	Design Risk Assessment
JDA	Joint Development Agreement
NDA	Non-Disclosure Arrangement
TRL	Technology Readiness Level
TRA	Technology Risk Assessment
PDRA	Product Development Risk Assessment
TLT	Test Lot Trial
CEO	Chief Executive Officer
CGO	Corporate Growth Officer
CTO	Corporate Technology Officer
R&I	Research and Innovation
R&D	Research and Development



University of Moratuwa, Sri Lanka.
 Electronic Theses & Dissertations
www.lib.mrt.ac.lk

APPENDICES

Appendix A	324
Appendix B.....	325
Appendix B.1	325
Appendix B.2.....	326
Appendix B.3	328
Appendix C	332
Appendix C.1	332
Appendix C.2.....	339
Appendix D	341
Appendix D.1.....	342
Appendix E	347
Appendix E.1	347
Appendix E.2.....	350
Appendix F.....	353
Appendix F.1.....	353
Appendix F.2	353



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

1 INTRODUCTION

1.1 Introduction to the chapter

The focus for this introductory chapter is to lay the foundations for the main body of this thesis, by providing firstly the background knowledge necessary to contextualize the study, and secondly a route map of this thesis.

The background knowledge necessary to understand the research problem is covered in section 1.2, which discusses the evolution of apparel consumer needs and the importance of upgrading the industry to meet those evolving consumer needs. Section 1.3 discusses the context of the study, which is the Sri Lankan apparel industry. Section 1.4 summarizes the research gap. This section highlights the knowledge gap in the main bodies of literature which helps to identify the value of the research. Accordingly, two key bodies of literature were identified: Servitization and Supply Chain Management (Sections 1.4.1 and section 1.4.2). The Strategic Management literature domain that discusses the general management theories linked with the research problem is discussed in section 1.4.3.

Section 1.5 then presents a thesis route map which explains the research gap identified for the thesis, the value of the research and the thesis structure. The structure for this chapter is summarized in Figure 1-1.



University of Moratuwa, Sri Lanka.

Electronic Theses & Dissertations

www.lib.mrt.ac.lk

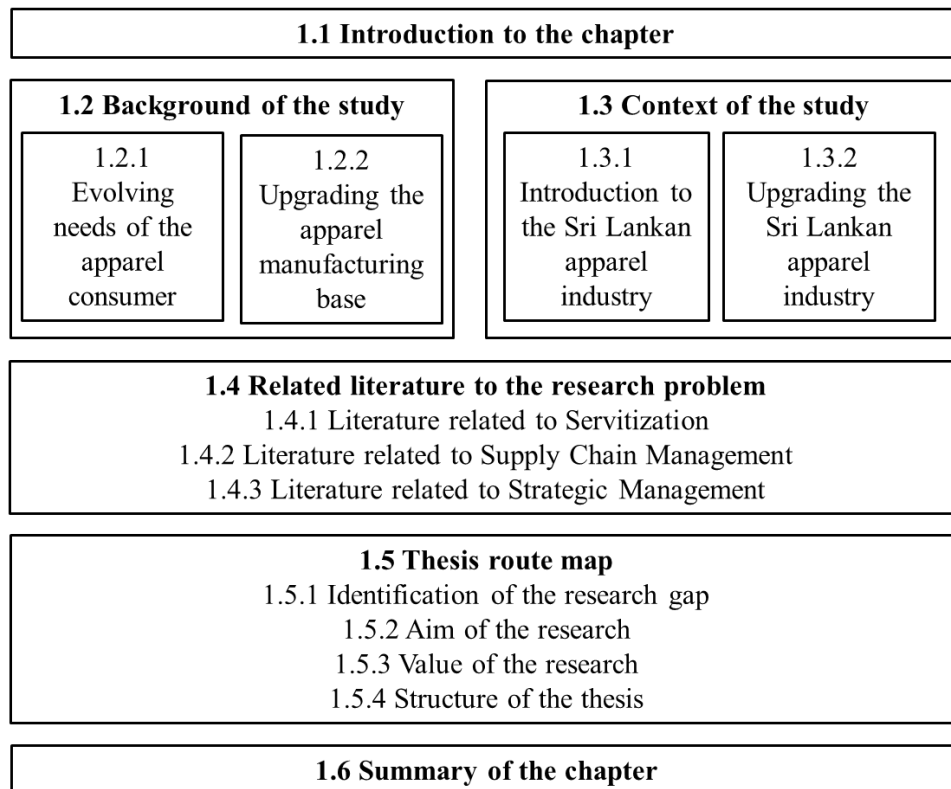


Figure 1-1 Breakdown of Chapter 1
 University of Moratuwa, Sri Lanka.
 Electronic Theses & Dissertations
 www.lib.mrt.ac.lk

1.2 Background of the study

This section explains the background of the study in terms of the evolving consumer needs (Section 1.2.1) and the importance of upgrading the apparel manufacturing base (Section 1.2.2).

1.2.1 Evolving needs of the apparel consumer

End user markets that were satisfied through basic product needs at low cost are now becoming more service dominated (Pine & Gilmore, 1998). The consumer decision to select a product no longer solely depends on the price itself but in terms of the ‘total experience’ embedded within the product, which is known as ‘Perceived customer value’ (Walters, 2008b). This trend is more prominent among apparel consumers in the major markets. Consumers are expressing preferences based upon some degree of product-service differentiation and not simply on cost. Increasing demand for product customization, as well as demand for fast fashion, provide evidence for some of these developments (Bruce & Daly, 2006; Walters, 2009;

Barnes & Lea-Greenwood, 2010). Further, with the developments of the new technology, consumers are increasingly looking for more innovative products. An example is the sportswear sector where high tech products are increasing rapidly due to the introduction of nano-technology (Gupta, 2011).

The above trend in consumer markets towards more service dominance, has forced changes in the industrial markets. Industrial markets not only look out for the low cost manufacturing bases but also search out manufacturers who can provide the required service. Cost, which was the main factor that affected the sourcing decisions of buyers, has now been replaced by other factors. Today, retailers select manufacturers according to the capabilities of suppliers to deliver customer value requirements (Walters and Bhattacharjya 2012). This is evident when looking at the apparel retailers' sourcing strategies, where retailers increasingly narrow down their roster of suppliers and are actively sourcing a “*partnership sourcing concept*” (Bruce & Daly, 2006; Şen, 2008; Bruce & Daly, 2011). Today retailers look for “Supplier of choice” who can deliver a total value package to meet the service requirements of the end consumer (Singhal, Sood, & Singh, 2004). Therefore retailers are seeking to establish (long term) relationships with preferred suppliers based on win-win philosophies. These changes in the apparel retailer's sourcing decisions make apparel manufacturers upgrade themselves in order to provide more innovative offerings.

1.2.2 Upgrading the manufacturing base

While it has been argued those retailers' sourcing strategies that were solely based on low cost are now changing, the impact of the above transformation in sourcing decisions for low cost supply bases will be twofold. The optimistic view depicts that, if the customer value is an outright price offer with no service support, then low cost supply bases will be in an advantageous position relative to other supply bases, where they could be competitive in their positioning in low cost networks to provide standardized products (Gereffi, 2003; Walters & Lancaster, 1999). However, the sources which would remain successful in terms of low cost would only be the cost leaders, who can offer an outright price offer. The pessimistic view of the other school of thought is that low cost supply bases, which are not competitive enough to

become the cost leaders in the market, will lose their position in the global supply chains. Retailers who source for price-led value will move towards supply sources that supply products at the lowest cost, since much larger, low cost rivals, such as China, attack the position of many poor and small developing sources, which have been traditionally known as low cost bases (Gereffi & Frederick, 2010). Furthermore, emerging low cost nations, such as Vietnam, Madagascar and Indonesia are also attracted as new entrants.

If the industry is not competitive in terms of low cost, the need is to upgrade the industry. Therefore in this context, the success of traditional low cost supply bases will be twofold: first, they can further compete in terms of low cost, by continuously cutting down their costs to become the cost leader in the market, or second, they can see opportunities to differentiate themselves from the competition through upgrading themselves to provide the innovative service offerings required to meet the evolving consumer needs (Gereffi & Frederick, 2010; Gereffi, 2003).

This calls into the question of upgrading the traditional low cost supply bases to meet the evolving consumer needs. The suppliers may upgrade to become competitive in terms of low cost as the primary competitive advantage, or move up the value chain through creating customer value through adding services to meet the evolving needs of the consumer.

Abernathy, Volpe & Weil (2005) support this argument stating that within the industry, high-cost, customer value oriented sources have been successful against low cost leaders such as China. Accordingly, low cost leadership, which was the competitive priority of the traditional low cost supply base, may compete in terms of low cost through upgrading in the same direction or may change their competitive priorities towards value-added competitive priorities with the evolving consumer needs.

The network implications of sourcing strategies for the above diverse value offerings are recognized by Gereffi (2003), who contrasts between standardized and differentiated (or fashion-oriented) goods. He states that sourcing standardized goods at low cost leads to mass production within vertically integrated plants and to the

increasing use of low cost suppliers in networks, while sourcing differentiated or value-oriented goods is done with a more extensive use of specialized networks for material or service inputs.

Walters (2004, p. 219) highlights:

“New business models are emerging, ones in which competitive advantage is based on managing processes that facilitate rapid and flexible responses to “market” change, and ones in which new capabilities are based upon developing unique relationships with partners (suppliers, customers, employees, shareholders, government and, often, with competitors).”

Walters (2004) further mentions that the contemporary approach to managing resources is to leverage partnership resources rather than invest. Accordingly, network relationships will be an important requirement in industry upgrade to deliver more value-added offerings to the customer.

Norman (2001) as cited in Walters (2008a, p. 2) discusses this movement as *“a new strategic logic.”* He suggests that:

“... Managers need to be good at mobilizing, managing, and using resources rather than at formally acquiring and necessarily owning resources. The ability to reconfigure, to use resources inside and particularly outside the boundaries of the traditional corporation more effectively becomes a mandatory skill for managements.”

In line with Norman (2001), Walters and Newton (2010) stresses the importance of network based new business models that act as value constellations to meet changing consumer needs. Accordingly, Walters and Newton (2010) elaborated the characteristics of new business models to match the opportunity environment. Accordingly, it is evident that upgrading the manufacturing base will not happen as a single entity, but within the network of customer and supplier. Walters and Newton (2010) emphasizes that one organization cannot simply have all the resources and capabilities to create and sustain its innovative business models, while Walters & Rainbird (2007) emphasized the need of corporative innovation.

Accordingly, it is evident that the changes in the consumer environment are pushing suppliers to develop network based business models that enable the business upgrade.

Stressing the fact that the traditional vertical network structures are now replaced by virtual structures, Walters (2008b) emphasizes that command and control are now replaced by integration and coordination. He further emphasizes that entrepreneurship and intrapreneurship are now replaced by interpreneurship, which refers to the management expertise required to integrate the resources (assets, processes, and capabilities) of an alliance or partnership comprising a number of independent organizations. Accordingly, Bhattacharjya and Walters (2009) highlights the fact that integration and coordination becomes the core capability in the new environment over economies of scale and scope. Bhattacharjya and Walters (2009) also mention the importance of interactions among the value chain network partners. In line with this view, the role of the Fourth party logistics provider (4PL) as a new member in the emerging extended network was introduced by Christopher & Holweg (2011) and Walters and Bhattachariya (2012), when they discussed the emerging business models to create customer value. Handfield & Nichols (2002) also support the need of 4PL. When they discussed the need for transforming supply chains into integrated value systems. These authors elaborated the fact that when integration and coordination becomes the core capability in emerging business models, need of a 4PL as an integrator that act as a tight decision making system is very important.

Although the need for evolving business models to meet the characteristics of the new opportunity environment of evolving consumer needs is widely acknowledged, how these business models are developed is not considered in the literature. (Walters 2012) Johnson, Chrsitensen and Kagerman (2009) highlights that reinventing the business model needs to consider the customer value proposition, resources and processes. Therefore this study addresses the research problem of identifying what enables the industry upgrade for the evolving consumer needs. Since the literature emphasized the need of changing characteristics of the competitive priorities, network relationships and integrative capabilities, this study more specifically

identifies an appropriate network based business model for business upgrade, linking to competitive priorities, collaboration intensity among network members and integrative capabilities.

1.3 Context of the study

This section explains the context of the study, i.e. the Sri Lankan apparel industry. Section 1.3.1 provides an introduction to this industry which was started as a supplier that provides basic commodity product at low cost. Section 1.3.2 explains the importance of upgrading this apparel industry.

1.3.1 Introduction to the Sri Lankan apparel industry

Sri Lanka became a member of the global apparel supply chain as a result of relocating its labor-intensive manufacturing operations from high-wage developed regions to low-cost production regions in developing economies. Therefore cost advantage became the key for the success of the apparel industry in Sri Lanka (Jayawickrama & Thangavelu, 2011).

The growth witnessed by this industry was attributed to two major factors: the first is the low cost of production in the country, and the second, the Multi Fibre Agreement (MFA), i.e. the worldwide system of managed trade in textiles and apparel that came into existence in 1974. Under the quota regime, Sri Lanka, like other apparel exporting developing countries, had enjoyed a relatively assured export market through bilateral agreements with countries in the developed world. (Fonseka & Fonseka, 1998)

Sri Lanka has since become a world class apparel manufacturer, having supplied to global super brands for over three decades. Today, the garment industry occupies a pre-eminent position in Sri Lanka, producing high quality garments combined with an industry which is capable of servicing leading international brands such as Victoria's Secret, Gap, Liz Claiborne, Next, Jones New York, Nike, Tommy Hilfiger, Pink, Triumph, Ann Taylor, Speedo, Abercrombie & Fitch, Land's End, Marks & Spencer (Sri Lanka. Export development board 2012). The USA and UK

have been the top markets for Sri Lankan apparel throughout the decades, accounting more than 90% of its total exports (Kelegama, 2009).

Sri Lanka's apparel export industry is the most significant and dynamic contributor to the Sri Lanka's economy. The industry has enjoyed epic growth levels over the past four decades and today is Sri Lanka's primary foreign exchange earner, accounting for 38% of total exports and over 50% of industrial products exported (Sri Lanka. Ministry of Technology and Research, 2014). Furthermore the industry export revenue has grown from \$3.2 billion in 2009 to \$4.5 billion in 2013 (Sri Lanka. Central Bank report, 2013). Table 1-1 shows Sri Lanka's export revenue from apparel and other textile sub-sectors.

Table 1-1 Textile and apparel exports

	Total Exports		\$ Mn			
	Rs. Mn	\$ Mn	Garments	Woven Fabrics	Yarn	Other textile
2009	374,645	3,261	3,120	55	42	44
2010	379,185	3,356	3,178	70	50	57
2011	463,509	4,191	3,986	85	57	64
2012	508,607	3,991	3,784	92	58	56
2013	583,046	4,508	4,265	124	58	61

Source : (Sri Lanka. Central Bank, 2013, Table 74)

Moreover the apparel industry is the largest single employer in the manufacturing sector. The industry provides over 300,000 direct employment and 600,000 indirect employment opportunities. 74% of the employees in the sector are female and 60% of them are in the age group between 18-25 years (Sri Lanka. Ministry of Technology and Research, 2014).

1.3.2 Upgrading the Sri Lankan apparel industry

The phasing out of the quota system, together with the increasing labour costs in the country, challenged the very foundation on which the Sri Lankan apparel industry was built in the 1970s (Kelegama, 2005). Recognizing the fact that the apparel industry has relocated from the East Asian economies (such as Hong Kong, South

Korea and Taiwan, who were the leaders in apparel export by the late 1970s), to Asian countries such as Sri Lanka, Thailand, Philippines, Indonesia, China, India, and Pakistan in the late 1970s and further towards to other quota holding countries with relatively lower labour cost in Asia (such as Laos, Cambodia, Bangladesh, and Vietnam), Latin and Central America, Caribbean, Eastern Europe, and North Africa, many advocates argued that the low cost focus apparel industry might relocate from Sri Lanka (Gereffi, 2003; Kelegama, 2005).

In line with this view, most policy makers, researchers and consultants argued that Sri Lanka can build competitive advantage in this new environment through developing new sources of competitive priorities, where cost is not the primary competitive advantage. Kelegama (2004;2005) stressed that Sri Lankan industry should move up the value chain by catering to high value added market segments Gereffi (2003) also supported this argument by highlighting the fact that apparel industries in developing countries need to upgrade to provide more value added offerings, in order to avoid the low cost competition.

The comments made by these commentators significantly influenced industrialists to think about new strategies to compete. Therefore since the mid-2000s, apparel industrialists in Sri Lanka began to identify the new competitive strategies to compete in the apparel sector. Recognizing the fact that the industry needs to redefine their competitive priorities, government and industry associations formed a Joint Apparel Association Forum (JAAF) to come up with a five-year strategy. The five-year strategic plan was prepared after taking into account various strengths, weaknesses, opportunities and threats (SWOT Analysis) in the garment industry and was developed by a specially appointed task force which included the participation of stakeholders (industry, government and industry associations). The strategy spelled out the fact that industry should transform from a “contract manufacturer” which does cut-and-make assembly operation to a provider of a “fully integrated service” and thereby cover the entire value chain. Furthermore strategy also highlighted that the Sri Lankan industry should focus on high value added apparel products focusing on premium market segments. (Wijayasiri & Dissanayake, 2008)

However even though five year strategy highlighted the importance of industry upgrade to avoid the low cost competition, with the loss of its competitive advantage in terms of low cost, the industry faced a very difficult situation during the era when the quotas were removed. According to Wijayasiri & Dissanayake (2008), in 2008, there were only 350 factories in operation compared to the 700 plus factories which were in operation before 2005. While many of the small and medium scale players in the industry had to either close down or enter into strategic arrangements with the larger players, according to the 2014 figures the number of factories have been further reduced to 300 (Sri Lanka. Ministry of Technology and Research, 2014). However, export figures do not confirm these facts (Table 1-1), as the Sri Lankan industry is driven by large players (12%) who control about 72% of exports. While these larger players have taken steps through developing collaboration with their customers and raw material suppliers and implementing new processes and structures to offer value added offerings, other suppliers who did not upgrade themselves to meet the new requirements have fallen behind. Sri Lanka's top three apparel companies are already amongst the world's 50 most important suppliers (Sri Lanka. Central Bank, 2013, 2012). Being an important driver in the economy in terms of its contribution to industrial exports, foreign exchange earnings and employment generation, the apparel industry is very important for the country. Therefore, in order to sustain the Sri Lankan apparel industry, suppliers need to upgrade the industry to develop the new competitive priorities through developing value added offerings.

“...the future of the Sri Lankan textiles and apparel sector will increasingly depend on the industry's ability to innovate in its products, to use the most advanced, flexible and resource-efficient processes and to focus its business models on the continuously evolving needs of its customers...”

(Sri Lanka. Ministry of Technology and Research, 2014, p. 2)

The above quote highlights the fact that Sri Lankan industry needs to focus on the evolving consumer needs and therefore need to innovate in its products using the most flexible and resource efficient processes. Highlighting the fact that Sri Lankan

industry could take the advantage of changing consumer needs towards value added offerings to overcome the threat of losing their competitiveness in terms of low cost, Mataraarachchi & Heenkenda (2012) introduced new sources of competitive priorities. These authors discuss the need of customer and supplier collaboration and the knowledge intensive skilled human resources in providing the value added offerings. Investigations made by Wickramasinghe & Wickramasinghe (2011) revealed that export-apparel manufacturing firms that were practicing high volume repetitive manufacturing are changing their production methods and management practices to suit the new production model to develop value added offerings. They further explain the new production methods are concerned with customer and supplier integration.

While it was discussed that the sustainability of the industry depends on the ability of the industry to upgrade itself to provide more value added offerings, a handful of large-scale apparel manufacturers, have taken steps in this direction. Accordingly, some large-scale manufacturers have established strong linkages with four global buyers in early stages of industry development: The Gap, M&S, Victoria's Secret, and Nike. They accounted for around half of Sri Lanka's apparel exports by the turn of the century, and collectively they facilitated asset-specific investments by providing stronger guarantees for future orders (Fernandez-stark, Fredrick, & Gary, 2011). Mover over Sri Lankan industry strengthened the backward integration through developing strategic alliances with raw material suppliers. As noted by Mataraarachchi & Heenkenda (2012) these large-scale manufacturers have also taken steps in opening up their own design centres in local as well as in overseas. Also under the JAAF strategy, government has taken steps in strengthening the design, marketing and technical education in the country to provide the experts in the areas of design, marketing and technical areas.

However, except the handful of large scale manufacturers in Sri Lanka, other factories do not have the proper guidance to upgrade their entities to provide value added offerings to meet the evolving needs of the apparel consumers. Therefore the proposed study addresses the research problem of developing an appropriate business model for industry upgrade, which changes with the evolving consumer needs. As

discussed in section 1.2.2, these new business models do not consider manufacturing as a single entity, but one which is positioned within a network that changes the competitive priorities to meet the evolving needs of the consumer. Therefore the study addresses the research question how industry upgrade link with competitive priorities, network relationships and integrative capabilities of an apparel manufacturer's network.

1.4 Thesis route map

The studies for this thesis can be decomposed into four key elements that provide a route map of the thesis. The first is positioning the research within the applied and underpinning literature domains (Section 1.4.1). Second and third discuss the aim and value of the research (Sections 1.4.1 and 1.4.2). The fourth element provides an overview of the structure of the thesis (Section 1.4.4).

1.4.1 Positioning the research

Emphasizing the fact that supply chains should create customer satisfaction, supply chain management literature has developed supply chain models to deliver offerings to create customer value. This stream of literature confirms the importance of integrating marketing and the supply chain for developing the required offering to the consumer. Chapter 3 section 3.3.2, describes the literature related to the supply chain management domain in terms of developing offerings. While this literature confirms the need to align the competitive priorities, need of developing relationships between the supply partners and also discuss the need of integrative capabilities in providing the required offering, combine how different offerings impact on the competitive priorities, collaborative intensity and integrative capabilities of an apparel manufacturer's network. Hence this stream of literature does not develop an appropriate supply network design that enables the industry upgrade.

Emphasizing the importance of providing customer value, the servitization literature stream also stresses the need to develop 'super' supply chains to become service providers. Moving towards the supply chain management literature domain, this literature also confirms the need for marketing and supply chain integration as a core

requirement to become a service provider. Chapter 3 section 3.3.3 describes the literature related to the servitization domain in terms of developing a business model for the service provider, where the supply chain acts as a value creating system. Although this stream of literature also confirms the need of for knowledge integration capabilities, which combine cross functions and network partners to develop the required offering, this literature also does not consider how different offerings impact on the competitive priorities, collaboration intensity and integrative capabilities. Once again this literature also does not provide an appropriate supply network design that enable servitization process.

With the evolving marketing environment, strategic management literature that confirms the need for strategic theory discusses how businesses develop competitive advantage in the evolutionary environment. Accordingly, the strategic management literature domain has introduced a dynamic capability view. Chapter 2 discusses the dynamic capability view for the evolving environments and introduces learning as the key enabler to develop dynamic capabilities.

Therefore this thesis is positioned within the applied literature domains related to supply chain management and servitization. Further the thesis is underpinned by the strategic management literature domain. See - Figure 1-2



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk



Figure 1-2 Positioning the research

1.4.2 Aim of the research

The thesis aims to explain how industry could upgrade from one stage to the other. Therefore the purpose is to develop an appropriate supply network model that

enables the industry upgrade. More specifically the study aims to explain how different offerings impact on the competitive priorities, collaborative intensity and integrative capabilities of an apparel manufacturer's network. Detailed research questions for the study are provided in the chapter 3 pg 112 .

1.4.3 Value of the research

While the servitization literature argues the need for a super supply chain model for creating customer value (Lockett, Johnson, Evans, & Bastl, 2011; Vargo & Lusch, 2011), supply chain management literature also highlights the need to develop Customer Responsive Supply Chains (CRSCs) when creating customer value (Godsell, 2008). However, neither literature domain develops an appropriate supply network design that upgrade according to the consumer requirements. Furthermore the existing literature does not discuss how different offerings impact on the competitive priorities, collaboration intensity and integrative capabilities of the supply network.

Accordingly this thesis hopes to fill the gap existing between the two domains of literature, i.e. servitization and supply chain management. Combining the available literature in supply chain management and servitization literature domains, this thesis develops a conceptual model for demand and supply integration through combining the underpinning theory in section 2.4. Accordingly, the thesis develops a conceptual framework for supply network design that enables the industry upgrade. Section 3.4 extends this conceptual framework through linking servitization with competitive priorities, collaboration intensity and integrative capabilities. Empirical data will be gathered using the extended conceptual framework, in order to further refine the conceptual framework.

The thesis also fill the gap exists in the strategic management theory were the application of learning theory and dynamic capability view is explored in the supply network context.

Further, as a practical value, the thesis provides guidance to apparel manufacturers to upgrade themselves according to evolving consumer needs.

1.4.4 Structure of the thesis

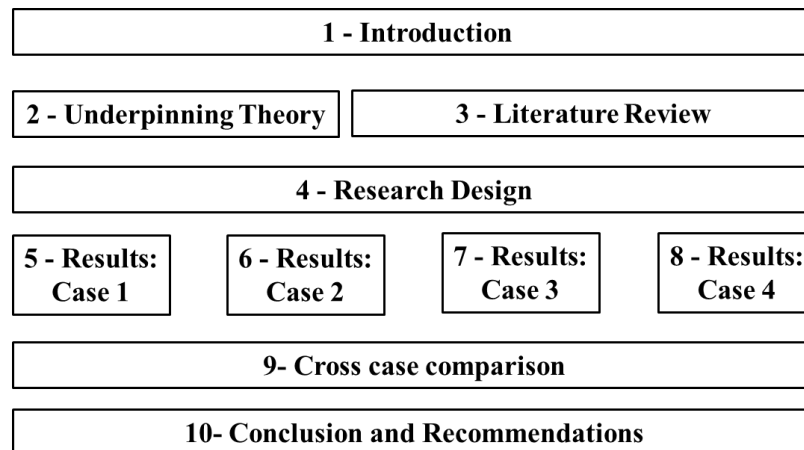


Figure 1-3 Structure of the thesis

Chapter 1 provides the introduction to the thesis in which the background and context of the study are discussed. The chapter also provides the research agenda for the thesis, which identifies the purpose of the thesis and its contribution to theory and practice.

In Chapter 2, the author first considers the general management theories within the strategic management domain, in order to develop a conceptual framework for the study. The chapter focuses on the dynamic capability view that extends the resources-based view thinking within the evolving market environment. Thereby the conceptual framework describes learning as a key enabler to becoming a service provider. Accordingly, closed loop learning enables the provision of customer value in a stable environment while double loop learning enables the provision of the customer value in evolutionary environments. Furthermore, this chapter defines learning capabilities as learning processes and learning structures.

Chapter 3 discusses the literature review related to the study. The literature review focuses on both servitization and supply chain management literature domains, which discuss on designing supply chains to create customer value. Accordingly, it discusses the integrative role of Demand (marketing) and the supply chain in creating customer value.

Based on the literature review, Chapter 3 conceptualizes Demand and Supply Integration (DSI) as the integrative processes and structures that integrate the market requirements which are operationalized using order winning and order qualifying criteria. By combining the view adopted in Chapter 2, where learning capabilities are considered as enablers for upgrading the industry, with the view of Chapter 3 that considers integrative capabilities as enablers for supply network reconfiguration to create customer value, Chapter 3 provides a conceptual framework for the thesis in section 3.4. At the end of Chapter 3, an extended conceptual framework for the thesis is developed further, operationalizing the conceptual framework for each stage in the industry upgrade continuum. The chapter concludes with four research questions.

Chapter 4 discusses the research design for the thesis, which describes the ontology, epistemology and methodology used to explore the research questions. Within the author's philosophical position, i.e. Critical Realist, the research questions are further categorized into the questions that explore the empirical domain (Descriptive-“What”) and real domain (Explanatory-“What”). This leads to understanding the enablers for a business upgrade in order to become a service provider. Therefore, within the overarching objective of developing an appropriate supply network design that enables the business upgrade, the study identifies the characteristics of the network design, in terms of the competitive priorities, network relationships and integrative capabilities. Accordingly, this chapter presents a method for the empirical investigation of the conceptual framework and a method for the analysis of the data.

Chapters 5 to 8 discuss the results of the four cases, where each chapter focuses on the different stages in the industry upgrade process. Chapter 5 discusses the first stage of industry upgrade where the industry tries to upgrade within the same market, providing the relevant service in terms of low cost basic products. Chapters 6, 7, 8 focus on three different cases where the industry upgrades to provide the relevant service in order to deliver according to the evolving consumer needs.

Chapter 9 presents a cross-case analysis which compares the results of the four embedded case units.

Chapter 10 includes the conclusions and recommendations of the thesis.

1.5 Summary of the chapter

This introductory chapter served two primary purposes.

1. To present the background of the study
2. To provide an overview of the route map for this thesis

To achieve the first of these objectives, this chapter began by describing the importance of the business upgrade to meet the evolving customer needs. It then described the context of the study as that of the Sri Lankan apparel industry.

In terms of the second objective, this chapter presented the research agenda for the thesis. Further, using three main bodies of literature, the chapter positioned the proposed study within those main bodies of literature. The third aspect of the route map presented is an overview of the thesis structure.

Chapter 2 now provides the underpinning theory for the thesis.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

2 UNDERPINNING THEORY

2.1 Introduction to the chapter

Chapter 2 of the thesis focuses on positioning the research problem within the underpinning theory. Hence the research problem is discussed using general management theories.

The chapter starts with an introduction to the chapter (section 2.1). Then it provides a discussion on the static theories of competition, where the industry develops competitive advantage in the stable environment (section 2.2).

In contrast to static theory, section 2.3 explores the dynamic theory for the evolutionary environment, which helps to upgrade the industry.

Section 2.4 develops the conceptual framework for the study, which identifies the business model for the industry upgrade. Section 2.4.1 describes the dynamic capabilities to upgrade the resource base, whereas section 2.4.2 identifies learning as the key enabler to develop dynamic capabilities.

Section 2.5 further conceptualizes the learning as processes.

Section 2.6 provides the summary of the chapter.

Figure 2-1 shows the topic breakdown for Chapter 2.



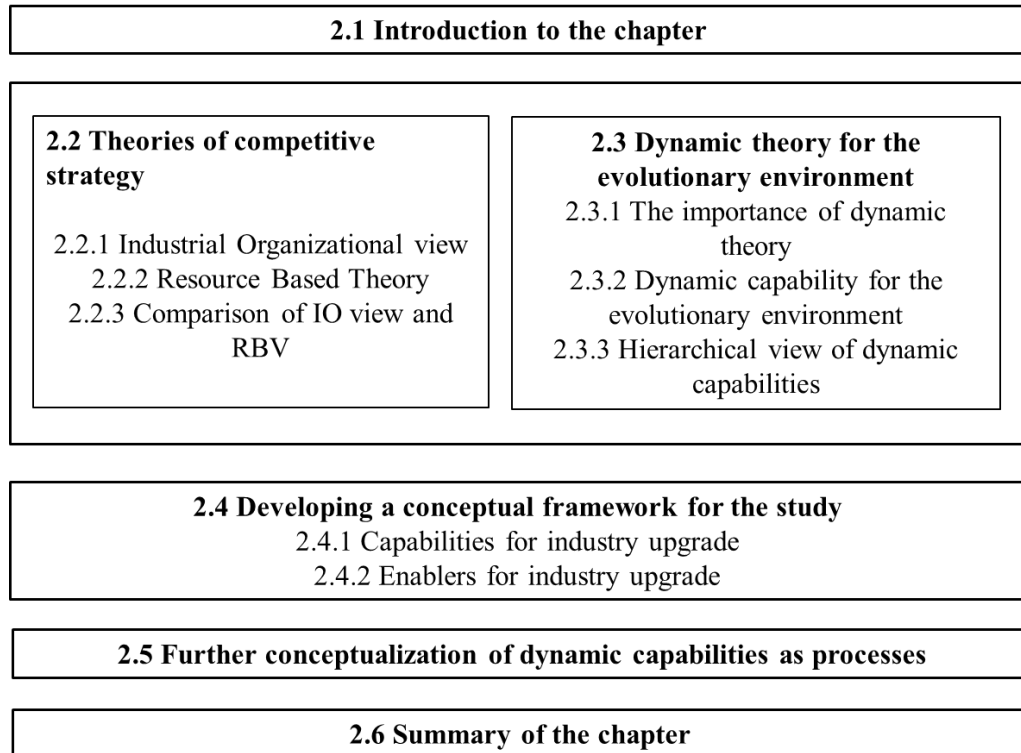


Figure 2-1 Topic breakdown of Chapter 2

University of Moratuwa, Sri Lanka.

Electronic Theses & Dissertations

www.lib.mrt.ac.lk

2.2 Theories of competitive strategy development

For a firm to achieve upgrade, this requires the development of its own internal resources and capabilities. Thus, Resource Based Theory (RBT) and Dynamic Capabilities (DC) are appropriate theoretical lenses over other general management theories. Therefore this section provides two different views of strategy development. In section 2.2.1 the Industrial Organization (IO) view, discusses the ‘outward in’ perspective in strategy development and in contrast, section 2.2.2 the Resource Based Theory (RBT), discusses the ‘inward out’ approach to strategy development. In section 2.2.3, a comparison of the two approaches and a discussion about the link between resources, the basic unit of RBV, and activities, the basic unit of IO view, will be provided.

2.2.1 Industrial Organization (IO) view

The IO approach to competitive advantage advocates that the external (industry) factors are more important than the internal factors in building competitive

advantage. The IO view stresses the relationship between strategy and the environment where firms respond to external conditions (Structure-Conduct-Performance (SCP)). The SCP model refers back to the original work of the Harvard economist Edward Mason, in the 1930s, and of his doctoral student Joseph Bain, in the 1950s. The model gained acceptance among corporate strategists when Michael Porter used it as an analytical tool for businesses striving to compete within a market. (Porter, 1985) explains the structure of an industry, and determines firm conduct/strategy (e.g. innovation strategies) and firm performance (e.g. profits). Accordingly, the IO view stresses that external factors and the industry in which a firm competes has a stronger influence on the firm performance than the internal resources and capabilities.

Porter contends that industry structure will be primarily determined by five industry forces. He further mentions that identifying a profitable industry structure is not enough but needs to identify a competitive positioning within an industry. Porter argues that there are three different positioning in which an organization can be engaged within a particular industry structure. These strategic positionings are cost leadership, where the organization needs to be the lowest cost producer in the given industry, differentiation where the organization differentiates itself from other competitors providing added advantage, and focus strategy where the organization targets a niche market and focuses on providing the unique needs of that market ,

After the specific industry and the entry strategy is chosen, the configuration of the activities that need to be undertaken by the organization is considered. Although Porter (1985) considers the basic unit of competitive advantage as the discrete activity, he stresses that once the configurations of the activities have been identified; the required assets need to be evaluated. If the assets requirements are not available within the organization, these need to be acquired or obtained from the outside.

Accordingly, Porter's (1985) approach to strategy development starts with the environment and then develops the appropriate strategy to gain profits. Therefore, and in line with the SCP approach, the strategy development process first considers the outside industry structure and then evaluates and develops the inside assets and

capabilities. Three main stages of the strategy development stages presented by the IO view are represented in Table 2-1.

Table 2-1 Stages in the strategy development process - IO view

Step	IO view Porter (1985)
1	Pick an industry (based on its structural attractiveness)
2	Choose an entry strategy based on competition.
3	If not already processed, acquire or otherwise obtain the requisite assets to compete in the market

Source: (Porter, 1985)

Therefore it can be concluded that the IO approach to strategy development is outward in its approach which determines the strategy on the basis of the external environment and then considers the asset development.

2.2.2 Resource Based Theory (RBT)

A different way of thinking about strategy is to give a primary role to the internal factors. This view is best exemplified by the RBT of the firm, which has its roots in the work of Edith Penrose. (Penrose, 1959) suggests the firm as a pool of resources which include not just tangible resources but also intangible resources exemplified in skills and in the interactions between people and systems. On the basis of RBT, Barney (1991) introduced the Resource Based View (RBV). He categorizes the organizational resources into three broad categories: physical capital resources, which include the tangible resources that help to create competitive advantage, while human capital resources and the organization's capital resources are the intangible resources. These three types of resource are illustrated in Table 2-3.

Table 2-2 Resources classification

Resource type	Description
Physical capital resource	Physical technology, firm's plant and equipment, its geographical location, access to raw materials
Human Capital resource	Training, experience, judgement, intelligence, relationship, insights of individual manager and workers in the firm
Organization capital resource	Formal reporting structure, formal and informal planning, controlling and coordinating systems, relations within firm and environment.

Source: (Barney, 1991)

Further, Barney (1991) emphasizes that competitive advantage is not derived from all the resources, but developed from the resources that have four attributes: valuable (V), rare (R), imperfectly imitable (I) and non-substitutable (N).

Barney (1991) explains that the resources can be used to exploit the opportunities and neutralize the threats, and hence can create competitive advantage. He highlights these resources as being “valuable”. He further stresses the fact that the valuable resources must be “rare” among the current and potential competition. If the valuable resources are available within the competition then it will not create competitive advantage as each organization will have the ability to exploit the resources in the same way. He further mentions that these resources need to be “imperfectly imitable”, so that the organizations which do not possess them will not be able to obtain them. Moreover, he also mentions that there should not be any substitutes for these resources hence they need to be “non substitutable”. Table 2-3 summarizes each of these attributes.

 **Table 2-3 Characteristics of the resources that provide competitive advantage**

Characteristics of the resource (VRIN)	Description
Valuable (V)	Exploits opportunities and neutralizes the threats in a firm’s environment.
Rare (R)	The valuable resource must be rare among the current and potential competition. If the valuable resource is available with the competition then each firm has the ability to exploit the resource in the same way.
Imperfectly Imitable (I)	The firms that do not possess these resources cannot obtain them.
Non Substitutability (N)	There cannot be strategically equivalent substitutes for this resource.

Source: (Barney, 1991)

Building on the VRIN resources, Barney (1991) developed a framework for sustained competitive advantage. (Figure 2-2)

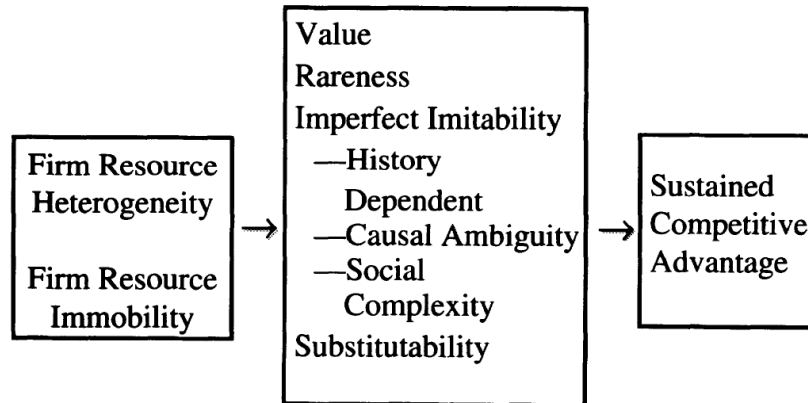


Figure 2-2 Framework for competitive advantage

Source: (Barney 1991)

In this framework, Barney (1991) highlights the two contrasting assumptions made by the two different thoughts on strategy development. First, RBT views organizations as being heterogeneous in terms of the strategic resources they control, while the IO view regards organizations as identical in terms of strategically relevant resources. Second, RBT assumes that the heterogeneity is long lasting as resources may not be perfectly mobile across the firms, while the IO view assumes that the heterogeneity is short term and resources can be bought or sold.



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Based on the above two assumptions, the RBV mainly considers the inside organizational factors in the strategy development process. Accordingly, the RBV consists of three steps in the strategy development process. First and foremost, the organization needs to understand the firm's VRIN resources, as described above. Afterwards the organization needs to analyze the environment, in order to decide in which market the resources can earn the highest rents. Moreover, the organizations can further identify the related markets where the resources can most effectively be utilized (Table 2-4).

Table 2-4 Stages in the strategy development process: RBV

Step	Resource Based View Barney (1991)
1	Identify the firm's unique resources.
2	Decide in which market that resource can earn the highest rents.
3	Decide whether the rents of those assets are most effectively utilized by integrating into related markets.

Source: (Barney, 1991)

2.2.3 Comparison of IO view and RBV

This section compares the IO view and RBV based on their processes in strategy development and the core unit considered in developing competitive advantage.

2.2.3.1 Strategy development

When comparing the two approaches in strategy development, the IO view first considers the market/industry structure and then works backwards to develop the necessary assets to achieve the strategic requirements. Therefore the approach can be named as the 'outward in' approach. In contrast, RBV has an 'inward out' approach, where the inner resources are first assessed against the VRIN attributes and then the environment is analysed to identify an appropriate market position which will earn the highest rents. Accordingly RBV can be named as an inward out approach.

The IO view concerns the economic rents flowing from distinctive product market positions (outward in) while RBV concerns the economic rents flowing from efficiency based distinctive VRIN resources (inward out). Furthermore, while Porter (1985) views organization as a systematic array of activities, where the basic unit of competitive advantage is the activity, Barney (1991) views the organization as a bundle of resources and the unit of competitive advantage is considered to be the resource. These differences are summarized in Table 2-5.

Table 2-5 Comparison between the two approaches

	IO model	RBV
Perspective	Outward in	Inward out
Economic Rents flow from	Distinctive product market positions	Efficiency based on the distinctive VRIN resources
Representation of the firm	Systematic array of activities/routines	Bundle of resources

2.2.3.2 Activities (IO view) vs. Resources (RBV)

The IO view represents the organization as an array of activities that view competitive advantage as being built from the value chain activities. In contrast resource based theorists argue that the organization is a bundle of resources and emphasize that VRIN resources provide the competitive advantage.

For the purpose of this thesis, the author adopts the Amit & Schoemaker (1993) definition which defines resources and identifies the link between resources and activities as: (p35)

“Stocks of available factors owned or controlled by the firm”,
 Whereas capabilities referred to as (p35)
“a firm’s capacity to deploy resources, usually in combination, using organizational processes to effect a desired end.”

Therefore capabilities are embedded in processes, which provide the competitive advantage. In line with this view, Day (1994) suggests that capabilities are complex bundles of skills and accumulated knowledge, exercised through organizational processes that create positional or competitive advantages for the firm which are not easily imitable by competitors.

The above explanation of capabilities are similar to the concept of competencies introduced by Jüttner & Wehrli (2005), according to whom, competences are components of a higher level result from the distinctive combination of the various resources. These competencies are further described as core/unique capabilities which refer to the productive activities at which the firm excels. Agreeing with Amit & Schoemaker (1993), Jüttner & Wehrli (2005) also mention that resources are the

basis for competence building, as on their own they are barely productive. Therefore, the resources are defined as unspecific, isolated components (normally resources of lower levels, skills and assets) while competencies are specific, integrated, idiosyncratic components (strategic assets, capabilities, competences, and core competences).

Table 2-6 describes the differences between resources and capabilities as discussed by different authors.

Table 2-6 Resources vs. capabilities/competencies

Source	Resources	Capabilities/ competencies
Amit & Schoemaker, 1993	Stocks of available factors owned or controlled by the firm	A firm's capacity to deploy resources, usually in combination, using organizational processes to effect a desired end.
Day, 1994		Capabilities are complex bundles of skills and accumulated knowledge, exercised through organizational processes that create positional or competitive advantages for the firm which are not easily imitable by competitors.
Jüttner & Wehrli, 2005	Resources are the basis for competence building; on their own they are barely productive. Therefore the resources are defined as unspecific, isolated components (normally resources of lower levels, skills and assets)	Competencies are components of a higher level result from the distinctive combination of the various resources. Competencies are specific, integrated, idiosyncratic components (strategic assets, capabilities, competences, core competences)

From these terms, competencies represent the capabilities which the firm's VRIN resources provide to achieve competitive advantage.

Makadok (2001) further identifies two key features that distinguish a capability from other types of resource. Firstly, a capability is firm-specific, since it is embedded in the firm and its processes, whereas an ordinary resource is not. Because of this embeddedness, ownership of a capability cannot easily be transferred from one firm to another without also transferring ownership of the firm itself, or some sub-unit of the firm. In line with the above thought, Ray, Barney, & Muhanna (2004) introduce business processes as the mechanisms through which resources and capabilities

become exposed to market processes, where their ultimate value and ability to generate competitive advantage are realized. Ray et al. (2004) also provide examples of business processes as acquiring supplies and other raw materials, the process of producing products or services, the process of delivering products or services to customers, and the process of providing after sales service.

The notion of processes presented by the above authors is similar to the notion of value chain activities explained by Porter (1985). Ray et al. (2004) view the capabilities that build the competitive advantage as being embedded in the business processes, while Porter (1985) elaborates that the specific value chain activities carry the competencies that create customer value which develops the competitive advantage.

Accordingly, it can be concluded that the value chain activities represent the business process in which the capabilities and competences are embedded. Furthermore, linking the fact that Porter (1985) emphasizes that the resources are the assets that enable the required capabilities, Ray et al. (2004) and other authors in Table 2-6 who discuss the link between resources and capabilities explain that resources develop the capabilities that are exercised through the processes.



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Based on the above discussion, the link between resources (RBV) and activities (IO view) can be linked using the capabilities. VRIN resources provide the capabilities which are exercised through the processes or value chain activities. Therefore the resources, capabilities and activities are summarized in Figure 2-3.

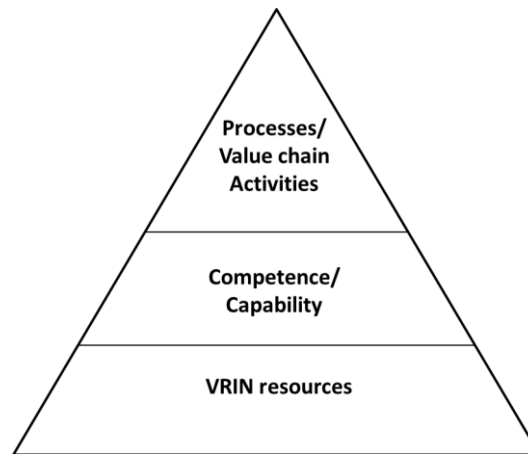


Figure 2-3 Resources vs. Capabilities vs. Activities

2.3 Dynamic theory for the evolutionary environment

This section introduces a dynamic theory for the evolutionary environment. Section 2.3.1 discusses the importance of dynamic theory for the evolutionary environment. Section 2.3.2 discusses the dynamic capability view in detail as an approach that addresses dynamic theory for evolutionary environments. Dynamic capabilities are defined using both resources as the core unit (RBV) in section 2.3.3 and routines as the core unit (Knowledge Based View – KBV) in section 2.3.4. Section 2.3.5 combines the KBV and RBV approaches.

2.3.1 The importance of dynamic theory

The two approaches for the strategy development consider that strategic decisions are based on a set of productive resources (RBV perspective) or environmental conditions (IO view). This is an equilibrium-based perspective which views both environment and resources as static. Although, in a static or stable environment, where the resources and the environment are stable, a strategic theory that addresses the cross-sectional problem of explaining superior performance at a given point in time is helpful, in evolutionary (Dynamic) environments, Porter (1991) highlights the need for a dynamic theory that addresses the longitudinal problem of how organizations evolve with the evolving environment. In other words, competitive advantage is sustainable in static or slow-moving environments but not sustainable in the long term when the environment evolves. When the environment evolves, the

product/market positioning that has been attractive erodes, and the VRIN resources that provide competitive advantage at one time may not be VRIN resources in a different environment.

Acknowledging the weakness of the static competitive frameworks in strategy development, Porter (1996) further stresses that the organization needs to redefine its competitive positioning for long-term sustainable competitive advantage. He stresses that organizations should be concerned with not only operational efficiency, but also strategic effectiveness. In support of this argument, Barney (2001) also raises the issue that the resources which provide the competitive advantage at one point in time will not be sustained over a long period of calendar time, and stresses the need for RBV to be positioned within the context of evolutionary economics to answer the question of how organizations could build long-term sustainable competitive advantage.

Therefore the need for strategic theory for the evolutionary environment can be summarized as in Table 2-7.


University of Moratuwa, Sri Lanka.
Table 2-7 Need for strategic theory for evolutionary environment
Electronic Theses & Dissertations
www.lib.mru.ac.lk

		Static theory for the equilibrium state	Evolutionary theory for the Evolutionary state
Problem addressed		Strategic theory that addresses the cross-sectional problem of achieving superior advantage at a given point in time is helpful.	Strategic theory that addresses the longitudinal problem of how a firm achieves superior advantage over time.
Requirement to change the organization's competitive strategy	IO view	Managers need not change their firms routinely because the basic features that define the environment and the structure of competition are stable, or at least predictable.	Managers need to change their firms routinely because the basic features that define the environment and the structure of competition are not stable.
	RBV	The resources that are valuable, rare, imperfectly imitable and not substitutable will not change their characteristics in the stable environments.	The resources that are valuable, rare, imperfectly imitable and not substitutable will change their VRIN characteristics with the evolution of the environment.

Source: After (Porter 1991); (Barney 2001)

With the dynamism of the environment, strategy theorists who began a pursuit for a dynamic theory of strategy extended the RBV by linking it to evolutionary economics. This extension led to two emergent views on the sources of superior

performance of the organizations in dynamic environments. The knowledge based view (Grant, 1996b) and dynamic capability view (Teece & Pisano, 1994).

For the purpose of this thesis, the author first introduces the dynamic capability view and explores various definitions of dynamic capabilities with their links to the RBV and KBV approaches.

2.3.2 Dynamic Capability for evolutionary environment

The “dynamic capability” perspective extends the RBV argument by addressing how valuable, rare, difficult to imitate and imperfectly substitutable resources can be created and how the current stock of valuable resources can be refreshed in the changing environments.

Teece, Pisano, & Shuen (1990) working paper is the first contribution developing explicitly the notion of dynamic capabilities. They (p11) that

“Our view of the firm is somewhat richer than the standard resource-based view ... it is not only the bundle of resources that matter, but the mechanisms by which firms learn and accumulate new skills and capabilities, and the forces that limit the rate and direction of this process.”

Table 2-8 shows the key characteristics of the RBV approach and dynamic capability approach. While it was noted that the dynamic capabilities are an extension of RBV, both views share the same assumptions. However the RBV argues how organizations earn superior competitive advantage in the stable environments while the dynamic capability view argues how organizations sustain competitive advantage in the evolutionary environment. Hence the RBV discourages change and elaborates that the organization culture is difficult to develop while dynamic capabilities encourage change and emphasize that culture can be changed through learning. Accordingly, RBV considers that capabilities are rooted in the culture while dynamic capability considers that the capabilities can be developed through organizational learning.

Table 2-8 RBV vs Dynamic capabilities

	RBV	Dynamic capabilities
Assumption	Resources are heterogeneous across organizations and that this heterogeneity can be sustained over time	This perspective is argued to be an extension of the RBV; it shares similar assumptions (Barney, 2001)
State of the environment	How some firms are able to earn super-profits in equilibrium and, as such, it is essentially a static view	Build on the evolution approach but not like that of Porter(1985). Concerned with internal, rather than external, factors
Organization change	Discouraged change - culture is difficult to develop	Encourage change - culture is changed through learning
Capability development	Capabilities rooted in the culture	Development through organizational learning

Source: Based on (Ambrosini, Bowman, & Collier, 2009,)

2.3.2.1 Resource Based View (RBV) – Defining dynamic capabilities linked to resources

The concept of dynamic capabilities was first formally published in 1997 (Teece, Pisano, & Shuen, 1997), They point out that it is essential to consider the changing nature of the external environment and hence the role of strategic management, which is principally about *“adapting, integrating and reconfiguring internal and external organizational skills, resources and functional competencies towards the changing environment”* (1997, p537). They argue how the dynamic capability view could overcome the limitations of the RBV.

(Teece et al., 1997, p516) defines dynamic capabilities as,

“..Firm’s ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments.”

By altering the organization’s resource base, i.e competencies, dynamic capabilities could then open new strategic alternatives or paths for the firm. Thus, if an organization has a dynamic capability, it can alter its resource base to meet the needs of the evolving environment.

Wang & Ahmed (2007, p35) have a more explicit view in defining dynamic capabilities as a:

“firm’s behavioural orientation constantly to integrate, reconfigure, renew and recreate its resources and capabilities and, most importantly, upgrade and reconstruct its core capabilities in response to the changing environment to attain and sustain competitive advantage.”

Further, Wang & Ahmed (2007) introduce a hierarchical view to distinguish resources, capabilities and dynamic capabilities. While their notion of resources, capabilities and dynamic capabilities share the same view adopted by the other authors, as discussed in Table 2-6, they further introduce the notion of the core capability that is explained as a bundle of firm’s resources and capabilities that are strategically important to its competitive advantage at a certain point. Thereby Wang and Ahmed (2007) explain how the success of Zara in the fast-changing fashion industry relies on its core capability in responsiveness to customers, which in turn is derived from a bundle of capabilities, including swift copy of catwalk designs, advanced information systems, just-in-time production and shop-floor-led stock control, which combine together to ensure success.

Furthermore, Wang and Ahmed (2007) contend that dynamic capabilities are the ultimate organizational capabilities that are conducive to long-term performance, rather than simply a ‘subset’ of the capabilities. If a firm is viewed as a bundle of resources and capabilities, then dynamic capabilities underline the processes of transforming firm resources and capabilities into outputs in such forms as products or services that deliver superior value to customers.

Accordingly, considering the source of competitive advantage as resources, the definitions of resources, capabilities, core capabilities and dynamic capabilities are given in Table 2-9.

Table 2-9 Defining dynamic capability linking to resources as the source of competitive advantage

Stage in the hierarchy	Key terms	Description
Zero order	Resources	Resources are the foundation of a firm and the basis for firm capabilities. Resources can be a source of competitive advantage when demonstrating VRIN traits.
First order	Capabilities	Ability to deploy resources to attain a desired goal.
Second order	Core capability	A bundle of a firm's resources and capabilities that is strategically important to its competitive advantage at a certain point.
Third order	Dynamic capability	A firm's constant pursuit of the renewal, reconfiguration and re-creation of resources, capabilities and core capabilities to address the environmental change.

Source: After (Teece et al. 1997); (Wang & Ahmed, 2007)

By recalling Figure 2-3, it can be synthesized that dynamic capabilities act as a capability that combines or deploys the resources to create customer value. Accordingly, the modified version of the link between activities, capabilities and resources using dynamic capabilities can be represented as shown in Figure 2-4.

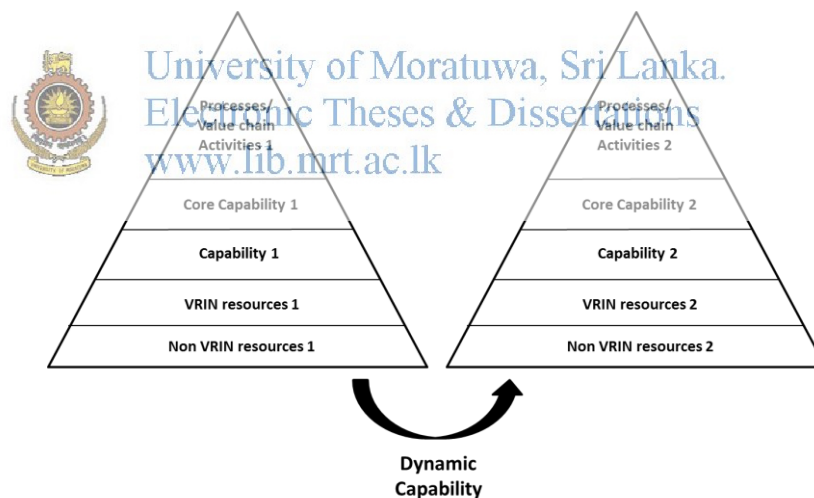


Figure 2-4 Linking dynamic capabilities to resources

By linking the RBV with the IO view, Jüttner & Wehrli (2005) introduce the concept of 'grand competence'. Grand competencies refer to those broad capabilities that are essential to the firm's performance and allow it to enter different product markets. According to these authors, these are the specific capabilities of the firm in integrating resources and are similar to the notions of dynamic capabilities. Furthermore, they stress that these capabilities are developed and improved in a

collective learning process, because human capabilities take the part of a central integrating force.

Building on the Evolutionary economics, Teece et al., (1997) dynamic capability view also assumes that the reconfiguration of the organizational resource base depends on the organization’s history. Therefore the authors introduce three dimensions of dynamic capabilities: processes, positions and paths. Teece et al., (1997) elaborate the fact that the competencies and existing capabilities of the organization are embedded in the organizational processes. Therefore the authors’ first dimension is known as process. The second dimension is considered to be assets because the content of the processes and the opportunities they afford are shaped by the assets’ positions (internal and market). Third is the evolutionary path through which the process and competencies are adopted. Based on these Teece et al., (1997) that when the organizational resources are reconfigured, new processes, positions and paths are determined by the previous processes, positions and paths – see Table 2-10.



University of Moratuwa, Sri Lanka
 Electronic Theses & Dissertations
 www.lib.mrt.ac.lk

Dimensions of distinctive competencies/capabilities	Description
Processes	“...way things are done in the firm, or what might be referred to as its routines, or patterns of current practice and learning.”
Positions	“Its current specific endowments of technology, intellectual property, complementary assets, customer base, and its external relations with suppliers and complementors.”
Paths	“...Strategic alternatives available to the firm, and the presence or absence of increasing returns and attendant path dependencies.”

Source: (Teece et al., 1997, p518)

These path dependencies explain that the change of the current resource base to a new state depends on the previous history and is a learning process. Accordingly, Helfat & Peteraf (2009) emphasize that while the market shapes the business enterprise, the managerial asset orchestration shapes the markets.

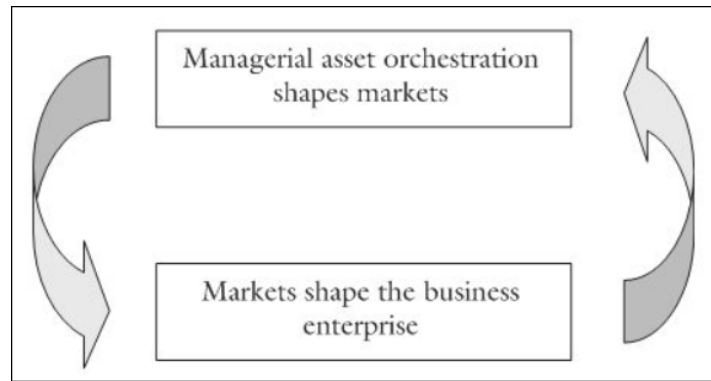


Figure 2-5 Coevolution of the markets and the business enterprise

Source: (Helfat & Finkelstein, 2007)

Based on this argument, Helfat & Finkelstein (2007,p1) define dynamic capabilities as follows:

“A dynamic capability is the capacity of an organization to purposefully create, extend, or modify its resource base.”

2.3.2.2 Knowledge Based View (KBV) – Defining dynamic capabilities linking to knowledge and routines

Grant (1996a) proposed knowledge integration as the core capability to compete in the dynamic environment. Therefore author highlighted that knowledge as the most strategically important resource.

Considering knowledge and routines as the source of competitive advantage, Zollo & Winter (2002, p340) link dynamic capabilities to learning mechanisms, defining dynamic capabilities as (p340):

“a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness.”

Zollo & Winter (2002) link dynamic capabilities and operating routines to two types of learning mechanisms. The learning mechanism that encompasses the relatively passive experiential process of learning (by doing), is geared towards the operational functioning of the firm and referred to as ‘operating routines’. The learning mechanism that encompasses more deliberate cognitive processes, having to do with

the articulation and codification of collective knowledge, is dedicated to the modification of operating routines, and this is known as dynamic capabilities. Therefore dynamic capabilities are routinized activities directed to the development and adaptation of operating routines.

In contrast to the view adapted by Teece et al., (1997) where dynamic capabilities are considered to be activities that reconfigure the resources, Zollo & Winter (2002) mention that dynamic capabilities reconfigure the operating routines based on the notion of considering the organization as a source of knowledge. Accordingly, the Zollo & Winter (2002) view is that the reconfiguration of the current set of routines to a future state is shaped by the existing routines. This is what Teece et al., (1997) referred to as path dependence, in section 0.

Similar to the hierarchical view adopted by Wang & Ahmed (2007) in defining dynamic capabilities linked to resources as the source of competitive advantage, Winter (2003) explains the term ‘routine’ as the behaviour that is learned, highly patterned, repetitious, or quasi-repetitious, founded in part in tacit knowledge and the specificity of objectives. Accordingly, Winter (2003) founded the concept of organizational capability on the broader concept of organizational routine (p991).

“An organizational capability is a high-level routine (or collection of routines) that, together with its implementing input flows, confers upon an organization’s management a set of decision options for producing significant outputs of a particular type.”

Winter (2003) considers a hypothetical firm ‘in equilibrium,’ to be an organization that keeps earning its living by producing and selling the same product, on the same scale and to the same customer population over time. He explains that the capabilities exercised in that stationary process are the zero-level capabilities, ‘*how we earn a living now*’ capabilities. Without them, the firm could not collect the revenue from its customers that allow it to buy more inputs and do the whole thing over again.

By contrast, capabilities that would change the product, the production process, the scale, or the customers (markets) served are not at the zero level. Accordingly, Winter (2003) introduces the term first-order ‘dynamic capability’ and defines it as follows (p991):

“Dynamic capabilities are those that operate to extend, modify or create ordinary capabilities”

Table 2-11 Defining dynamic capability linking to knowledge/routines as the source of competitive advantage

Stage in the hierarchy	Key terms	Description
	Routines	Behaviour that is learned, highly patterned, repetitive, or quasi-repetitive, founded in part in tacit knowledge and the specificity of objectives
Zero level	Operating routines (Ordinary capabilities)	A high-level routine (or collection of routines) that, together with its implementing input flows, confers upon an organization’s management a set of decision options for producing significant outputs of a particular type
First order	Dynamic capability	Dynamic capabilities are those that operate to extend, modify or create ordinary capabilities



Source: After (Zollo & Winter 2002) and (Winter 2003)

University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations

www.lib.mru.ac.lk

By recalling Figure 2-4, it can be synthesized that dynamic capability acts as a capability that reconfigures the operating routines. Accordingly, the modified version of the link between activities, capabilities and resources using dynamic capabilities can be represented as shown in Figure 2-6.

By combining both views (resource/routine), Zahra, Sapienza, & Davidsson (2006, p917) define dynamic capabilities as:

“The abilities to reconfigure a firm’s resources and routines in the manner envisioned and deemed appropriate by its principal decision-maker.”

Easterby-Smith & Prieto (2008) combine the RBV and KBV approaches, and explain dynamic capabilities as (p241):

“The critical aspects of dynamic capabilities are the ability of the firm to identify the changing market environment, to sense the need and the opportunity, and then to accomplish the necessary transformation in its routines which reconfigures resources and creates significant value.”

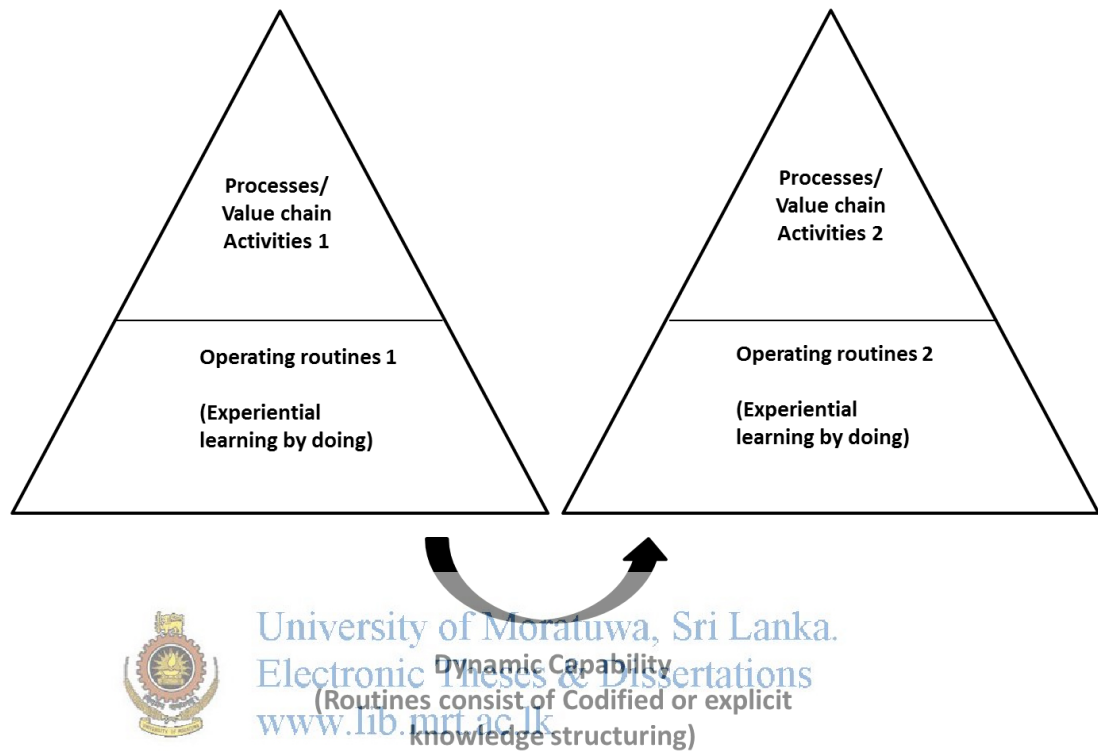


Figure 2-6 Linking dynamic capabilities to resources

According to the above explanation, dynamic capabilities first change the routines. Therefore, through integrating the existing knowledge with the new knowledge taken from the environment, dynamic capabilities change the existing routines of the organization, where the new routines will change the resource base.

2.3.3 Hierarchical view of dynamic capabilities

Several authors have elaborated the need for different levels of dynamic capabilities. Accordingly, a hierarchical view of dynamic capabilities has emerged.

Collis (1994) as cited in Ambrosini & Bowman (2009) proposes four categories of capability. The first is that which reflects an ability to perform the basic functional activities of the firm referred to as the firm resources. The second category concerns

dynamic improvements to the activities of the firm. The third category is closely related to the second category. It is also about dynamic improvement but specifically about being able to recognise the intrinsic value of other resources or to develop novel strategies before competitors. Both Collis's second and third categories are dynamic capabilities that extend the resource base. The fourth category is labelled 'higher order' or 'meta capabilities', and relates to learning-to-learn capabilities. Collis (1994) as cited in Ambrosini & Bowman (2009) also states that meta-capabilities can go on ad infinitum; there is a kind of infinite wave of capability to renew the capability that renews the capability, and so on. He also suggests that ultimately in order to outperform competitors, firms do need to deploy these meta-capabilities.

Danneels (2002) as cited in Ambrosini & Bowman (2009) proposes two competency types: first-order competencies, which create the ability to achieve an individual task; and second-order competencies, the firm's ability to renew itself through creating new first-order competencies. Danneels' (2002) first-order capabilities are considered to be the firm's extant resource base, the resources that allow the firm to directly earn a living, and his second-order capabilities refer to dynamic capabilities that enable the creation of new resources. However, he does not explicitly consider the issue of how dynamic capabilities themselves might be changed.

Winter (2003) further advances the idea of a capability hierarchy based on Collis (1994). His hierarchy begins with operating capabilities or 'zero-level' capabilities which allow firms to earn a living in the present. He then describes first-order capabilities that allow for a change in zero-order capabilities to occur. Finally, he considers higher order capabilities that are the outcome of organizational learning which result in creating or modifying a firm's dynamic capabilities; but, like Collis (1994), he does not discuss this capability in great depth. However, both views consider these higher level dynamic capabilities as an outcome of organizational learning that develops or extends the dynamic capabilities.

Zahra et al.(2006) also present a hierarchical view of capabilities. The first level is the ability to solve a problem (a substantive capability). Zahra et al. (2006, p947)

advocate that an ‘infinite spiral of capabilities to renew capabilities could be conceived’. They further comment that these capabilities would have the ability to change how the firm solves its problems, ‘a higher-order dynamic capability to alter capabilities’ (Zahra et al., 2006, p921). Therefore the second level is the ability to change the way the firm solves its problems (dynamic capability to alter capabilities).

Building on the work of Danneels (2002), Winter (2003) and Zahra et al. (2006) on hierarchies of capabilities, Ambrosini et al. (2009) propose that there are three distinct types of dynamic capability. First, starting with Eisenhardt & Martin's (2000) argument that dynamic capabilities may also be used in stable environments, Ambrosini et al. (2009) suggest that the generic concept of dynamic capabilities can be decomposed into two distinct levels: incremental dynamic capabilities and renewing dynamic capabilities. They also distinguish the above two types of dynamic capability according to the dynamism in the environment. They further explain that the dynamism of the environment depends on the managers’ perception of environmental conditions and define the perceived stable and dynamic environments as given in Table 2-12:

Table 2-12 Defining perceived stable environment vs. dynamic environments

Dynamism in the environment	Description
Perceived stable environment	Environment where externally or internally triggered changes are largely seen by managers to be predictable and incremental, with a low rate of change.
Perceived dynamic environment	A perceived dynamic environment is an environment where managers perceive fast paced change and even unpredictable changes and unanticipated discontinuities.

Source: (Ambrosini et al., 2009)

Then, building on Winter’s (2003) paper in which he mentions that dynamic capabilities may need to be refreshed, Ambrosini et al. (2009) further propose that the firm may also need ‘regenerative’ dynamic capabilities to refresh the firm’s existing dynamic capabilities, as shown in Figure 2-7.

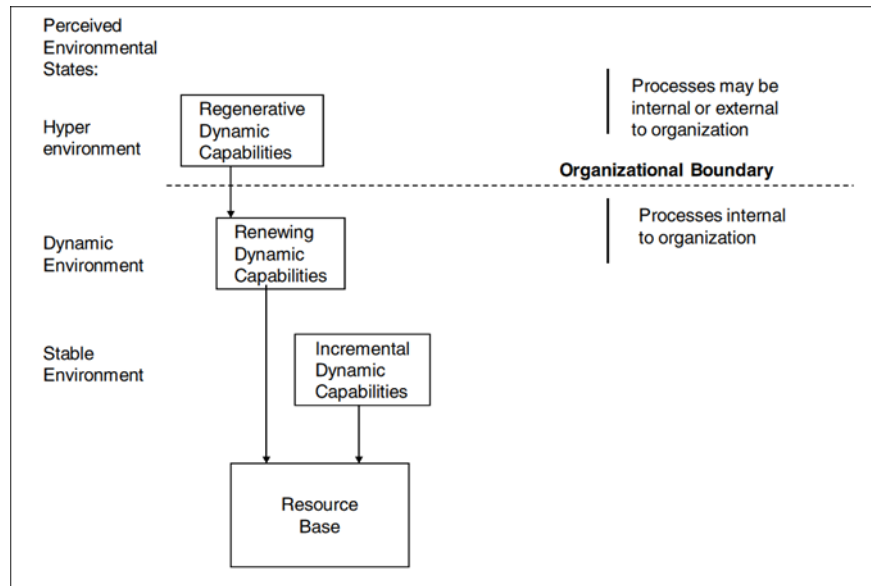


Figure 2-7 Linking dynamic capabilities to environmental states

Source: (Ambrosini et al., 2009)

Thereby Ambrosini et al. (2009) introduce three types of dynamic capabilities. First, is the incremental dynamic capability that adapts and adjusts the resource base in more of the same direction and is applied in perceived stable environments. According to these authors, although the pace of change is slow and the extent of change limited, the requirement for incremental adjustments and improvements to the resource stock of the firm would still remain. Thus, even in stable environments there is likely to be a need for continuous improvement, but the resource stock would not be transformed through these change processes.

Second, is the renewing dynamic capabilities that renew the existing resource base to develop the new capabilities. These dynamic capabilities are utilized to sustain a rent stream in changing (dynamic) environments; they refresh and renew the nature of the resource stock, rather than incrementally adapt it. These renewing dynamic capabilities are of a different order from incremental dynamic capabilities. The authors differentiate incremental dynamic capabilities from renewing capabilities as follows (p15):

“...incremental capabilities are applied to the resource stock remains essentially the same, but the resources undergo continuous development or evolution....In contrast,

where renewing capabilities are employed new resources are either created or introduced, or resources are combined in new ways.”

Therefore whilst incremental dynamic capabilities are about adjusting and incrementally improving the current resource base in the direction of more of the same, renewing dynamic capabilities are concerned with the capacity of an organization to purposefully create, extend, or modify its resource base to sustain a rent stream.

Third, is the regenerative dynamic capabilities that help the organization to change the exiting set of dynamic capabilities. According to Ambrosini et al. (2009), when current dynamic capabilities are perceived to be insufficient to impact appropriately upon a firm’s resource base, the dynamic capabilities themselves need to be renewed. Ambrosini et al. (2009) refer to this type of environment as a hyper dynamic environment. In these environments, the firm needs to change the way it purposefully creates, extends or modifies its resource base. In these circumstances a firm also needs a set of dynamic capabilities to act upon the extant set of currently embedded dynamic capabilities, thus allowing it to change its resource base in new ways. Therefore, compatibly with the Collis (1994) level four dynamic capabilities (learning to learn capabilities) and Winter’s (2003) notion of higher order dynamic capabilities, these regenerative dynamic capabilities allow the firm to move away from previous change practices towards new dynamic capabilities.

Comparing the different views of the hierarchy of dynamic capabilities presented by the various authors, Table 2-13 presents the three types of dynamic capabilities discussed by Ambrosini et al. (2009).

Table 2-13 Comparison of Hierarchical view of dynamic capabilities adapted by different authors

Level	Collis (1994)	Danneels (2002)	Winter (2003)	Ambrosini et al. (2009)
1	Resource base	Firm's extant resource base, the resources that allow the firm to directly earn a living.	Zero order capability/ Operating routines	
2	Dynamic improvements for the resource base	Dynamic capabilities that enable the creation of new resources.	Lower level dynamic capabilities	Incremental dynamic capability
3	Recognise the intrinsic value of other resources or to develop novel strategies			Renewing dynamic capability
4	Renew the dynamic capability that renews the resource base (the capability to develop the capability that innovates faster (or better), and so on) These refer to 'higher order' or 'meta-capabilities', and relate to learning-to-learn capabilities)		Higher order dynamic capabilities	Regenerative dynamic capability

Source: (Ambrosini et al., 2009)

Links between the different authors' lower order and higher order dynamic capabilities and Ambrosini et al.'s (2009) definition of different types of dynamic capabilities, are given in Table 2-14.



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Table 2-14 Hierarchy of Dynamic capabilities (DC) to support different environment states

Hierarchy of capabilities		Processes to build dynamic capabilities (Ambrosini et al., 2009)	Purpose
Base line	Base Line (Resource base)		
Lower level dynamic capabilities	Incremental DC	Adjusting and incrementally improving the current resource base in the direction of more of the same.	Reconfigure the resource base (Stable environment) (Inside Org boundary)
	Renewing DC	The capacity of an organization to purposefully create, extends, or modify its resource base.	Reconfigure the resource base (Dynamic environment) (Inside Org boundary)
Higher level dynamic capabilities	Regenerative DC	Reconfiguring the current set of dynamic capabilities.	Reconfigure the dynamic capabilities Hyper Dynamic environment

2.4 Developing the conceptual framework for the study

According to the above discussion, dynamic capabilities that help to reconfigure the resource base help to understand how organizations upgrade within the evolution of the environment. Section 2.4.1 discusses the capabilities for industry upgrade while section 2.4.2 discussed the enablers.

2.4.1 Capabilities for industry upgrade

By defining dynamic capabilities as the ability to reconfigure the existing resource base/operating routines, this shows that dynamic capabilities help an organization to upgrade from one stage to the next. The hierarchical view of the dynamic capabilities highlights the need for incremental dynamic capabilities, both in upgrading the resource base in the stable environment and the resource base in the dynamic environment.

Accordingly, in the stable environment, the organization resource base improves itself in the same direction to provide for the changing needs of the consumer. Thereby incremental dynamic capabilities help an organization to incrementally improve its core capabilities and resource base. At the starting point, the organization

will upgrade in the same market using the incremental dynamic capabilities. Accordingly, in stage 1, the incremental dynamic capabilities help an organization to improve the VRIN 1 resources/Core capability 1 to meet the market needs 1.

When the environment is dynamic and the market needs evolve from market needs 1 to market needs 2, the VRIN 1 resources that were advantageous in providing the core capabilities to meet market needs 1 become eroded. A new set of core capabilities will, therefore, be required to meet the needs of the evolving market. So, in order to develop core capability 2, to meet market needs 2, the organization has to transform its resource base to create new VRIN resources (VRIN 2 resources) that will develop core capability 2.

Moreover, in line with the argument offered in section 2.2.2, it should be emphasized that dynamic capabilities are path dependent, and hence are concerned with protecting the existing resource base when reconfiguring the resources. Therefore, the VRIN 1 resource base that was in an advantageous position in market needs 1 becomes a non-VRIN resource in stage 2, that may not provide the core capability but will provide a capability in meeting the market needs of stage 2.

Finally, renewing dynamic capabilities helps to transform the existing value chain configuration to a new value chain configuration which represent the capabilities embedded in the value chain activities/processes.

Hence for the purpose of this thesis, the conceptual framework can be presented as in Figure 2-8.

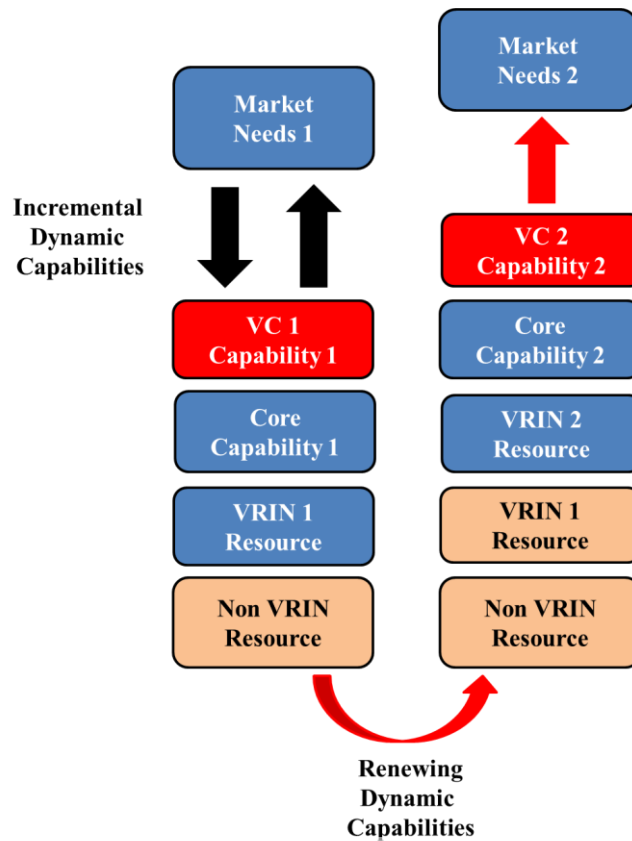


Figure 2-8 Conceptual framework to represent the capabilities for an industry upgrade based on Chapter 2

2.4.2 Enablers for industry upgrade

Introducing the hierarchical view of dynamic capabilities, Ambrosini et al. (2009) elaborated that higher order dynamic capabilities are known as the enablers for dynamic capabilities as the former support the development, or extending of the current set, of the latter. In line with other authors who describe the need for higher order dynamic capabilities to develop dynamic capabilities (as shown in Table 2-13), Ambrosini et al. (2009) discuss regenerative dynamic capabilities as learning capabilities, that act as enablers for developing dynamic capabilities. Ambrosini & Bowman (2009) further argue that the Teece (2007) and Augier & Teece (2009) definitions of dynamic capabilities as sensing, shaping and seizing, and reconfiguring capabilities are not correct. Ambrosini & Bowman (2009) elaborate the point, saying that sensing, shaping and seizing are learning processes, which act as enablers to

develop or change the dynamic capabilities, while reconfiguring capability is considered to be the dynamic capability.

The above fact echoes the hierarchical view of dynamic capabilities, where learning is a higher order dynamic capability that renews the lower order dynamic capabilities, which in turn changes the routines that change the resource base.

Considering the higher order dynamic capabilities, i.e. learning capabilities, as the enablers to create or modify the existing dynamic capabilities, the author of this thesis refers to the literature related to organization learning in order to further understand how learning enables the creation or extension of different dynamic capabilities.

The notion of the learning organization refers back to when (Argyris, 1977) introduced learning behaviours of the individuals, stressing two main types of learning behaviours among individuals. Later, Argyris & Schoen (1978) extended the individual learning towards organizational learning. They elaborated the fact that organizational learning is not the sum of individual learning in an organization. Furthermore, they suggest two types of learning: single and double loop learning. With single loop learning individuals react to changes in their internal and external environment, yet the only learning that occurs is consistent with what is already known in the organization and the only change that takes place is within the norms of the organization. However Argyris and Schoen (1978, p22) further explain that change must happen to the organization's norms, because the usual error-correction methods are not sufficient to counter the change in the internal or external environment:

“Individuals recognize that they cannot correct it [an error] by doing better what they already know how to do.”

Therefore, in order to progress, the organization must instead restructure the organizational norms, i.e. learning must take place.

In 1985, Fiol and Lyles (1985) extended this perspective and considered single loop learning as lower level learning and double loop learning as higher level learning.

Senge (1990) introduced adaptive learning vs. generative learning to further explain the types of organizational learning where adaptive learning enables optimum reactions to events while generative learning empowers the organizations to create events.

Highlighting the fact that changing market needs call for market driven organizations (Day, 1994), Slater & Narver (1994) introduced the notion of learning organizations to explain the concept of market driven organizations; they further defined adaptive learning vs. generative learning. Accordingly, adaptive learning occurs within a set of recognized and unrecognized constraints (learning boundary) that reflects the organization's assumption about its environment and itself, whereas generative learning occurs when an organization is willing to question long held assumptions about its mission, customers, capabilities or strategy.

Exploitation and exploration are referred to by Levinthal & March (1993), who also describe exploitation as lower level learning and exploration as higher level learning. The different authors' views of the various types of learning and their key characteristics are described in Table 2-15.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations

Table 2-15 Defining different levels of learning

Learning type	Description	Key terms for learning types			
		Argyris and Schon (1978) p22	Fiol and Lyles (1985) p808	Senge (1990) p47	Slater and Narver (1994) p64
Type 1	Reactions to changes occur within the environment, yet the only learning that occurs is consistent with what is already known in the organization. (Learning is in the traditional organization boundary)	Single loop learning	Lower level learning	Adaptive learning	Adaptive learning
Type 2	Learning which focuses on the ability to question and change the underlying values and assumptions of traditional action. It is the ability to question and change the rules of a game. (Learning beyond the traditional organization boundary)	Double loop learning	Higher level learning	Generative learning	Generative learning

For the purpose of this thesis, learning type 1, which occurs inside the traditional learning boundary, is known as closed loop learning, since the organization is learning within a closed loop where the only learning that occurs is consistent with what is already known in the organization.

Learning type 2, which occurs outside the traditional organization boundary, is known as open loop learning, since the organization learns within an open loop, beyond the scope of traditional organization activities.

Hence closed loop learning constrains the organizational learning to existing markets, whereas open loop learning opens avenues for organizations to learn for new/potential markets. The key characteristics of the different types of learning are compared in Table 2-16.

Table 2-16 Comparison of different levels of learning

Core constructs	Closed loop learning	Open loop learning
Learning boundary	Learning is constrained	Learning is not constrained
Issues/Opportunities	Within the traditional scope of the organizational activities	Beyond the traditional scope of the organization activities
Occurrence	Repetition-sequential/incremental	Occurs through use of insights
Control	Over immediate task, rules and structure	Differentiated structures, rules
Understanding	Well understood	Ambiguous
Level in the organization	At all levels in the organization	Mostly at upper levels
Consequences	Behavioural outcome	Cognitive outcome

Source: After (Fiol and Lyles, 1985(Lyles, 1985)); (Slater & Narver, 1994)

By linking the different types of organizational learning with the hierarchical view of dynamic capabilities, incremental dynamic capabilities that change the resource base through adjusting or adapting the resource base in more of the same direction are enabled by closed loop learning, whereas renewing dynamic capabilities that change/reconfigure the resource base to meet the evolving environment needs are enabled by open loop learning.

Hence the hierarchical view of the dynamic capabilities can be linked to the different learning types; incremental dynamic capabilities are enabled through closed loop

learning while renewing dynamic capabilities are enabled by open loop learning as shown in Table 2-17.

Table 2-17 Enablers for dynamic capabilities

Industry upgrade	Type of capability	Type of enabler
Upgrade in the stable environment (Existing market)	Incremental DC	Closed loop learning (Single loop)
Upgrade in the dynamic market (New market)	Renewing DC	Open loop learning (Double loop)

By considering the enablers needed to develop the relevant dynamic capabilities, the conceptual framework for the thesis can be further developed to include the enablers to the industry upgrade.

Therefore in order to upgrade the industry in the existing market within the traditional/existing resource base, closed loop learning will be appropriate. However, in order to upgrade to a new market to meet the evolving needs of the consumer, organizations should develop open loop learning capabilities where the organization learns beyond the traditional learning boundary.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

The modified conceptual framework that includes enablers for the industry upgrade is presented in Figure 2-9.

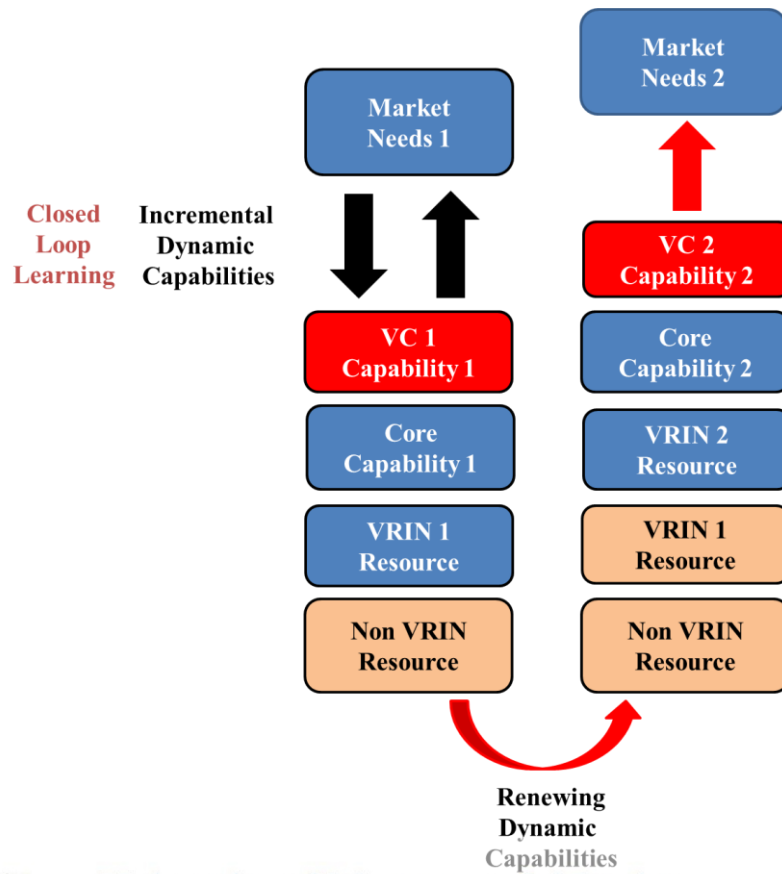


Figure 2-9 Modified conceptual framework for the thesis based on Chapter 2

In this thesis, the apparel industry started as a basic product provider to customers in a stable environment where the consumer needs were focused on obtaining a basic product. However, when the existing consumer needs evolve, consumers start demanding low cost products. Therefore the industry needs to upgrade to provide the low cost needs. Enablers for the industry upgrade will be single loop learning. When the environment becomes dynamic, the industry needs to upgrade to provide the evolving requirements of consumers. Accordingly, enablers for the industry upgrade will be double loop learning where the industry combines existing learning with the outside learning of the consumer needs.

2.5 Further conceptualization of learning capabilities

Slater & Narver (1994) describe learning processes such as information acquisition, assimilation, shared interpretation, as learning capabilities that enable an

organization to become a learning organization which evolves with customer needs. This is in line with the argument of Ambrosini & Bowman (2009), in which the authors mention that sensing, shaping and seizing processes are related to learning capabilities while the reconfiguring process is concerned with dynamic capability.

The above argument, which emphasizes the fact that learning is an enabler for the industry upgrade, referred back to when Cohen and Levinthal (1990) argued that absorptive capacity is an enabler for organizations to coevolve with the knowledge environment. Based on Cohen and Levinthal's (1990) argument that organizations should evolve with the knowledge environment, Zahra & George (2002, p188) state that absorptive capacity is:

“A dynamic capability that influences the firm's ability to create and deploy the knowledge necessary to build other organizational capabilities.”

Accordingly, Zahra & George (2002) consider absorptive capacity as the higher order dynamic capability, i.e. an enabler which influences the firm's ability to build organizational capabilities. This in turn means that absorptive capacity is the learning capability of the organization. Therefore, Zahra & George (2002) introduced knowledge acquisition, assimilation, transformation and exploitation processes as absorptive capacity which in turn means they are learning capabilities.


This led to considering the sensing, shaping and seizing processes as enablers, but the reconfiguring process as a dynamic capability. According to the different authors, the sensing process is concerned with the processes related to sensing the market trends, while shaping is concerned with the processes related to identifying the responses to the sensed trends. Seizing considers processes related to prioritise and shaped opportunities and allocate resources. See-Table 2-18

Table 2-18 Learning capabilities as processes

		Description	Narver and Slater (1994)	Zahra et al. (2006)	Teece (2007)
Learning capabilities	Sensing	Ability to utilize own (intra-firm network) and network capabilities (inter-firm network) to constantly identify, create, and anticipate Social, Technological, Economic, Environmental and Political trends	Information acquisition	Knowledge acquisition	Sensing
	Shaping	Ability to utilize own (intra-firm network) and network (inter-firm network) capabilities to constantly devise plausible responses to the sensed trends through modifying existing, developing new and/or exploring new contexts for existing businesses	Information dissemination	Knowledge assimilation	Shaping
	Seizing	Ability to utilize own (intra-firm network) and network (inter-firm network) capabilities to constantly prioritise and select shaped opportunities, and allocate resources (investment decisions) to capture opportunities developed	Shared interpretation	Knowledge Transformation	Seizing
Reconfiguring	Ability to utilize own (intra-firm network) and network (inter-firm network) capabilities to constantly implement the seized opportunities		Knowledge exploitation	Reconfiguring	

Cohen and Levinthal (1990) introduce the term ‘absorptive capacity’ as the enabler to coevolve the organization with the knowledge environment. Accordingly, Van den Bosch, Volberda & de Boer (1999) identify combinative capabilities that increase the absorptive capacity of an organization. Combinative capabilities represent the learning capabilities that identify the processes and configuration dimensions of the learning capabilities – see Table 2-19.

Table 2-19 Learning capabilities- Processes & Organization structure

Capability		Description	Source
Sensing capabilities	Process dimension/ Configuration dimension	<p>Processes:</p> <p>Elements for sensing market and technological opportunities- Processes and people to tap into for the opportunities in the environment.</p>	Cohen and Levinthal (1990) Van der Bosch et al. (1999)
		<p>Structure(Role):</p> <p>Receptors of knowledge from the environment- Communication may rely on specialized actors to transfer information from the environment or may involve less structured patterns.</p>	
Shaping / Seizing capabilities	Process dimension/ Configuration dimension 	<p>Processes:</p> <p>Developing decision-making skills and organizational processes to seize opportunities is essential.</p>	Cohen and (1990) Van der Bosch et al. (1999)
		<p>Structure (Role):</p> <p>Joint decision making/participation in decision making- Extent to which subordinates take part in the decision making of superiors.</p> <p>External org. awareness of other’s capabilities and knowledge. Complementary knowledge strengthen the absorptive capacity.</p> <p>Complementary functions can be tightly intermeshed using cross function absorptive capacities. Usually the personnel need to be both competent in their fields and familiar with the organizational processes, complementary capabilities. Individuals who stand at the interface of the interfaces between sub-units within the firm. Some are centralised and can be named as gate keeping/ boundary spanning roles. Eg: Product manager is the integrator for the success of new product development.</p> <p>Some persons act as the liaison devices in sub-units.</p>	
		<p>Culture:</p> <p>Social integration that goes far beyond the systems and coordination capabilities. Social relationships between sub units are essential. This leads to strong identity with a coherent set of beliefs and shared values, a common language and a strongly agreed upon kind of behaviour. However, strong cultures can create mental prisons that prevent them from changing.</p>	

2.6 Summary of the chapter

The chapter has discussed static theories for competition and emphasized the need for a dynamic theory for the evolutionary environment. The chapter conceptualized dynamic capabilities that reconfigure the resource base and operating routines, in order to upgrade the industry from one stage to a new stage.

Moreover, two main levels of dynamic capabilities were identified as lower level and higher level dynamic capabilities; the former are concerned with upgrading the resource base, the latter are concerned with upgrading the existing set of dynamic capabilities. Lower level dynamic capabilities are divided into two: incremental dynamic capabilities that upgrade the resource base in the stable environments, and renewing dynamic capabilities which upgrade the resource base in the dynamic environment. Higher order dynamic capabilities are considered to be learning capabilities that act as enablers for dynamic capabilities which reconfigure the resource base. Therefore, in developing the conceptual framework, the author considers learning capabilities. Accordingly, two key learning types were identified: closed loop learning, enabled by modifying the existing dynamic capabilities, and open loop learning which creates new dynamic capabilities.

The chapter concludes with an emerging conceptual framework for this thesis. According to the conceptual framework, in stable environments, and in order to upgrade the industry to meet the requirements of the existing market, organizations need to develop incremental dynamic capabilities which are enabled through closed loop learning. In dynamic environments, in order to upgrade the industry to meet the market needs in the evolving market environment, renewing dynamic capabilities should be employed. These renewing dynamic capabilities are enabled through open loop learning.

Moreover the chapter further conceptualizes the learning capabilities using process dimension (Sensing, shaping and seizing) and configuration domination (Structure and Culture).

3 LITERATURE REVIEW

3.1 Introduction to the chapter

Section 3.2 introduces the value chain as a framework that represents the business model for the industry upgrade. Aligned with Chapter 2, Chapter 3 starts with Porter's value chain framework; the chapter explains how the supply chain was introduced and aligned to Porter's value chain framework. Beyond Porter's value chain framework, Chapter 3 redefines the value chain as the integration of the demand chain and the supply chain for the evolutionary environment. This new definition aligns with the Chapter 2 conceptual framework, which discusses the need for learning capabilities as enablers for the industry upgrade in the evolutionary environment, as it integrates an outward in approach and an inward out approach.

Section 3.3 investigates the literature related to Demand and Supply Integration (DSI). This section explores integration between demand and supply, and identifies existing frameworks developed in the supply chain management as well as in the servitization literature. At the end of this section, DSI was identified as a demand and supply planning process, where marketing and supply chain strategies are developed. Accordingly, integrative capabilities are identified as being knowledge integrative capabilities.

Section 3.4 presents a conceptual model for the thesis. This model is based on Chapters 2 and 3. Accordingly, learning capabilities, identified as the enablers for industry upgrade in Chapter 2, are combined with the integrative capabilities, identified in Chapter 3. Section 3.4.1 further operationalizes the integrative capabilities/ learning capabilities as learning processes, governance and decision making structures, organization design and Key Performance Indicators (KPIs).

Section 3.5 presents the extended conceptual framework for the thesis. Section 3.5.1 discusses the stages in the industry upgrade process. Section 3.5.2 discusses the evolution of the offering of the manufacturer along the industry upgrade continuum. Section 3.5.3 discusses the evolution of the competitive priorities of the manufacturer also in each stage of the industry upgrade continuum. Section 3.5.4 discusses the level of collaboration intensity between customer and supplier. Section 3.5.5

considers the level of DSI in different stages in the servitization process. Section 3.5.6 discusses the integrative capabilities that support different levels of DSI.

At the end of the section the extended conceptual framework for the study will be presented along with the research questions.

Section 3.6 provides a summary of the chapter and brings the chapter to a close.

Figure 3-1 shows the topic breakdown for Chapter 3.

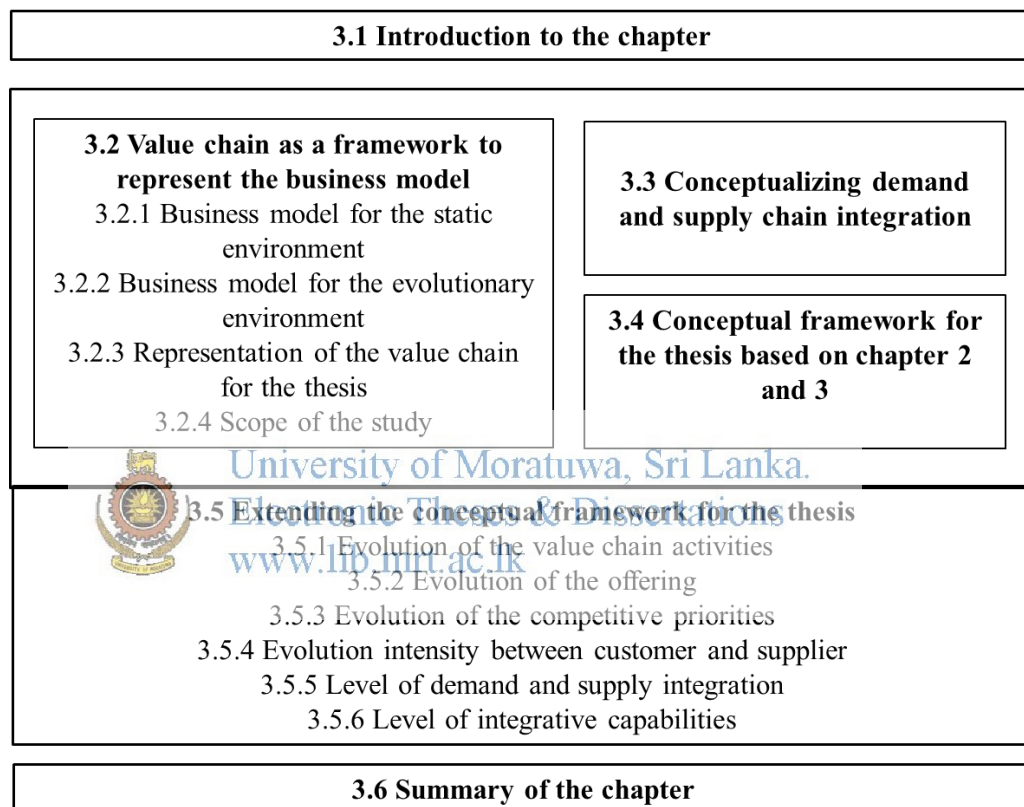


Figure 3-1 Topic breakdown of Chapter 3

3.2 Value chain as a framework to represent the business model

Magretta (2002, p4) states, cited in Walters

“...all new business models are variations on the generic value chain underlying all businesses... A new business model’s plot may turn on designing a new product for an unmet need ... Or it may turn on a process innovation, a better way of making or selling or distributing an already proven product or service.”

The above statement justifies that the value chain framework is appropriate to represent a new business model.

This section introduces two aspects of the value chain. Firstly in section 3.1.1 it presents the value chain configuration for stable environments and secondly in section 3.1.2 it presents the value chain configuration for evolutionary environments.

3.2.1 Business model for static environment

In 1985, Porter introduced the value chain as a framework to represent the activities of an industry that creates customer value. Porter schematically arrayed the activities in an organization using a diagram which he termed a 'value chain'. Porter's (1985) value chain activities are divided into two parts: primary and secondary activities. Primary activities are inbound logistics, outbound logistics, operations, marketing, sales and service, while the supporting or secondary activities include firm infrastructure, human resource management, technology development and procurement. The primary activities are concerned with transforming the inputs to outputs while the supporting activity helps the transformation process. Porter (1985) emphasized the fact that an organization's value chain does not work independently, but as a value system which has linkages with the buyer's value chain, in order to create customer value. Porter further elaborated that value chains work as a value system that links customer and supplier to create customer value – see Figure 3-2.

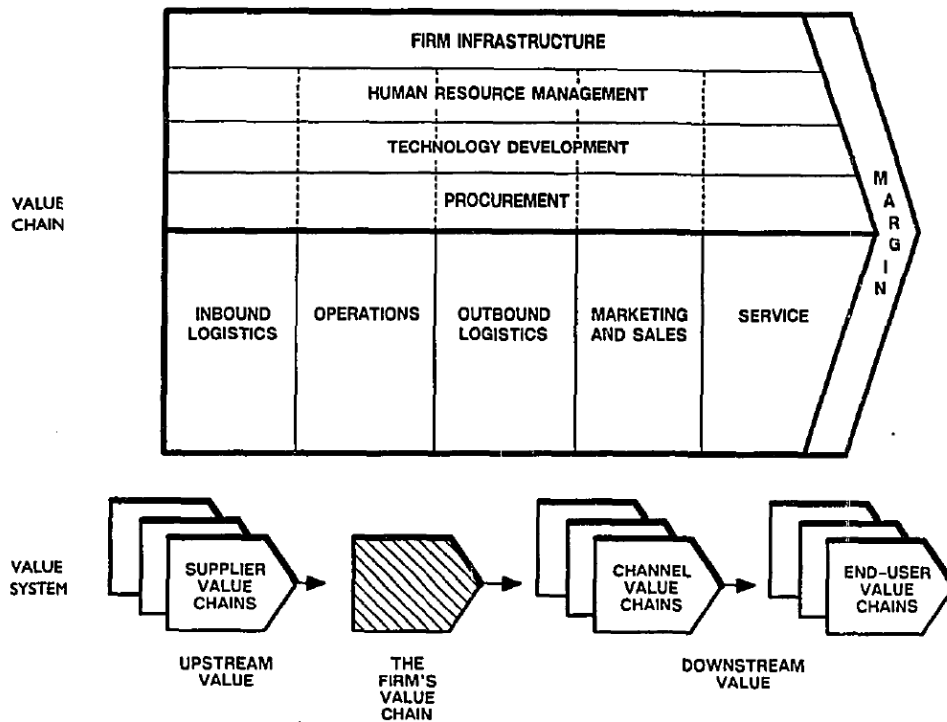


Figure 3-2 Value chain vs. Value system

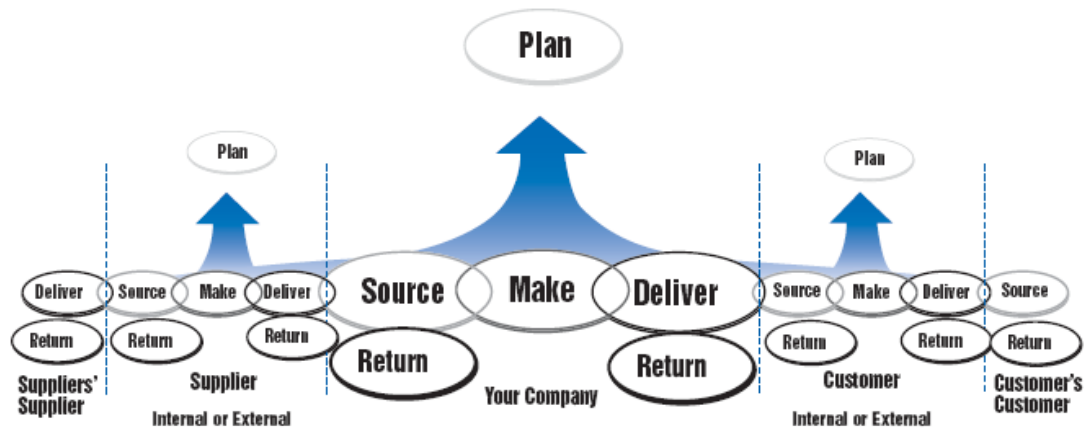
Source: (Porter, 1985)

As depicted in Chapter 2, Porter's (1985) value chain model assumes that the environment is static and the value chain is stable. In a given product market position, he believes that value chain activities represent the appropriate capabilities to compete in the particular product market position. Accordingly, his value chain activities that consist both of supply related and marketing related activities represent the supply related and sales and marketing related capabilities of a given market position.

Porter's (1985) value chain echoes the concept of the supply chain (SC) which came to prominence in the 1980s. Oliver & Weber (1982, p66) as cited in Godsell (2008) viewed the SC as:

"...a single entity rather than relegating fragmented responsibility for various segments in the supply chain to functional areas such as purchasing, manufacturing, distribution and sales."

The Supply Chain Council has subsequently defined the industry standard around five core supply chain processes: Plan, Source, Make, Deliver and Return; these form the backbone of the Supply Chain Operations Reference (SCOR) model. While Porter (1985) believed that the value chain of an individual firm was part of a broader ‘value system’, supply chain proponents have presented the extended supply chain which includes the value chains of suppliers and customers as shown in Figure 3-3.



University of Moratuwa, Sri Lanka.
 Electronic Theses & Dissertations
 Source : (Godsell, 2008)
 www.lib.mrt.ac.lk

Figure 3-3 Extended supply chain

Source, make and deliver activities represent the inbound logistics, operations and outbound logistics activities in Porter’s value chain model. Sales and marketing activity is connected with the customer, which identifies the marketing channel capability used to market and sell the product.

(Christopher, 1992, p3) defines the SC as:

“The network of organizations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services delivered to the ultimate consumer. In other words, a supply chain consists of multiple firms, both upstream (supply) and downstream (distribution), and the ultimate consumer.”

and Supply Chain Management(SCM) as (p3):

“The management of upstream and downstream relationships with suppliers and customers in order to deliver superior customer value at less cost to the supply chain as a whole.”

3.2.2 Business model for evolutionary environments

This thesis considers the business model that supports a business upgrade through the evolution of consumer needs. Accordingly, moving beyond the Porter’s value chain model that represents the capabilities in the static environment, the proposed business model for the evolutionary environment takes the view of Walters & Rainbird (2004) value chain model, which emphasizes that the value chain is in constant evolution.

Walters and Rainbird (2004) value chain model is built based on Rainbird (2004a, 2004b), those emphasized the need of new business model for the evolutionary environments. Rainbird (2004b) viewed traditional marketing function which focused on effectiveness, in terms of attractive products/markets, and the traditional supply chain function that focused on efficiency in terms of cost per item, as a demand chain process and a supply chain process, respectively. Table 3-1 shows the comparison between the traditional marketing and manufacturing functions.

Table 3-1 Marketing vs. Supply chain: Traditional view

	Marketing	Manufacturing
Focus	Effectiveness focus-Product/market fit	Efficiency focus-Cost per item
Processes	Related to Planning	Related to execution
Key driver	Revenue	Cost
Orientation	Long-term oriented, within the next planning cycles	Short-term oriented within the immediate and controllable future
Domain	Domain of marketing, sales and strategic supply chain personnel	Domain of tactical manufacturing and logistics personnel
Resources	Focus on long-term capabilities not short-term constraints	Focuses on immediate resources and capacity constraints

Source: (Rainbird, 2004b)

In the traditional environment, marketing and supply chain been considered as a function that is solely in the firm’s marketing and manufacturing departments, but in

its contemporary role, Rainbird (2004b) views marketing and manufacturing as demand chain and supply chain process.

In line with the above view, Walters & Rainbird (2004) conceptualized the value chain for the evolutionary environment as the integration of demand chain and supply chain. According to authors', the demand chain process carries out seven activities that relate to the traditional marketing function, such as identifying the market opportunities, developing a value proposition based on resource implications, and determining the focus of the Supply Chain (SC) by defining the product service characteristics while the SC carries out the processes related to order receipt and entry, order processing, evaluating the value delivery options, order assembly, manufacturing and value delivery to create customer value. These authors explain demand process as a cross functional activity that contributes to orienting organizations' activities to create customer value, while the supply chain as a process focused on creating customer value. See-Figure 3-4

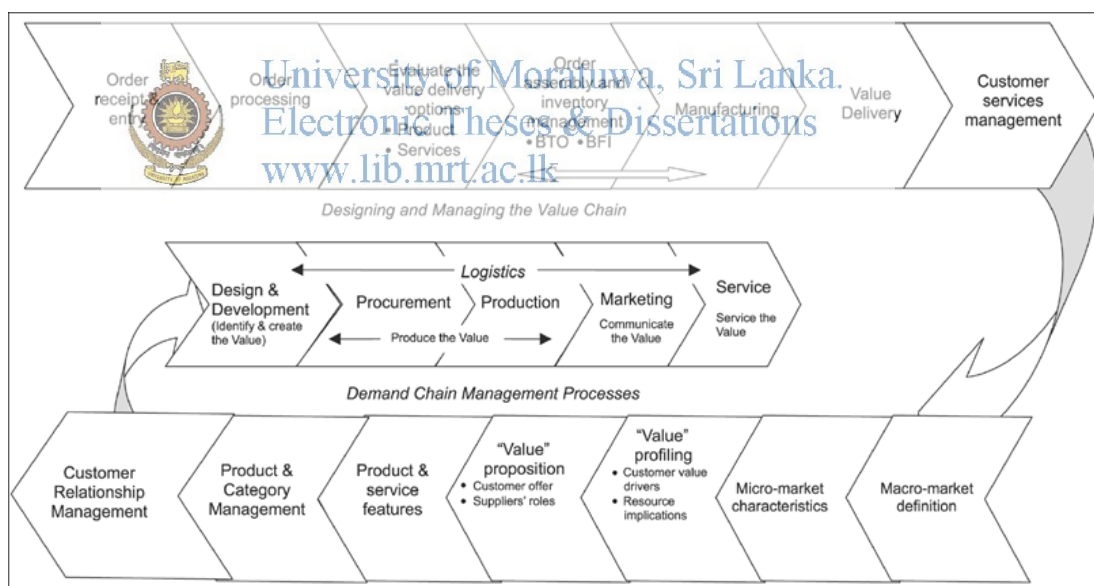


Figure 3-4 Value chain as integrating demand chain and supply chain processes

Source: (Walters & Rainbird, 2004)

Hence, While Porter's value chain represents the capabilities in the static environment using supply and sales and marketing capabilities, Walters and Rainbird's (2004) value chain model considers these capabilities under the supply

chain process. Their conceptualization of value chain for the evolutionary environments considers demand chain as a distinct entity in the value chain, which focuses the supply and sales and marketing capabilities.– see Table 3-2.

Table 3-2 Marketing vs. Demand chain: Contemporary view

	Marketing	Demand chain
Focus	A philosophy, stressing the customer centric goals of an organization.	A practical description and analysis encompassing all the processes within the firm which adopt and apply the customer centric goals.
Domain (Function/process)	Sole domain of the firm’s marketing department	Cross-disciplinary activity, encompassing all processes which contribute to orientating the firm’s activities to the needs and requirements of the customers.
Customer value	As the owner of the customer value	Broader perspective where the customer value is the responsibility of the whole organization.

Source: (Rainbird, 2004b)

The contemporary view of marketing as demand process, explores the premise that a product or service needs not only to be attractive to a customer but also viable for the stakeholders of the firm that produces it.

Accordingly, Walters & Rainbird (2008) elaborate,


“The old “adage” that “the customer is always right” in fact disguises a series of direct and indirect negotiated outcomes where what is feasible for the customer and what is viable for the firm is settled.”

According to Figure 3-2, Porter’s value chain consists of activities related to inbound logistics, operations, outbound logistics, marketing & sales and service. When compared with Porter’s (1985) value chain model, Walters & Rainbird’s (2004) value chain model in Figure 3-4 includes design and development of the value proposition as a separate activity, considering the fact that consumer needs are evolving hence there is a need to have a separate value chain activity for making decision about the product or service requirements.

While both models acknowledge the fact that the value chain should have linkages with the buyer’s value chain, Porter’s value chain model considers that value chains

are positioned in respect to a specific product market in a given industry structure and assumes the static nature of a specific value chain configuration. Accordingly, when the capabilities are developed to meet the requirements in a given market position, these capabilities remains static. Thereby Porter views that the buyer's value requirements are not changed so that links with the buyer's value chain are linear and sequential.

In contrast, Walters & Rainbird (2004) highlight the evolutionary nature of consumers' needs and consider the constant monitoring of the customer value requirements and supply capabilities through integrating the demand chain process with the supply chain process. Accordingly, the Walters and Rainbird(2004) value chain is in constant alignment and realignment according to the evolutionary needs of the consumer. Therefore, unlike Porter, Walters & Rainbird's (2004) value chain is dynamic and coevolves with consumer needs, so the links with the buyer's value chain are not sequential but synchronous. According to Rainbird (2004a) these links develop friction (p244):

 *“A firm will create value when what the customer demands can be brought into synchronisation with what the firm can supply, minimising friction and internal interaction costs and maximising the dynamic forces of the interaction. Where they are not synchronised, value will either not be realised or actually destroyed.”*

The above quotation emphasizes the fact that when the organization links with the customer to create customer value, there is friction between the supply and demand chains. This is due to the fact that because when the supply chain focuses on efficiency (shareholder value), the demand chain focuses on effectiveness (creating customer value). Thereby Rainbird (2004a) elaborated the need for fusing the two processes to create customer value. Unlike Porter, Walters & Rainbird (2004) consider the linkages as nonlinear synchronous links, where the value chain activities that represent the supply related and demand related operational capabilities are in constant evolution. Walters (2008a, p2) highlights the weakness of Porter's value chain model as follows:

“...Little or no attention was given to the notion that customer expectations were dynamic and are influenced by external variables that may have not been identified as and when a product-service was being developed as a response to an identified need or opportunity.”

Walters (2012) states that while customers’ expressed needs drive the existing value chain, customers’ anticipated needs build the value chain to a new configuration.

Table 3-3 shows the comparison between the two models.

Table 3-3 Characteristics of the two different value chains

Source	Activities	Characteristics				
		Customer focus	Stakeholder focus	Linear Sequential links	Non Linear Synchronous links	Dynamism
Porter (1985) p36	“Collection of activities that are performed to manufacture, market, deliver and support its product”.	√	√	√		
Walters and Rainbird (2004)	Activities concerned with design and development of value proposition, procurement, production, marketing and service.	√	√		√	√

3.2.3 Representation of the value chain model for the thesis

In line with the views of Walters & Rainbird (2004), a value chain framework which is in constant evolution was adapted for this thesis, as presented in Figure 3-5.

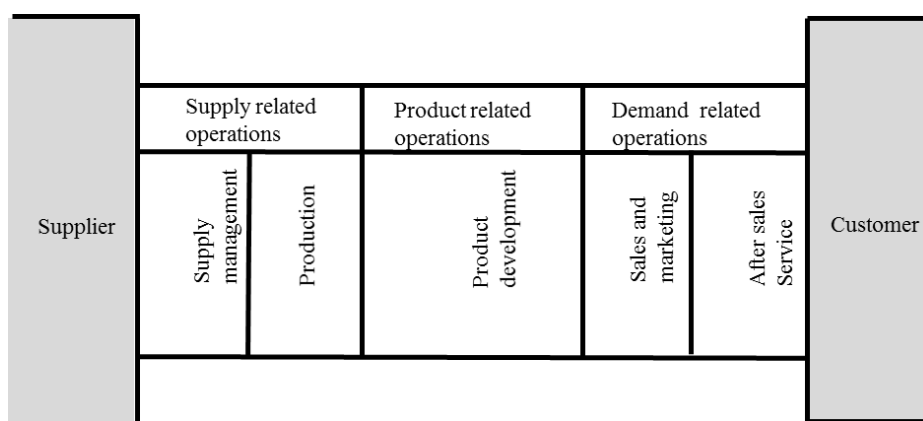


Figure 3-5 Value chain framework for the purpose of this thesis

In line with Walters & Rainbird's (2004) view of the value chain as the integration of the demand and supply chains, this thesis further presents the business model for evolutionary environment using demand process and supply process integration.

Accordingly, the value chain for the evolutionary environment can be represented using the supply and demand chains as shown in Figure 3-6.

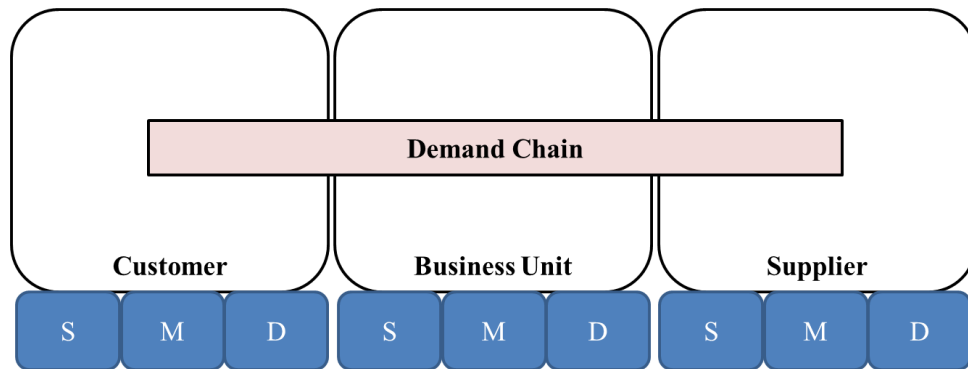


Figure 3-6 Value chain = Demand chain + Supply chain

The supply chain is represented as the Source, Make and Deliver processes, while the demand chain provides cross functional activities related to orienting the supply chain to meet the evolving consumer needs.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

In line with the conceptual framework of Chapter 2, Porter's value chain model for the static environment represents the value chain capabilities to create customer value. Hence these capabilities include supply related (internal and external supply channel) capabilities as well as the demand related (internal and external market channel) capabilities for a given product market position. When Porter's value chain model is represented as the supply chain processes, as shown in Figure 3-3, the demand chain processes consist of the activities which orient the supply chain capabilities to meet the evolving customer value. Accordingly, demand chain processes consists of processes that develop the demand and supply plan which defines the directions for pipeline (supply and demand pipeline) capabilities. Hence the demand chain processes carry the activities related to both supply and demand planning.

3.2.4 Scope of the study

The focus of the study can be explained using two dimensions, i.e. the physical dimension which converts the physical inputs into outputs, which represent the capabilities (Demand and supply) in terms of providing the required offering. The physical dimension is represented as the supply chain in Figure 3-7. The process dimension controls the physical dimension. This is the demand chain which includes the activities related to both demand and supply planning, where the organization plans the marketing and supply strategies based on the consumer needs.

As the study focuses on the firm positioned in a supply network, the physical dimension of the study covers the supplier as well as the customer for the particular offering. The study focuses on the process dimension or the planning activities related to the particular supply chain offering provided by the firm. Therefore the focus of the study will be the planning process of the firm, which was represented by the demand chain in Figure 3-6. Accordingly, the focus will be the demand and supply planning which controls the physical conversion of material from supplier to customer. (Figure 3-7)

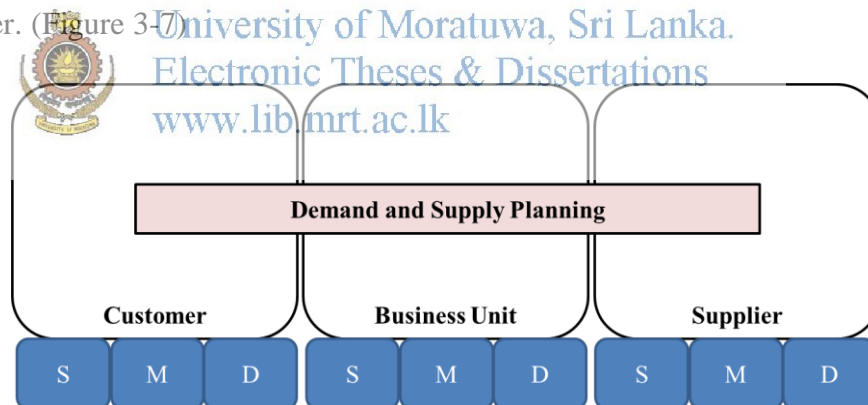


Figure 3-7 Scope of the study

3.3 Conceptualizing demand and supply planning process as integrative planning of marketing strategy and supply chain strategy

The following sections discuss how DSI is considered to be the integrative planning of marketing and supply by several authors who discuss the needs of developing supply chains to create customer value.

Supply chain management literature that describes the need for developing supply chains to meet the customer needs, developed supply chain models to align the supply chain to create customer value – see section 3.3.1.

Recent developments in marketing under service dominant logic also developed models to understand how super supply chains is developed to become a service provider, in order to create customer value – see section 3.3.2.

The business models are described below.

3.3.1 Literature related to supply chain management

The concept of the DSI refers back to when Godsell, Harrison, Emberson, & Storey, (2006) mentioned the demand strategy model as the missing link for developing CRSCs. The demand strategy model emphasizes the need for DSI in determining the value proposition. Accordingly, the authors emphasize the need for setting the demand objectives and identifying a relevant marketing strategy to meet the market needs. Moreover, they argue the need for integration between the market oriented and supply oriented views in setting the demand chain objectives that describe the marketing strategy. Accordingly, the authors describe that marketing strategy identifies a relevant basis for segmentation that is meaningful not only to sales and marketing but also to the supply chain. Accordingly marketing strategy which defines the value proposition to the consumer will be aligning to the supply chain strategy that defines the capabilities. Furthermore, Godsell et al. (2006) emphasize the need for setting appropriate supply chain processes to align the marketing strategy through implementing the process enablers.

Aligned to the above view, (Walters, 2008b) provide a very useful point in their argument, contending that demand chain analysis and management help to improve an organization's processes by aligning the organization around a common plan. The author further highlight that demand chain analysis and management improve coordination within the supply chain by using forecasts and plans, which exploit the commercial processes by understanding consumer demand and by selecting those product/markets that best meet an organization's, owned or leased skills and

resources. Once again the authors notion of demand chain analysis and management emphasize how demand and supply plan is developed as an integrative process.

This view was also emphasized by (Jüttner, Christopher, & Baker, 2007), in designing supply chains to create customer value. They emphasize the need for a demand chain model, where market oriented and supply oriented views are integrated in developing the customer value proposition that enables the development of an appropriate supply chain configuration, which represent the supply chain capabilities. Building on the Rainbird (2004a) process fusion model, (Jüttner et al., 2007) visualize demand and supply integration through a process fusion model. Their demand and supply process integration model determines five key phases in process integration according to the different phases in the consumer buying cycle – see Figure 3-8.

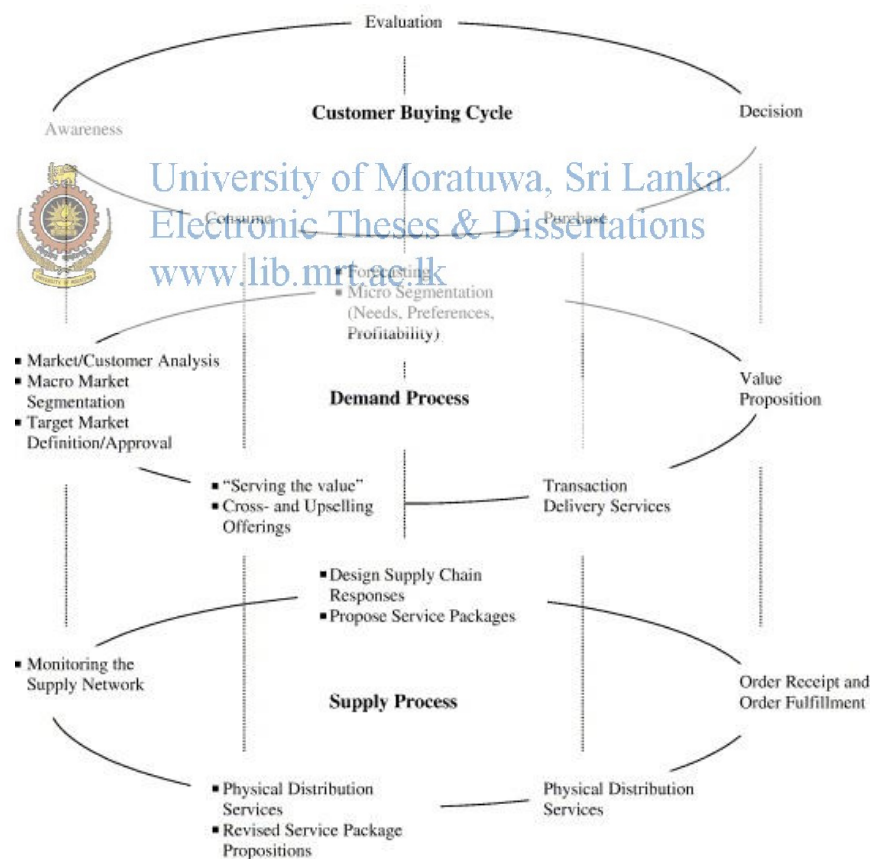


Figure 3-8 Demand and supply process integration

Source: (Jüttner et al., 2007)

The five key phases of the consumer buying cycle are: awareness, evaluation, decision, purchase and consume. By linking them to the different phases in the consumer buying cycle, Jüttner et al. (2007) identify key activities in the demand and supply processes that are integrated to create customer value requirements. The key activities relating to the demand and supply processes are explained further in Table 3-4.

Table 3-4 Demand and supply process integration- Activity level

Buying cycle Phase	Demand process-Activity	Supply process-Activity
Awareness	Market analysis, macro market segmentation, as well as the definition of target markets, or, in the case of repeat purchases from existing customers.	The existing supply network has to be monitored against the market information based on the supply requirements derived from the market positioning.
Evaluation	Customers are micro segmented based on needs, preferences and likely profitability. Value profiles are developed by quantifying for each segment the “ideal” customer value model, including the benefits, costs and value imperative drivers.	Plan the specific supply chain responses to propose service delivery package options as input into the value profiling. Materials requirement planning, capacity management or production planning and scheduling etc.
Decision	Ensure that the company profitably meets different customer needs with differentiated supply chain capabilities.	
Purchasing	Do the transactions confirm that the profits are met through fulfilling customer needs within the supply capabilities.	Make, Sell and Deliver the product/service package on the basis of a thorough understanding of customer needs.
Consume	Supporting activities such as installation, financing, or warranty. Feedback on over- or under-delivery is undertaken to renew service packages.	Supply functions to develop revised service packages.

Source : (Jüttner et al., 2007)

Accordingly, key demand related and supply related activities describe the integration within the key phases. Hence Jüttner et al.’s (2007) framework expects that the demand and supply processes integrate from the time of sensing the market related and supply related information to evaluating the possible market responses and supply packages towards the value delivery phase. The first three phases gather the knowledge related to market needs and supply capabilities, evaluating the supply options and are concerned with decision making about the value proposition. This is aligned with the thoughts of Rainbird (2004b), who considers the demand chain process to be activities related to understanding the current and future customer

expectations and all the available response alternatives to meet these through operational processes.

Moreover, the Jüttner et al., (2007) model has another phase which considers the feedback from the consumer and develops revised service packages. This phase confirms the cyclical nature of all these four phases.

As a further development of DSI, Jüttner, Christopher & Godsell (2010) extend the strategic level integration between marketing and the supply chain, to include the network partners. These authors discuss this integration across four boundaries: customer integration, supplier integration, corporate integration, and marketing and supply chain integration (Figure 3-9).

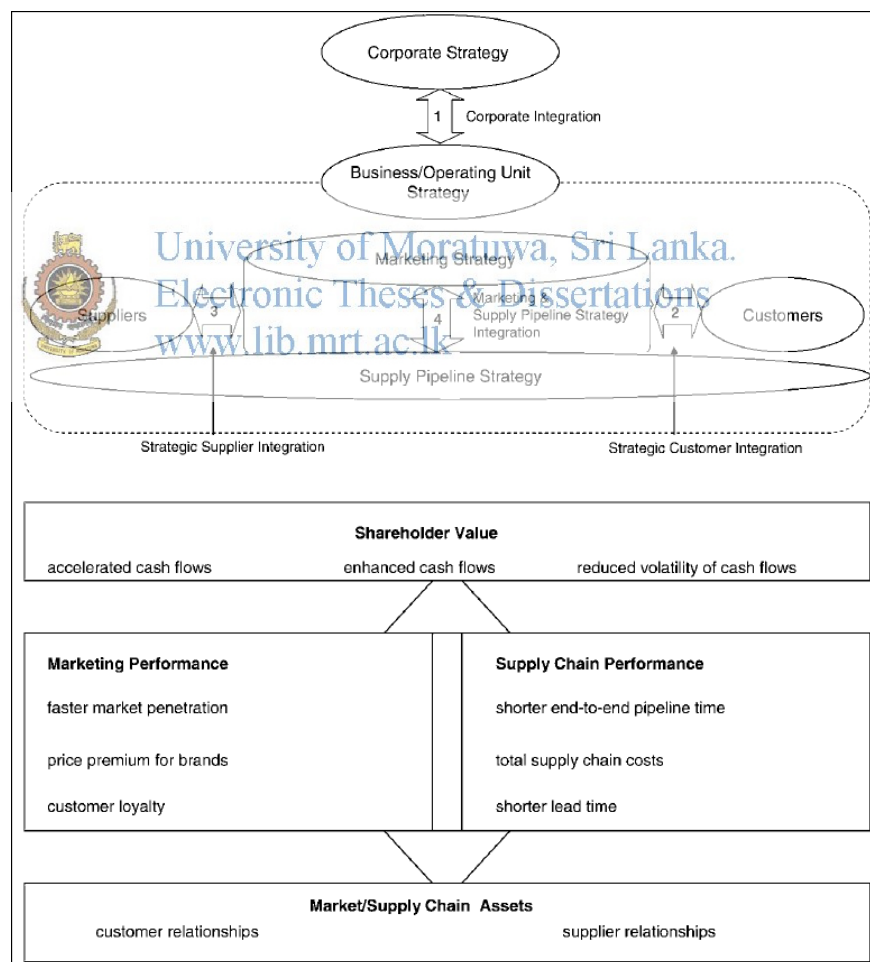


Figure 3-9 Strategic level integration between network partners

Source: (Jüttner et al., 2010)

Accordingly, Jüttner et al.'s (2010) model highlights the need to include supply pipeline partners in developing the marketing and supply chain strategy. Hence the development both of the value proposition and the supply capabilities needs to involve the supply chain partners. According to the authors, marketing strategies are concerned with the decisions relating to value proposition that defines the product, price, distribution and promotion decisions.

Jüttner et al. (2010, p105) describe marketing strategies as follows:

“Firm-level marketing strategies need to be “infused” into cross-organizational business processes to ensure an end customer and market perspective across the companies within the supply chain network.”

On the other hand, supply chain strategies encompass a firm's behavioural orientation towards collaborative partners in the chain or network and include process configurations across the key supply chain processes, that determine the capabilities.

Jüttner et al. (2010, p105) further describe supply chain strategies as follows:

“Supply chain strategies are concerned with optimising cross-organizational activities and depend on a close interaction with in-company marketing and sales resources, processes and skills.”

3.3.2 Literature related to Servitization

Service dominant logic in marketing that argues the need for super supply chains (Lusch, 2011), has developed a stream of conceptual papers on identifying how the supply chains can be created to deliver customer value.

Within the stream of literature in marketing related to service dominant logic, the work of Esper et al. (2009) presents a conceptual model for the integrative planning of a marketing and supply chain strategy to create customer value. They define DSI as (p3):

“Balancing of demand and supply market information and business intelligence through integrated knowledge management processes to strategically manage demand and supply activities for the creation of superior customer value.”

According to Esper et.al, (2009), DSI represents a strategic approach to bundling the customer value propositions from both demand side and supply side information in order to create value in the marketplace.

Esper et al. (2009) present a visual portrayal of the key elements of DSI – see Figure 3-10.

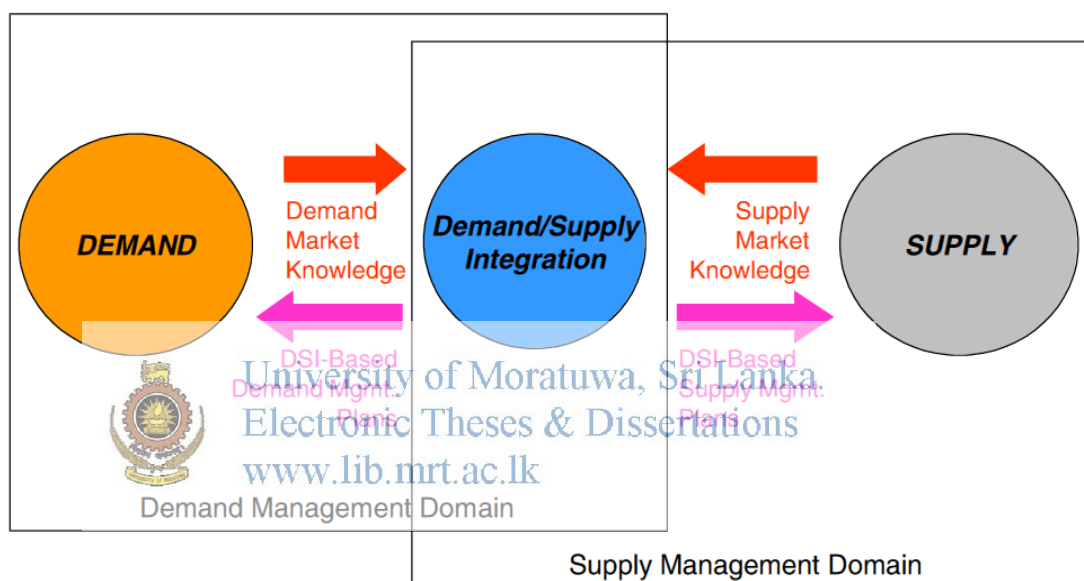


Figure 3-10 Visual portrayal of the key elements of DSI

Source: (Esper et al., 2009)

Accordingly, DSI-based demand management plans provide the detailed sales and marketing plan, whereas the DSI-based supply management plans provide the detailed supply plan.

As emphasized by Godsell et al. (2006) and Walters (2008a), the DSI conceptual model presented by Esper et al. (2009) confirms that both the supply and demand activities of the organization provide input towards a firm’s strategic direction, hence the capabilities of the supply chain should be considered before any strategic action is undertaken.

The emphasis of DSI, is that both demand market knowledge and supply market knowledge are needed in an integrated fashion so that firms can facilitate the creation of relevant value. Accordingly, Esper et al. (2009) further conceptualize DSI, using knowledge management as a framework – see Figure 3-11.

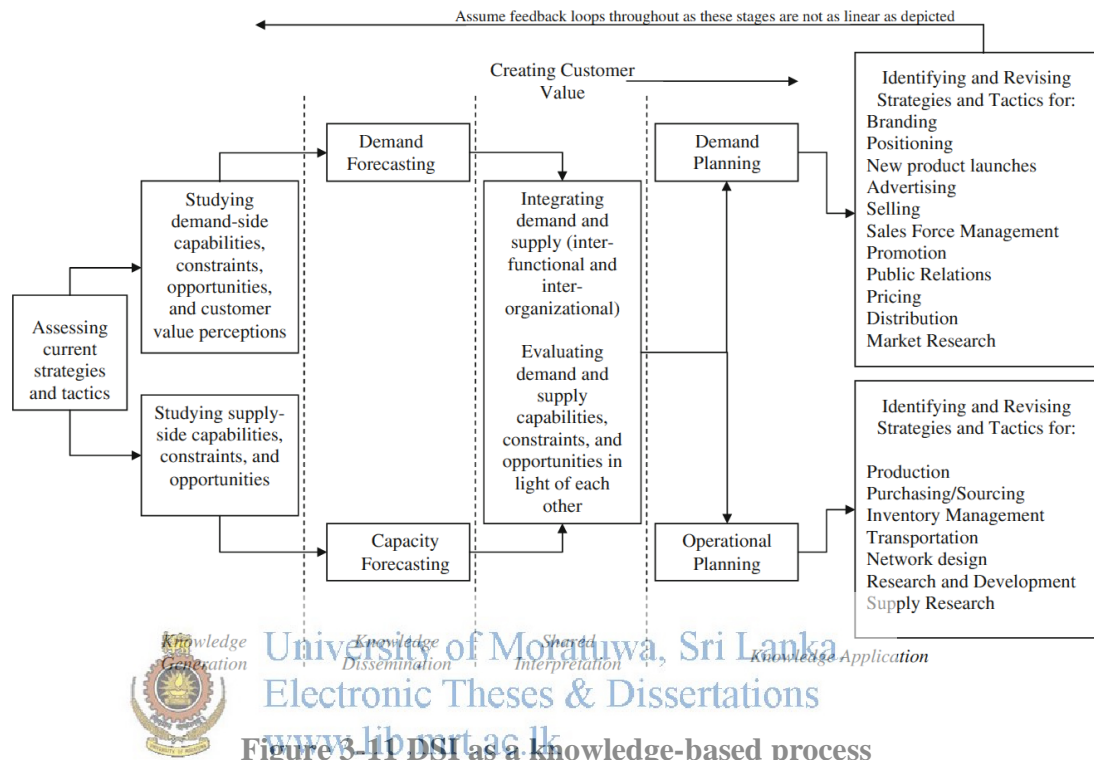


Figure 3-11 DSI as a knowledge-based process

Source: (Esper et al., 2009)

This framework further conceptualizes the processes related to the demand and supply integrative planning. According to the above framework, the related processes are considered as shared generation, dissemination, interpretation and application of real-time customer demand as well as on going supply capacity constraints.

Building on Jüttner et al. (2007) process fusion model, Esper et al.'s (2009) knowledge generation and dissemination is the awareness phase, shared interpretation is the evaluation phase and knowledge application is the decision making phase. Moreover, Jüttner et al.'s (2007) model has another phase which considers the feedback from the consumer and then develops revised service packages. This phase confirms the cyclical nature of all four phases. This fact is also

depicted by Esper et al.'s (2009) framework when they present a feedback loop and state that the stages are not linear.

The servitization literature stresses the need for network participants in demand and supply planning. Highlighting the need for super supply chains, Lusch (2011) and Lockett et al. (2011), emphasize that supply chains will act as value co-creation networks where the value is co-created with the customer and supplier. Based on this argument Tokman & Beitelspacher (2011) developed a conceptual framework to understand the concept of value co-creation networks that share knowledge (see Figure 3-12). They further mention that knowledge integration within the supply chain partners is an enabler in developing the appropriate supply chain configuration to create customer value.

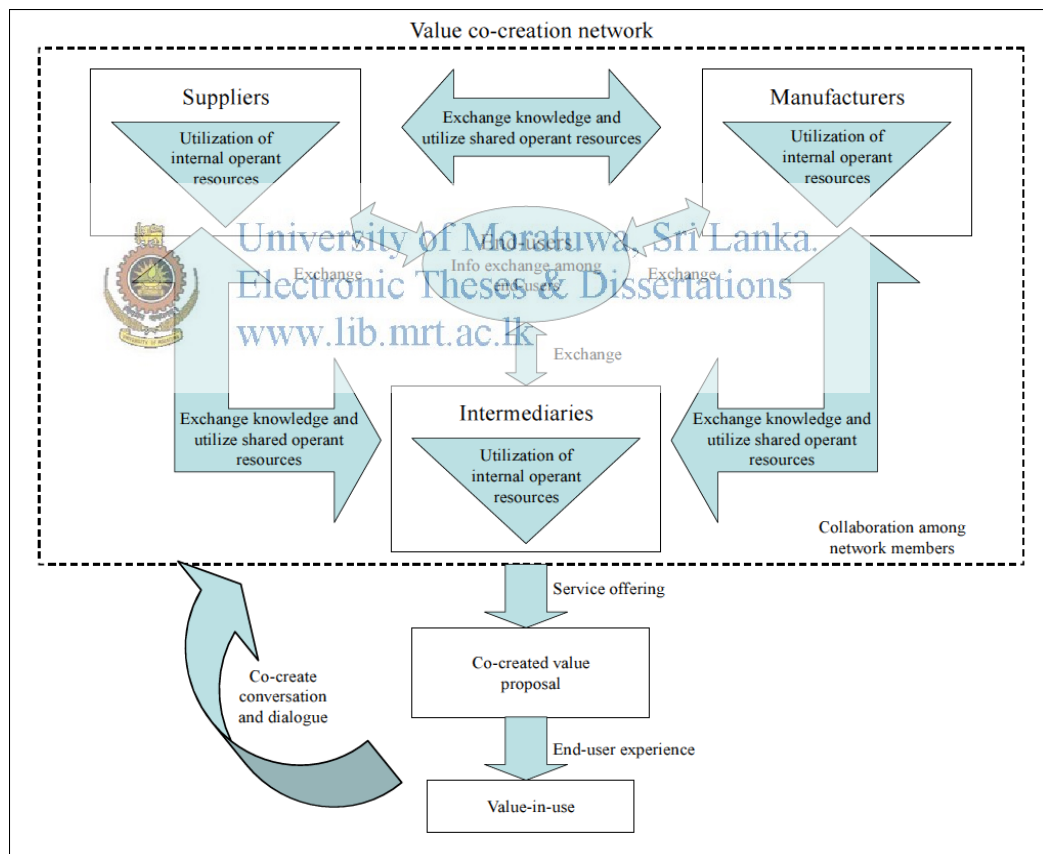


Figure 3-12 Value co creation networks

Source: (Tokman & Beitelspacher, 2011)

3.3.3 Capabilities for integrative planning

By combining all the above views it can be concluded that demand chain consisting of the activities related to demand and supply planning is considered to be integrative planning.

Table 3-5 presents a comparison of the activities related to integrative planning provided by the different authors. Accordingly, demand chain consists of the activities related to demand and supply related knowledge integration. Hence these activities represent the capabilities for demand and supply integrative planning.

These capabilities are knowledge generation and dissemination, shared interpretation and knowledge application processes. Knowledge generation includes sensing the consumer requirements, and sensing supply and demand side capabilities; knowledge interpretation includes shaping the opportunities and capabilities in the light of each other; whereas knowledge application includes the decisions of both the demand plan and supply plan based on the value proposition. As elaborated earlier, in section 3.3.1, marketing strategy determines the value proposition provided to the consumer, while supply chain strategy determines the supply related channel capabilities and demand related channel capabilities.

Acknowledging the fact that DSI enables reconfiguring the supply chain, capabilities for demand and supply integration are considered to be demand and supply knowledge integration capabilities that define the marketing strategy (Sales and marketing plan) and supply chain strategy (Supply plan). Accordingly, knowledge integration capabilities are comprised of knowledge generation and dissemination, knowledge interpretation and knowledge application.

Table 3-5 Conceptualization of demand and supply planning as knowledge integration processes

Source	Concept	Description of setting the direction for supply chain (value proposition)	Core Processes		
			Knowledge generation and dissemination	Knowledge interpretation	Knowledge application
Rainbird (2004a)	Demand chain	Understand current and future customer expectations, market characteristics	√	√	√
		Understand all the available response alternatives to meet the market requirements through deployment of operational processes			
		Implement the operational processes			
Godsell et al. (2006)	Demand strategy model	Set demand chain objectives	√	√	√
		Define market strategy that identifies a relevant basis for segmentation for both marketing and supply chain			
		Link market strategy to supply chain process strategy; supply chain strategy processes are aligned with customer value drivers			
		Process enablers facilitate implementation of the supply chain process			
Walters (2008)	Demand chain Management	Understand the market characteristics	√	√	√
		Align the organization around a common plan that exploits market opportunities by using the available/leased skills and resources			
		Implement the operational response processes			
Jüttner et al. (2007)	Demand chain model	Sensing information about the market through identifying market opportunities/Monitoring the supply network	√	√	√
		Evaluate the profitability of market opportunities against the forecasted sales figures/Propose service packages			
		Designing the value proposition			
		Designing supply chain responses			
Esper et al. (2009)	Demand supply integration	Generating market and supply related knowledge	√	√	√
		Knowledge dissemination			
		Shared interpretation			
		Knowledge application			

3.4 Conceptual framework for the study based on Chapters 2 and 3

In Chapter 2, the conceptual framework for the thesis was presented in Figure 2-9. According to this conceptual framework, Porter's (1985) value chain framework represents the capabilities to meet the market needs in a static environment. Emphasizing the fact that an extended supply chain framework represents Porter's value chain framework, Chapter 3 presents a supply chain framework to represent the supply related and demand related channel capabilities. Hence chapter 2 presented the conceptual framework for resource upgrade in Figure 2-9, while Chapter 3 presents the business model for the evolutionary environment in Figure 3-6 as demand chain and supply chain integration.

Chapter 2 concluded that learning capabilities enable the value chain reconfiguration with the evolving consumer needs. Chapter 3 highlights the need for integrative capabilities to enable the reconfiguration. Moreover Chapter 2 determines learning capabilities as sensing, shaping and seizing capabilities, while Chapter 3 determines integrative capabilities, namely, knowledge generation, knowledge interpretation and knowledge application processes.

Based on Chapter 2 and 3 a comparison of the enablers for upgrading the industry from one stage to the other is presented in Table 3-6.

Recalling the business model for the evolutionary environment, presented in Figure 3-6, and combining the business models in Chapters 2 and 3 for evolutionary environment, a conceptual framework for the proposed thesis is presented in Figure 3-13.

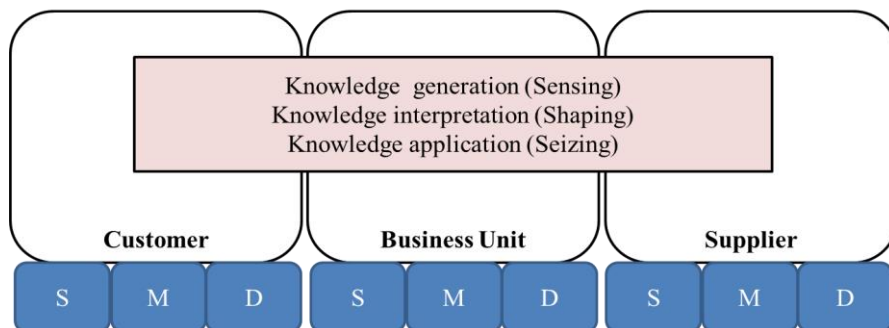


Figure 3-13 Conceptual framework for the thesis based on Chapters 2 and 3

Table 3-6 Learning capabilities vs. integrative capabilities

Learning capability (Based on Chapter 2)		Integrative capability (Based on Chapter 3)	
Capability	Description	Capability	Description
Sensing	Ability to utilize own (intra-firm network) and network capabilities (inter-firm network) to constantly identify, create, and anticipate Social, Technological, Economic, Environmental and Political trends.	Knowledge generation and dissemination	Recognizing market variables that may significantly impact on the effectiveness of current and future organizational operations and share the applicable market information and business intelligence throughout the organization and relevant stakeholders.
Shaping	Ability to utilize own (intra-firm network) and network (inter-firm network) capabilities to constantly devise plausible responses to the sensed trends through modifying existing, developing new and/or exploring new contexts for existing businesses.	Shared interpretation	Developing one or more commonly understood interpretations of market information and business intelligence for a unified, integrated response.
Seizing	Ability to utilize own (intra-firm network) and network (inter-firm network) capabilities to constantly prioritise and select shaped opportunities, and allocate resources (investment decisions) to capture opportunities developed.	Knowledge application	Institutionalizing new market information and business intelligence by altering management behaviours and processes to enhance market effectiveness.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

3.4.1 Operationalizing the integrative capabilities

Integrative capabilities can be further explained using the frameworks developed by Godsell in developing CRSCs. Godsell (2008) introduced the CRSC strategy that aligns demand creation (Marketing) and demand fulfilment (Supply chain) to provide customer value requirements. By combining the strategic alignment in supply chains (Gattorna, 1998) with the lean/agile school of thought (Christopher & Towill, 2000, 2001), Godsell's (2008) framework redefined the lean/agile focus on the product demand characteristics, to a CRSC strategy that focuses on customer value requirements. Accordingly, Godsell (2008) operationalized the customer value requirements using Order Winning (OW) and Order Qualifying (OQ) criteria and elaborated the point that the development of CRSCs needs integrative capabilities which integrate OW and OQ criteria – see Figure 3-14.

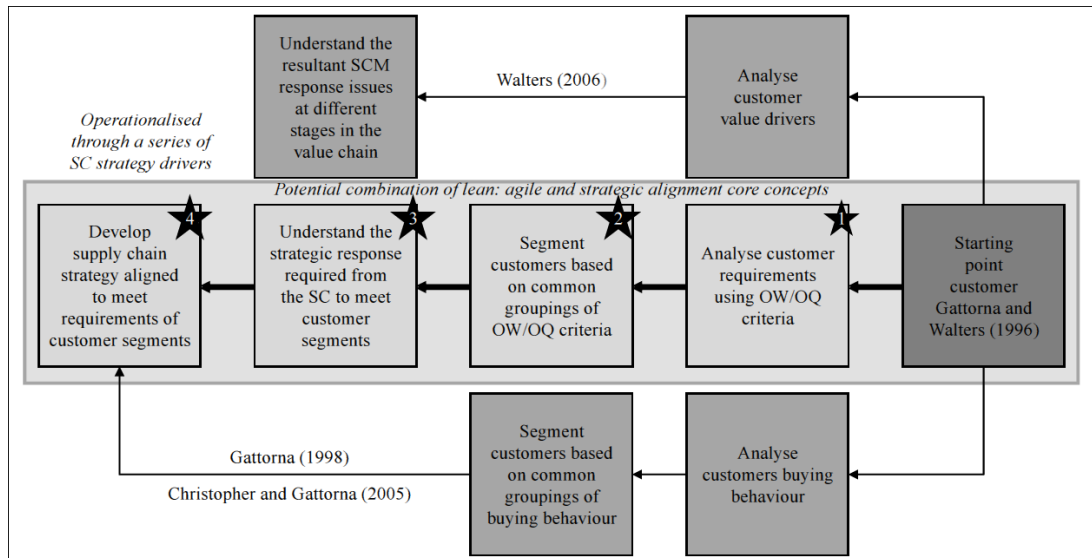


Figure 3-14 Operationalizing integrative capabilities using customer value criteria

Source: (Godsell, 2008)

Therefore, integrative capabilities can be further explained using OW and OQ criteria which operationalize the consumer needs – see Figure 3-15.

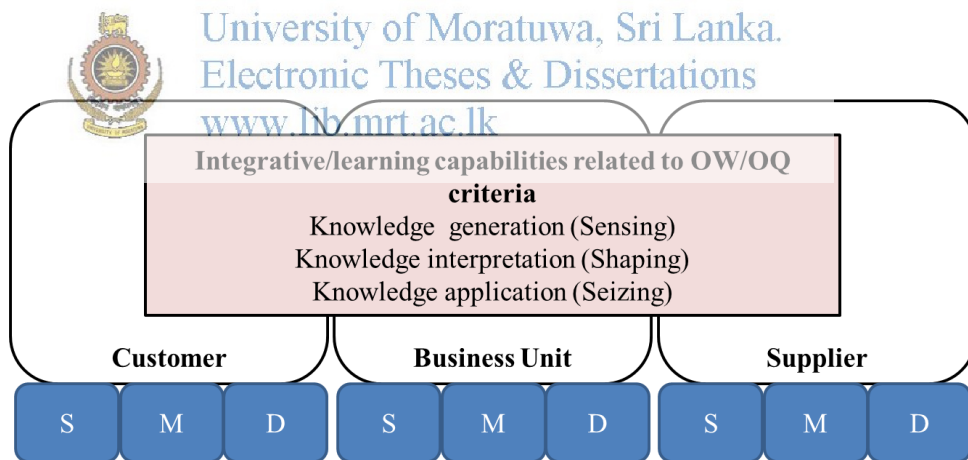


Figure 3-15 Integrative capabilities - Related to OW/OQ criteria

Further, in 2010, Godsell introduced a business alignment model that discusses designing an appropriate supply chain to deliver the customer value requirements (Godsell, Birtwistle, & van Hoek, 2010). She emphasized that business alignment can be achieved using the congruence between market, product and supply chain strategy – see Figure 3-16

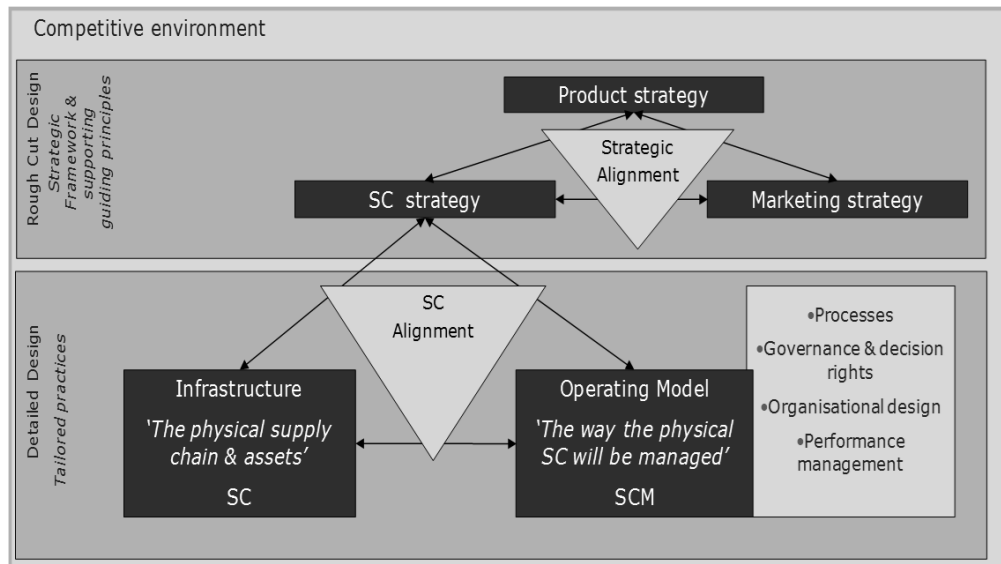


Figure 3-16 Business alignment model

Source: (Godsell et al., 2010)

Godsell et al. (2010, p2) says:

“Supply chain alignment is achieved when there is congruence between the supply chain strategy (the infrastructure of the physical supply chain and its assets) and the operating model (the way the physical supply chain will be managed).”



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

According to Godsell et al. (2010), SC infrastructure describes the physical supply chain assets and source, make and delivery processes and the operating model describes the integrative processes, organizational design, governance and decision rights, and performance management.

Moreover, Godsell et al. (2010) stresses that fact that supply chains can only be crafted and cannot be copied. Hence she states that the business alignment model she presents is only a rough cut design which shows the guiding rules in designing supply chains.

Godsell et al. (2010, p2) states:

“This could be considered as the “rough cut design” which depicts the strategic framework and set of “guiding principles” that provide the ground rules for the detailed supply chain design.”

Godsell et al.'s (2010) model echoes the view of Aken (1978), who presents the control and coordination structures for an industry. These structures represent the integrative capabilities for specific market requirements which are described through market winner and market qualifier criteria.

Aken (1978) introduced different types of modes which describe the coordination and control structures act as integrative structures, which enable the integrative capabilities. In line with Aken (1978) coordination structures, Godsell et al. (2010) propose governance and decision making structures, Performance measurement systems and performance measurement systems. Godsell et al., (2010) also mention the need of integrative processes.

Aken describes four coordination structures as shown in Table 3-7. He emphasizes that coordination structures may or may not have official power over the coordinated groups. He also explains the structures that have the official power over the coordinated groups as having stratified coordination, whereas the structures that do not have the official power have non-stratified coordination. Furthermore Aken divides the above two coordination structures according to their involvement in making decisions. The structures that are involved in direct decision making are called stratified direct/non stratified direct, while the structures that are not involved in direct decision making are known as stratified indirect/non stratified indirect structures.

Mode 1 structures are the line managers who are heading the specific unit that is under control. These are stratified direct coordination structures who have official power over coordinated groups and who are involved directly in decision making. Accordingly, mode 1 structures are the line managers in the supply related activities and demand related activities.

Table 3-7 Types of coordination structures

Mode	Description	Explanation	Core constructs			
			Official power	Unofficial power	Direct involve	Indirect involve
1	Stratified Direct coordination	Traditional mode of coordination through line management.	√		√	
2	Non stratified Direct coordination	Coordinators do not have official power over the coordinated groups, although they have a certain amount of expert power. They influence behaviour by providing additional information to decision makers by participating in the process of decision making.		√	√	
3	Stratified Indirect coordination	It uses regulations instructions standards to constrain the self-control before actual decision making takes place. It is not based on information on the current control of a situation. Instructions are issued by a coordinator who has the power to impose them.	√			√
4	Non stratified Indirect coordination	It tries to modify the self-control but in such a way that latter automatically chooses its interventions in the best interests of the organization as whole.		√		√



University of Moratuwa, Sri Lanka.
 Electronic Theses & Dissertations
 Source: (Aken, 1978)
www.lib.mrt.ac.lk

Mode 2 structures need to be available to influence the decision making on the demand and supply plan based on the OW criteria. Mode 2 structures deal with unstratified direct coordination which does not have official power over the coordinated groups, but has an expert power to influence the actual decision making. Therefore mode 2 structures include the structures that influence decision making, but do not have power over demand and supply related activities. Accordingly these structures involved in making decisions are related to OW criteria and act as influencers in decision making.

Mode 3 structures are stratified indirect coordination structures which have official power but are not directly involved in decision making. These structures use regulations, instructions and standards to constrain the self-control before actual decision making takes place. Mode 3 structures need to be available to integrate the OQ criteria that integrate the market qualifiers in the particular market.

Mode 4 structures are the KPIs that modify the self-control in the best interests of the organization as whole.

Accordingly, in Godsell's (2010) business alignment model, the processes will be the integrative/learning processes described as sensing, shaping and seizing processes. Governance and decision making Structures are the Mode 2 and mode 3 structures. Mode 2 structures are considered to be the influencers in actual decision making that integrate the OW criteria and mode 3 structures that consider standards and regulations through OQ criteria. Mode 4 structure will be the KPIs. Organization design includes leadership which is described under mode 1 structure by Aken (1978), the organization culture and the liaison devices.

Combined with Chapter 2, mode 2 structures that act as influencers in decision making can be explained experts in integrating the OW criteria, who have complementary knowledge in demand and supply functions. These can be further categorized as receptors, those acts as the people that sense the information regarding consumer needs and are expected to have knowledge related to the environment needs. Spanners are the people who shape opportunities and capabilities from the environment. These personnel are the structures who have complementary knowledge in different functions, i.e. demand related opportunities and supply related capabilities.

Combined with Chapter 2, organization design not only considers leadership but also the culture of the organization. Liaison devices are also needed to ensure that the supply processes are reconfigured.

Godsell's (2008) integrative capabilities related OW/OQ criteria, echoes the view of Aken (1978), who presents the control and coordination structures for an industry. These coordination structures represent the integrative capabilities for specific market requirements which are described through market winner and market qualifier criteria.

Aken (1978) introduced different types of modes which describe the coordination and control structures that align the integrative processes. Accordingly, as depicted

by Godsell (2008), Aken's (1978) different coordination modes also explain the integrative structures within the industry that develop the demand and supply plan, integrating them with the market requirements.

Therefore for the purpose of this thesis, the author considers integrative capabilities under integrative process dimensions as well as the structure (Coordination) dimension. Integrative processes are considered to be the processes aligning the OW/OQ criteria as depicted by and integrative structures are considered to be the coordination structures according to the Aken models.

Accordingly, in line with Godsell et al.'s (2010) business alignment model, the processes will be the integrative/learning processes described as sensing, shaping and seizing processes. Mode 1 structure is explained as the leadership of the organization, which comes under organization design. Mode 2 structure is considered to be the influencers in actual decision making that integrate the order winning criteria and mode 3 structures are considered as the standards and regulations which affect in prior decision making that integrates the order qualifying criteria. These coordination structure will be the governance and decision making structures in the (Godsell et al., 2010). Mode 4 structure will be the KPIs.



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Combined with Chapter 2, the mode 2 structures that act as influencers in decision making can be further explained as receptors, boundary spanning personnel. Receptors act as the people who sense the information regarding consumer needs and are expected to have knowledge related to the environment needs. Boundary spanning personnel are the people who shape opportunities and capabilities from the environment; these personnel are the structures who have complementary knowledge in different functions, i.e. demand related opportunities and supply related capabilities.

Combined with Chapter 2, organization design not only considers leadership but also the culture of the organization. Liaison devices are also needed to ensure that the supply processes are reconfigured. Accordingly, modified conceptual framework for the thesis can be presented as in Figure 3-17.

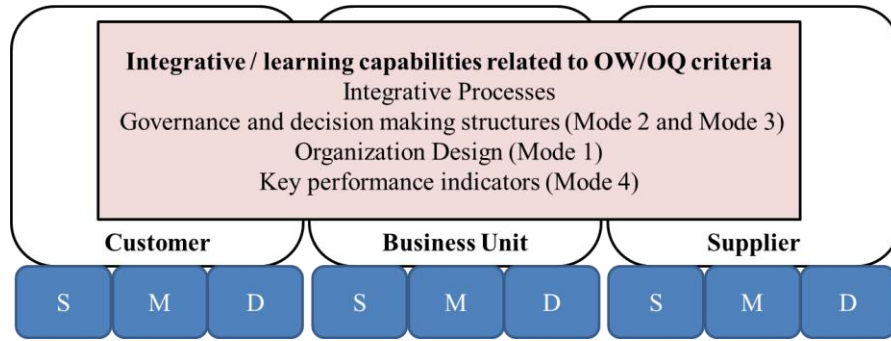


Figure 3-17 Modified Conceptual framework for the thesis based on chapter 2 and chapter 3

3.5 Extending the conceptual framework for different stages in the industry upgrade continuum for servitization

This section discusses the extended conceptual framework for the study. Section 3.5.1 describes the industry upgrade continuum of a labour-intensive manufacturing industry which represents the industry upgrade process as the servitization process. Sections 3.5.2 to 3.5.6 describe offerings provided by the manufacturer, competitive priorities of the manufacturer, collaboration intensity of the supply chain partners, level of demand and supply integration, and integrative capabilities for each stage of the industry upgrade continuum.

Based on all the above sections, the final section extends the conceptual framework for the study, representing the industry upgrade process along the industry upgrade continuum.

3.5.1 Evolution of the value chain activities along the industry upgrade continuum

Slywotzky (1996) mentions value innovation as being a prerequisite for any industry to upgrade within the evolution of the environment and stresses that when the environment changes, value migration occurs. According to him, value migration has three key phases where a company first starts to absorb value due to the proper alignment of its business model with customer needs. It is then in a stable position for a specific period of time until the customer needs have evolved. Finally, with the evolution of customer needs, value starts moving away from the traditional business

designs towards business designs that more effectively meet the customers' evolving needs, as given in Table 3-88. Therefore, according to Slywotzky, before the value outflows, the company should identify ways to renew its business design to meet the evolving needs of the customer. Clearly the industry needs to upgrade its positioning, according to the new, evolving needs of the environment.

Table 3-8 Phases of value migration and the need for value innovation

Phases of value migration	Description
Value inflow	Company starts to absorb value from other parts of the industry because its business design proves to be superior in satisfying customer priorities.
Stability	Business designs that are well matched to customer priorities. This phase can vary in length depending on the rate at which customer priorities change and are new. Expectations of a moderate future prevent new value from flowing to the company.
Value outflow	In the third phase value starts to move away from traditional organizational activities towards business designs that more effectively meet the evolving priorities of customers.

Source: (Slywotzky, 1996)

Fernandez-stark et al., (2011) introduced the industry upgrading process for low cost oriented, labour-intensive industries; They identify four stages in the industry upgrading process as moving from mere cut-and-make entities towards providing value adding activities. Accordingly, when the customer's needs evolve, the industry upgrades to meet those needs. Gereffi & Frederick (2010) identify a different positioning of the manufacturer within the global value chain. The manufacturer starts as an assembler who provides cut, make and trim (CMT) operations and will then move forward to becoming an Original Equipment Manufacturer (OEM) that does activities related to logistics, i.e. purchasing and distribution. The manufacturer then moves forward to become an Original Design Manufacturer (ODM) with increasing value adding activities and then towards being an Original Brand Manufacturer (OBM). Also, the manufacturer adds value through Research and Development (R&D) activities and adding after sales services – see Figure 3-18.

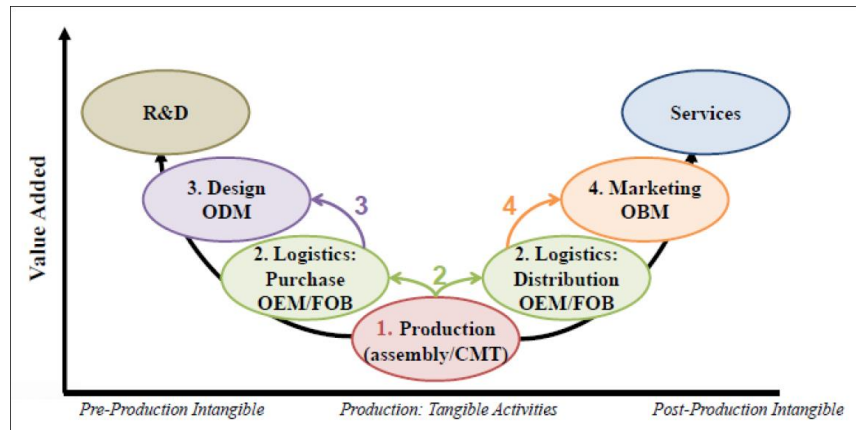


Figure 3-18 Expanding the value chain by adding value through intangible activities

Source: (Gereffi & Frederick, 2010)

In line with this thought, when discussing the global disaggregation of the value chain, Mudambi (2008) positioned three functional areas for a manufacturer: R&D (input), manufacturing (processing), and marketing (output). Here the processing function consists of inbound logistics, outbound logistics and manufacturing. The value-added potential of various functional areas differs and processing (manufacturing) is the least value-added, while the input and output ends of the chain are intensive in their application of knowledge and creativity and thus offer a higher potential of value-added.

Building on Mudambi's (2008) focus on low and high value-added activities, Slepniov, Wæhrens, & Johansen (2014) identified the customer centric servitization process as moving from product based to service based activities, focusing on high value activities such as R&D, marketing and customer service while offshoring/outsourcing manufacturing activities – see Figure 3-19. Acknowledging the same fact, Davies, Brady, & Hobday (2007) state that the servitization process of a manufacturer will make the firm move from manufacturing product to being a consultant firm that provides knowledge on new products and new markets.

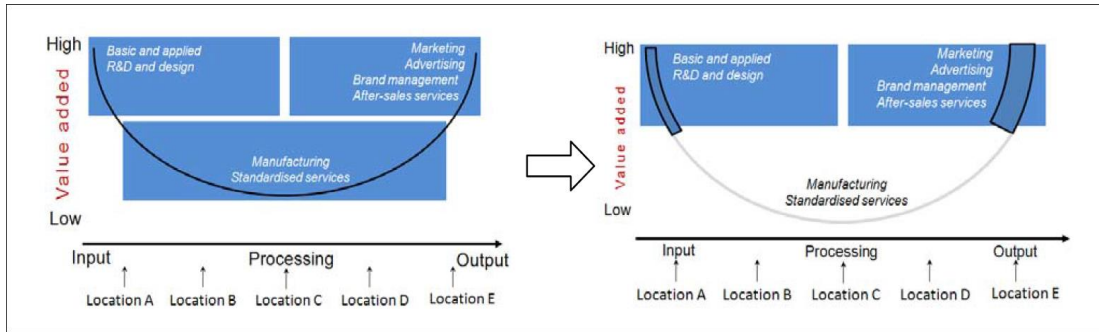


Figure 3-19 Manufacturer movement to service based activities

Source: (Slepniov et al., 2014)

Therefore it can be concluded that the low cost, labour intensive manufacturers upgrade their positioning to offer more advanced value propositions through acquiring different value chain activities in the input and output ends of the value chain. Accordingly, the manufacturer starts as an assembler of a cut-and-make product for a cost focused market, providing the cut-and-sew assembly operations. Secondly, the manufacturer becomes an ODM that offers product in terms of product design. Thirdly, the manufacturer becomes an innovative product provider acquiring the Research and Development (Basic) and further improves itself to provide high technology innovative products acquiring the Research and Development (Applied) activity.

Table 3-99 shows the different value chain activities acquired by the manufacturer, in the industry upgrading process.

Table 3-9 Evolution of a manufacturer's activities

Stage	Role of manufacturer	Value chain activities provided by the manufacturer
Stage 1	Assembly/OEM	Cost Focus assembly operations
Stage 2	ODM	Design and development
Stage 3	R&D (Basic)	Research and Development (Basic- Solutions for consumer problems)
Stage 4	R&D (Applied)	Research and Development (Applied- Advanced products for future needs)

3.5.2 Evolution of the offering along the industry upgrade continuum

Supply chain management literature that discusses the need of market driven supply chains, operationalizes the supply chain offering using different classification systems (Childerhouse, Aitken, & Towill, 2002; Christopher & Towill, 2002). However, most of the classification approaches link to product demand not to the market requirements that are linked to the customer value criteria (Godsell, 2008).

Christopher & Towill (2002) proposed 3 dimensional criteria to define SC offering. Thereby different supply chain offerings are identified based on Products (standard or special), Demand (either stable or volatile), Lead Times (either short or long). Even though the variables are linked to specific market winner criteria that define the customer value, the focus is on demand characteristics.

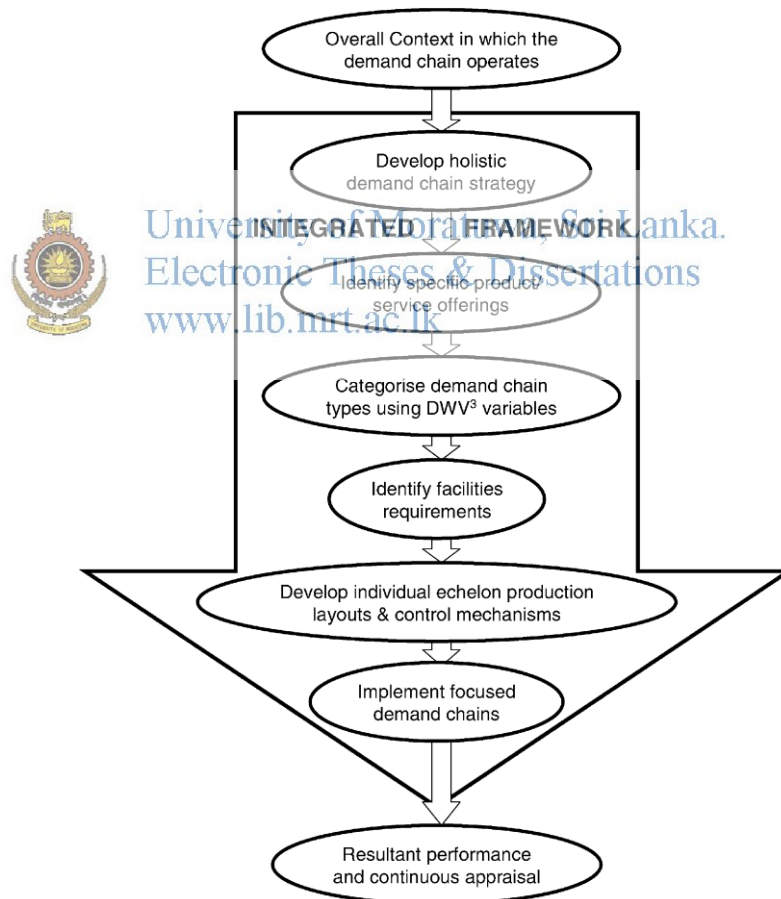


Figure 3-20 Integrated framework for the development of focused supply chains

Source: (Childerhouse et al., 2002)

Childerhouse et al.'s (2002) classification system has five staged processes where they identify the product service offerings to meet the market requirements, which are described using DWV³ classification variables – see Figure 3-20.

Although the five stages presented in Figure 3-20 state that DWV³ aligns with the market requirements, these classification variables mainly explain the demand characteristics of the offering, not the customer value requirements, as shown in Table 3-100.

Table 3-10 Description of DWV3 criteria that determine offering

Variable	Reason- Market requirements
Duration and the stage of life cycle	<p>Short life cycles require rapid time to market</p> <p>Short life cycles require short end-to-end pipelines to enable demand to be continuously replenished during the life cycle</p> <p>Short life cycles require a demand chain to be able to 'fast track' product development, manufacturing and logistics to exploit ever decreasing windows of opportunity</p> <p>Replenishment lead times need to be matched to stage of the product life cycle, so as to reduce lost sales and obsolescence risks</p>
Time window for delivery	<p>Rapid response is required to replenish fashion goods that are selling well at a particular point in time</p> <p>Competitive pressures are continually reducing acceptable response times, with many demand chains competing on the basis of very short windows for the delivery of customised products</p>
Volume	<p>Products aimed at high volume mass markets allow for the lean-type of production and make-to-forecast strategies to take advantage of economies of scale</p> <p>Lower volume markets benefit from flexibility both in production and the entire demand chain</p>
Variety	<p>Product variety is constantly increasing in the marketplace as demand chains attempt to compete on the basis of added value in relation to colour, form and function.</p> <p>Postponement strategies will be a main option for the supply chain</p> <p>Greater variety results in a larger number of stock keeping units because the volume is split between alternatives</p> <p>Continuous appraisal of the proportional breakdown between variants must be conducted during the product life cycle because those variants, popular at the introductory stage, may be less popular in the decline stage</p>
Variability	<p>Variability relates to spikiness of demand and unpredictability. Spikiness drastically affects capacity utilization and resultant production techniques</p> <p>Unpredictability increases the risk of obsolescence and lost sales and can be addressed via information enrichment, consultative forecasting and lead time reduction</p>

Source: (Childerhouse et al., 2002)

Accordingly, this classification approach is not suitable to understand the offering for the purpose of this thesis.

Compared with Childerhouse et al. (2002), Godsell (2008) defined a more appropriate terminology for the supply chain offering. This classification not only considers the product demand characteristics but also the customer value requirements – See Figure 3-21.

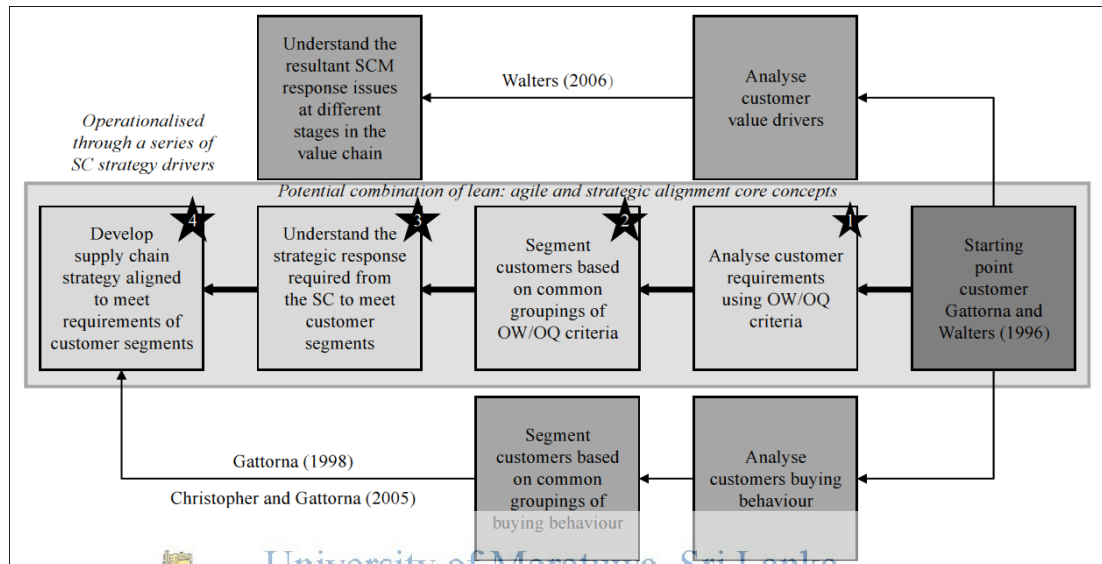


Figure 3-21 Operationalizing the supply chain offering using customer value criteria

Source: (Godsell, 2008)

In this classification, Godsell (2008) operationalized the supply chain offering by using three main variables: demand type, product type and service type. The author links these variables to customer value criteria instead of the product demand characteristics. Building on these three criteria, Jüttner et al. (2010) further explain these variables as product-related criteria, customer service-related criteria and demand-related criteria as shown in Table 3-111.

Table 3-11 Description of supply chain offerings

Variable	Description
Product related criteria	Standard or special product
	Duration of lifecycle/ Phase within the life cycle
Customer service related criteria	Lead time
	Delivery reliability
	Delivery flexibility
Demand related criteria	Volume
	Variety
	Variability

Source: Godsell (2008) modified by (Jüttner et al., 2010)

These different approaches in determining the supply chain offering are listed in Table 3-122.

Table 3-12 Classification of approaches in determining the supply chain offering

Source	Contribution	Dimensions of SC offering	Contribution in terms of SC offering
Christopher & Towill (2002)	Three-dimensional classifications that operationalize the supply chain offering	Different supply chains are designed based on the following: Products (standard or special) Demand (Stable or volatile) Lead Time (short or long)	The variables are linked to specific market-winner criteria that define the customer value. However, the focus is on demand characteristics.
Based on Christopher and Towill (2000) Childerhouse, Aitken and Towill (2002)	Apply DWV3 criteria describe the supply chain offering	Duration of life cycle Time window for delivery Volume, variety and variability	The variables are linked to 'specific market winner criteria' which describe the customer value criteria. The criteria does not prove product configuration.
Godsell (2008)	CRSC strategy	Product Demand Service	The variables are linked to 'specific market winner criteria' which describe the customer value criteria.

For the purpose of this thesis, the offerings for the different stages in the industry upgrade process will be determined using the variables presented in Table 3-11.

Considering the evolution of the manufacturer in the industry upgrade continuum discussed in section 3.5.1, author of this research identifies the characteristics of the offering for each stage.

When the manufacturer is a cut-and-make assembler, the offering can be explained as core, basic product categories with high volume, low variety, and low variability in demand with the service level, provided it is low in terms of delivery frequency and lead time. Product life cycle (PLC) is high. (Christopher & Towill, 2001).

When the manufacturer becomes an ODM, the offering will be the Basic products with high variety due to the seasonal trends. Also these products may have medium to high variability. Christopher & Towill (2001) highlight the need for continuous replenishment supply chains to meet this kind of market requirement. According to them, even though the volume of these products are high, due to the high variability, base demand can be met through classic lean procedures to achieve economies of scale while a surge demand is provided for through more flexible, and probably higher cost, processes. When considering the lead time, lead time for base demand quantities are long when compared to the surge demand quantities.

“...arrangements can be made for dealing with both “base” and “surge” demands either by separation in space (via separate production lines) or in time (by using slack periods to produce base stock).”

(Christopher & Towill, 2001, p9)

When the industry upgrades to a stage where the manufacturer provides basic R&D, the offering will be value-added innovative products. These products will be special products offered in the season to align with consumers’ special needs. Hence the demand characteristics will become low volume, low variety and high variability. Since these are ‘in season’ products, the service level expected is short in terms of time window for delivery. Therefore the lead time becomes short. Duration of the PLC is not known.

When the offering becomes R&D in terms of new technology, the offering is a special product where the demand variability is high and very unpredictable. Volume

and variety are low. New products will first be market tested in order to understand the sales or consumer acceptance. Childerhouse et al. (2002) state that the duration of the PLC is not known. The service level expected is short in terms of time window for delivery.

Table 3-133 provides the evolution of the offering of the respective value chain configuration with the evolving market environment.

Table 3-13 Evolution of the offering

Offering		Stage 1	Stage2	Stage3	Stage 4
Product related criteria	Standard/ Special	Standard	Standard	Special	Special
	PLC	Long	Long	Short	Short
	Phase in PLC	Maturity	Maturity	Introduction	Introduction
Demand related criteria	Volume	High	High	Low	Low
	Variety	Low	High	Low	Low
	Variability	Low	High	High	High
Service related criteria	Lead time	Long	L-Base demand S-Surge demand	Short	Short
	Delivery reliability	High	High	High	High
	Delivery frequency	Low	High	High/Low	High/Low

3.5.3 Evolution of the competitive priorities

Slywotzky (1996, p15) highlighted the need to understand the competitive priorities of a particular market, stating:

“Needs analysis determines what products customers need and priority analysis determines what business design creates the greatest utility to customer and profits to shareholder.”

This echoes the views of (Hill & Hill, 2000) when the author identifies the need for competitive priorities in developing the required manufacturing strategy (p36).

“The key to developing an effective operations strategy lies in understanding how to create or add value for customers. Specifically, value is added through the competitive priority or priorities that are selected to support a given strategy.”

Based on this argument, Hill & Hill (2000) proposed OW criteria and OQ criteria to operationalize the competitive priorities in a particular market. The former explains the variables that win the order, while the latter explains the variables that need to be available to qualify the order for a particular market.

Initially, Hill (1985) as cited in Godsell (2008) identified four basic competitive priorities: cost, quality, delivery/lead time, and flexibility. In 2000, with the evolution of the environment, Hill extended the factors in competitive priorities to include service and environmental friendliness, as given in Figure 3-22.

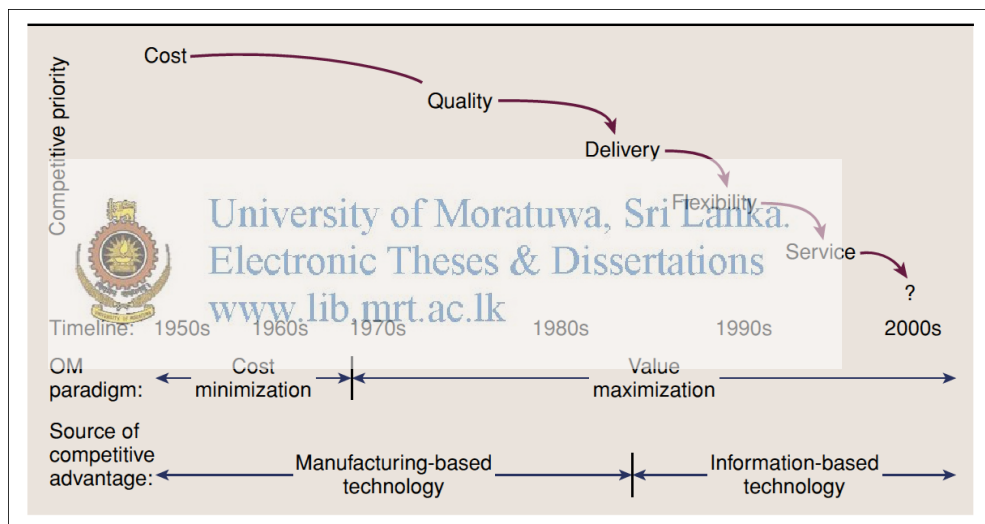


Figure 3-22 Evolution of competitive priorities

Source: (Hill, 2000)

Hill (2000) contends that with the evolution of the consumer needs, competitive priorities will further evolve and there will be new additions for competitive priorities in the future.

Similarly to Hill’s (1985, 2000) notion of competitive priorities, Slack (2005) also proposed competitive priorities. These two authors explain the competitive priorities as follows. When the product is a commodity which is not differentiated, the key

variable to win the order becomes cost. Hill distinguishes quality as product quality – which determines the quality of the product design, and process quality – which determines the ability to provide error free products. Moreover Hill distinguishes between speed and reliability, i.e. speed determines the speed of delivery, delivery determines the reliability of delivery. Furthermore Hill proposes flexibility to consider the ability to offer the customer a variety of products by having a fast change over to produce a new line of products. Recently, Hill introduced a new variable that determines the competitive priorities as environmentally friendly processes and products as shown in

Table 3-144.

Table 3-14 Competitive priorities

Factor	Description
Cost	Products sold strictly on the basis of cost are typically commodity-like, i.e. customers cannot easily distinguish the products made by one firm from those of another. As a result, customers use cost as the primary determinant in making a purchase.
Quality	Product quality – the level of quality in a product’s design
	Process quality – process quality is to produce error-free products
Speed	Speed of delivery
Delivery reliability	Reliability of delivery - minimum variance in delivery times
Flexibility	Ability to offer its customers a wide variety of products
	How fast a company can change its production facilities to produce a new line of products -fast change over
Environmentally friendly processes and products	Appropriate management policies towards waste management, recycling, and reuse of products, are maintained

Source: Based on (Hill, 2000 and Slack, 2005)

Supply chain proponents who argued that supply chains compete, not companies, have extended manufacturing strategy to supply chain strategy. Hence the OW and

OQ criteria that explain the competitive priorities in a particular market were considered in determining the appropriate supply chain strategy to deliver the customer value requirements.

(Christopher & Towill, 2001, p237) say:

“We can borrow from these important ideas to develop a wider supply chain oriented concept of “market qualifiers” (MQ) and “market winners” (MW). The notion here is that to be truly competitive requires not just the appropriate manufacturing strategy, but rather an appropriate holistic supply chain strategy...”

Accordingly, the supply chain management literature links with competitive priorities to determine the appropriate supply chain configuration that aligns with a particular market. Thereby supply chain configuration was designed with a market backward instead of a supply outward approach. Hence the competitive priorities of a particular environment that determine the appropriate supply chain configuration can be explained by linking the offering provided by the manufacturer along the industry upgrade continuum discussed in section 3.5.2.

Accordingly, when the manufacturer provides standard product with stable demand, competitive priority becomes low cost. When the manufacturer upgrades to a position in a high value-added market providing a basic product with high variety and variability in demand, competitive priority becomes product design in terms of product variety. Möller & Rajala's (2007) framework defines this as flexibility driven, as opposed to efficiency driven, value networks. When manufacturers further reposition in high value-added product/market segments offering special products, the competitive priority becomes the product leadership, while when the manufacturers reposition themselves in terms of providing R&D (applied), the competitive priority becomes technology leadership (Möller & Rajala, 2007). Table 3-15 shows the evolution of the competitive priorities of the manufacturer.

Table 3-15 Evolution of the competitive priorities of the manufacturer

Competitive priorities		Stage 1	Stage2	Stage3	Stage 4
OW/OQ Criteria	Cost	OW			
	Availability		OW		
	Product leadership			OW	
	Technology leadership				OW
	Quality				
	Timely delivery				
	Environmental standards				

3.5.4 Collaboration intensity between supply network partners

Cooper, Ellram, Gardner, & Hanks (1997) discuss the different approaches of collaborating in the supply chain. The first is the dyadic approach, where many organizations will focus in their early attempts on the channel members with whom they have immediate contact and have a transactional approach in collaboration. The second approach is known as triad, where the supply chain uses a channel integrator. This channel leader plays the key role in setting the overall strategy for the supply network, and gets the all network members involved in and committed to the strategy. The third approach uses a fourth party logistics (4PL) entity as a centralized ‘optimization tool’ to coordinate and control the supply network. The fourth approach, vertical integration, adopts ownership of other network members and therefore is not considered as collaboration.

Bititci, Martinez, Albores, & Parung (2004) defined three different stages of maturity for collaborative enterprises as ad hoc collaboration, which refers exclusively to the traditional customer-supplier relationship. Defined and linked collaboration, which focuses on operational issues and is limited to collaborative planning, forecasting and replenishment of materials and capacities. Integrated and extended collaboration at a strategic level where there are integrated and coordinated strategies in enterprises. Bititci et al. (2004) named this kind of group of individual organizations that are brought together under a joint strategic purpose as an ‘extended/virtual enterprise’, where extensive collaboration is achieved based on strategic partnerships, common

goals and values. In line with this thought, VICS (2004) identifies two types of collaboration among buyers and suppliers which are described as collaboration for managing transactions for efficiency to managing transactions for creativity, and continuous improvement in the form of collaborative assortment planning with retailers. The first type of collaboration is defined as collaborative planning and forecasting replenishment (CPFR), which engages the manufacturer and retailer in exchanging marketplace information in order to develop a customer specific plan that can substantially reduce inventory. At the heart of the CPFR process is the aspiration to cover the gaps left by previous business practices such as vendor managed inventory and continuous replenishment. The second type of collaboration is about joint product and joint strategic development and agenda setting, which require high levels of collaboration between customer and supplier.

Kampstra, Ashayeri, & Gattorna (2006) provide a better discussion on the collaboration levels. The initial level of collaboration is considered as 'Communication' assuming there is no collaboration at first. The goal of this level is to improve productivity allowing the collaboration members to enhance decision-making and may result in improved delivery rates, fewer inventories, etc. Second level of collaboration is 'Coordination', which focuses on the coordination of intra and inter-network partners. Third level of collaboration is 'Intensive collaboration', which implies increased involvement of the collaboration members to improve the strategic management decision-making and enhance innovation in the chain. The high level of collaboration creates a more open dialogue environment, both within and amongst collaboration entities. Fourth level of collaboration is 'Partnerships', which involves extended financial linkages, such as sharing of investments and profits.

Based on the above discussion about the collaboration intensity between customers and suppliers to provide different offerings, it is evident that different levels of offerings need different levels of collaboration between external partners.

In stage 1, since the offering focuses on basic products with fixed volumes, integration between supply partners is minimal.

In stage 2, since the offering considers the product variety with the variability in demand, both defined and linked collaboration between the partners are needed in decision making on the demand and supply plan to meet the fluctuations in demand Bititci et al. (2004). Kampstra et al. (2006) consider this level of collaboration as coordination. Therefore it can be concluded that stage 2 needs external coordination between demand and supply.

In stage 3, since the offering is focused on incremental improvements in the product and to offer new products that act as solutions for consumer problems, Intensive collaboration between the customer and supplier is needed to make sure that the new products fit within the supply capabilities.

In stage 4, since the offering is focused on radical changes in the products, i.e. to offer advanced products, extensive external collaboration between supply partners will be needed – see Table 3-166.

Table 3-16 Evolution of collaboration intensity

Collaboration intensity		Stage 1	Stage 2	Stage 3	Stage 4
Collaboration intensity	Customer	Transactional	External Coordination	Extensive collaboration	Extensive collaboration
	Supplier	Transactional	External Coordination	Extensive collaboration	Extensive collaboration

3.5.5 Level of demand and supply integration

According to the discussion in section 3.4, the level of DSI extends from internal integration between the marketing and supply chain functions to external integration, i.e. to include the network partners. Kampstra et al. (2006) mention that Effective collaboration within each function as cross-functional integration (Internal integration) and between network members as external integration.

Based on the above discussion it is evident that different levels of offerings will need different levels of demand and supply integration according to the decisions made on the offerings.

In order to understand the level of demand supply integration for each offering, the author of this thesis considers the supply chain management literature that discusses

the different supply chain configurations. Furthermore, the level of integration will be further explained based on collaboration intensity, as discussed in section 3.5.4.

When the supply chain offering is a basic product at low cost, the supply chain is efficiency focused and the supply chain operations' processes need to be integrated to provide the requirements. Therefore the activities related to the physical transformation of the basic product need to be integrated.

When the offering is the availability of products, demand and supply processes need to be integrated internally as well as externally to include the network partners, to decide on the value proposition which describes the product variety. Demand and supply operational processes need to be integrated internally as well as externally to provide the offering.

When the offering becomes a service level through the availability of the special innovative products that act as solutions for consumers' problem, then demand and supply processes need to be integrated internally as well as externally to include the network partners, to decide on the value proposition which describes the new product.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

When the offering becomes a high technology innovative product that acts as a solution for customers' future needs, the value proposition is decided by integrating the demand and supply processes including customers and suppliers.

Level of DSI for different types of offerings are detailed in Table 3-177.

3.5.6 Evolution of integrative capabilities

Integrative capabilities are operationalized as sensing (Knowledge generation), shaping (Knowledge interpretation) and seizing (Knowledge application) processes and organization structures which integrate the OW and OQ criteria of the new market. In section 3.4.1, integrative capabilities were described as the learning processes, governance and decision making structures, Organization design and KPIs.

Accordingly, integrative capabilities for each stage of the industry upgrade continuum can be explained using the competitive priorities that describe each market requirement in terms of OW and OQ in section 3.5.3.

Table 3-17 Level of demand and supply integration

Demand supply integration			Stage 1	Stage 2	Stage 3	Stage 4
Type of integration	Supply chain Integration	Internal	High	High	High	High
		Customer	High	High	High	High
		Supplier	High	High	High	High
	Demand chain and supply chain integration	Internal	Low	High	High	High
		Customer	Low	High	High	High
		Supplier	Low	High	High	High

3.5.6.1 Process dimension

3.5.6.1.1 Sensing process

In the first stage, manufacturers should have the market related, knowledge generation capabilities to understand the cost criteria.

In the second stage, market related, knowledge generation capabilities in terms of identifying the required product variety will be needed.

In the third stage, market related, knowledge generation capabilities include the consumers' explicit needs in terms of new product needs. This also includes tapping into suppliers' new product processes to understand the available new products.

In the fourth stage, market sensing capabilities include network visioning capabilities by identifying the latest trends in the market with the evolution of new technologies. These will not only be related to the particular industry trends but will also include the information on other related industries.

3.5.6.1.2 Shaping and seizing processes

Shaping processes consider the shaping of supply capabilities to meet the opportunities as well as the shaping of opportunities to develop the offering based on the available capabilities.

In the first stage, cost is the order winning criteria. Since the offering is a basic product, shaping of the opportunity is not available. However capabilities are shaped to meet the lowest cost through incremental learning.

In the second stage, shaping processes are required to shape the supply capabilities to make sure that the proposed product variety can be manufactured within the internal as well as external manufacturing capabilities. Shaping capabilities shape the opportunities to meet the supply capabilities.

In the third stage, the shaping processes are required to shape the supply capabilities to make sure that the new product becomes a solution for consumer needs and can be manufactured within the internal as well as external manufacturing capabilities. Shaping capabilities also need to shape the opportunities to meet the supply capabilities.

In the last stage, the shaping processes are required to shape the supply capabilities to make sure that the new product meets new technology trend that satisfy consumer's future needs and can be manufactured within the internal as well as external manufacturing capabilities. Shaping capabilities also need to shape the opportunities to meet the supply capabilities.

The process dimensions of integrative capabilities, which were identified as sensing, shaping and seizing processes, are presented in Table 3-18.

3.5.6.2 Governance and decision making structures

In the first stage, since the order winner is cost, mode 2 structures need to be available to align the cost factor. These structures act as influencers in decision making and are involved in the shaping and seizing processes. Mode 3 structures need to be available to evaluate the standards and procedures to meet the order qualifying criteria, before making the actual decisions.

In the second stage, since the order winner is product variety, mode 2 structures are needed to align the market winner in terms of product variety. Mode 2 structures need to be available to influence the decision making about product variety. These include receptors who sense the new requirements of the consumer in terms of

consumer problems with available products and boundary spanning personnel who shape the opportunities and capabilities. Mode 3 structures are needed to make sure that the standards and procedures are met to align the market qualifier criteria.

In the third stage, since the order winner is a new product to meet customer needs, mode 2 structures need to be available to meet the order winning criteria, in terms of new products being solutions to the market needs. Mode 2 structures need to be available to influence decision making. Accordingly, there should be structures to receive the information that act as receptors, as well as the boundary spanning personnel, in shaping opportunities and capabilities. Mode 3 structures should be available to make sure the order qualifying criteria are met.

In the last stage, the environment becomes further dynamic with the requirements for innovative product development using new technologies. Integrative structures to link market winners need to be available to align the new technology requirements. Accordingly, there should be structures to receive the information that act as receptors, as well as the boundary spanning personnel, in shaping opportunities and capabilities. Mode 3 structures should be available to make sure the order qualifying criteria are met. Governance and decision making structure is given in Table 3-19.



Table 3-18 Integrative capabilities - Process dimension

Integrative capabilities		Stage 1	Stage 2	Stage 3	Stage 4
Integrative Processes	Cost	Sense price Shape capabilities Seize supply plan	OW2	OW2	OW2
	Availability		Sense product variety needs Shape opportunities and capabilities Seize demand plan and supply plan		
	Product leadership			Sense existing consumer needs for new products. Shape opportunities and capabilities Seize demand plan and supply plan	
	Technology leadership				Sense future consumer needs for new technologies Shape opportunities and capabilities Seize demand plan and supply plan
	Quality				
	Timely delivery				
	Compliance				



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Table 3-19 Integrative capabilities - Governance and decision making structures

Integrative capabilities		Stage 1	Stage 2	Stage 3	Stage 4
Governance and decision making structures	Cost	Boundary spanners			
	Availability		Receptor Boundary spanners		
	Product leadership			Receptor Boundary spanners	
	Technology leadership				Receptor Boundary spanners
	Quality				
	Timely delivery				
	Compliance				

3.5.6.3 Organization design

In the first stage, since the OW is cost, the line manager of the organization should be a person who is focusing on efficiency. However, since there are order qualifiers, the leader should also focus on the order qualifiers. Further, the culture of the organization should be focused not only on efficiency but also on OQs. Liaison devices need to be available to ensure that cost and OQs are met in the supply process.

In stage 2, since the order winner is product variety in terms of latest designs, the line manager of the organization should be a person who focuses on product design at low cost. However, since there are OQ, the leader should also focus on the order qualifiers. Further, the culture of the organization should be focused not only on product design but also on OQs. Liaison devices need to be available to ensure that OWs/OQs are met in the supply process.

In stage 3, since the OW is new product in terms of solutions to consumer problems, the line manager of the organization should be a person who focuses on product

innovation at low cost. However, since there are OQ, the leader should also focus on the OQ. Further, the culture of the organization should be focused not only on product innovation but also on OQs. Liaison devices need to be available to ensure that OWs/OQs are met in the supply process.

In stage 4, since the OW is new product in terms of new technology, the line manager of the organization should be a person who focuses on product innovation at low cost. However, since there are OQ, the leader should also focus on the order qualifiers also. Liaison devices need to be available to ensure that OWs/OQs are met in the supply process.

The integrative capabilities organization design is presented in Table 3-20.

Table 3-20 Integrative capabilities - Organization design

Integrative capabilities		Stage 1	Stage 2	Stage 3	Stage 4
Leadership and culture	Cost	OW			
	Availability		OW		
	Product leadership			OW	
	Technology leadership				OW
	Quality				
	Timely delivery				
	Compliance				
Liaison devices	Cost	OW			
	Availability		OW		
	Product leadership			OW	
	Technology leadership				OW
	Quality				
	Timely delivery				
	Compliance				

3.5.6.4 Key performance indicators

The KPIs need to be align with the OW and OQ criteria.

In the first stage, since the OW is cost, KPIs should focus on efficiency. However since there are OQs, KPIs should consider OQs.

In the second stage since the OW is product variety, KPIs should focus on the ability to develop variety. However, since there are OQs, KPIs should consider OQs.

In the third stage since the OW is new product innovation, KPIs should focus on the ability to offer new products. However, since there are OQs, KPI should consider OQs.

In the final stage since the OW is new product innovation, KPIs should focus on the ability to offer new technology products. However, since there are OQs, KPIs should consider OQs. The integrative capabilities in terms of KPIs are presented in Table 3-211.



 University of Moratuwa, Sri Lanka
 Electronic Theses & Dissertations
 www.lib.mrt.ac.lk

Table 3-211 Integrative capabilities - KPIs

Integrative capabilities		Stage 1	Stage 2	Stage 3	Stage 4
KPI	Cost	OW			
	Availability		OW		
	Product leadership			OW	
	Technology leadership				OW
	Quality				
	Timely delivery				
	Compliance				

Based on the section 3.5, Figure 3-23 presents the extended conceptual framework for the thesis that provides the link between offering, competitive priorities, collaboration intensity and integrative capabilities for each stage.

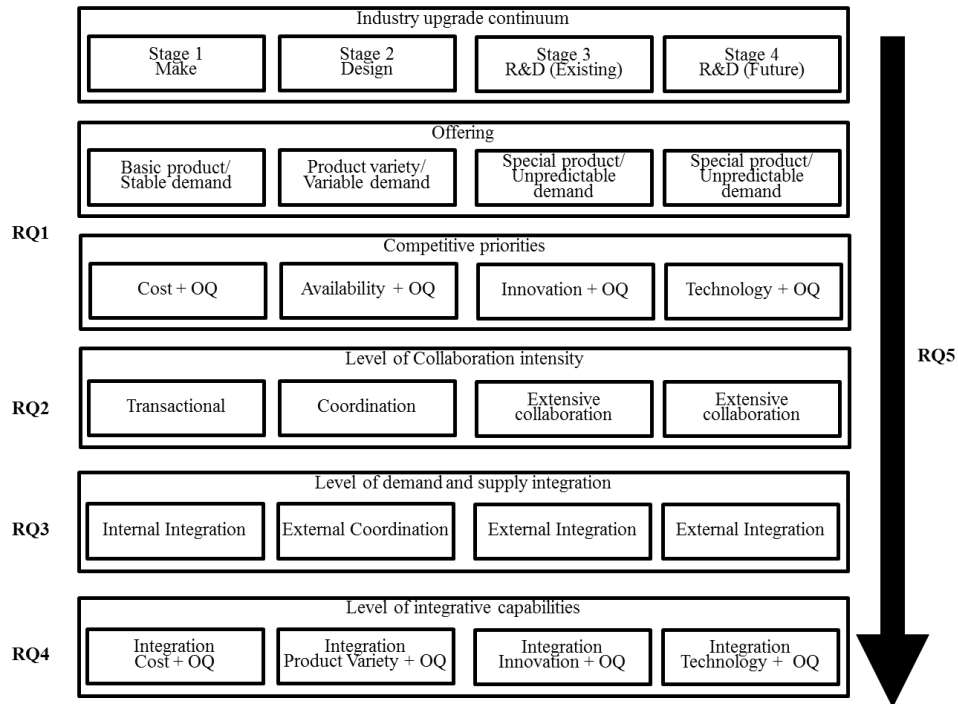


Figure 3-23 Extended conceptual framework for the thesis



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations

The above conceptual framework supports the five research questions as follows:

RQ1: What are the different types of offering provided by the manufacturer and what competitive priorities do they need?

RQ2: What level of collaboration intensity between network partners is required to deliver the different types of offering?

RQ3: What level of demand-supply integration is required to deliver the different types of offering?

RQ4: What types of integrative capabilities are required to deliver the different types of offering?

RQ 5: What are the linkages between the offerings, competitive priorities, collaboration intensity and integrative capabilities?



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

3.6 Summary of the chapter

This chapter first introduced the value chain as a framework to represent the business model. Then it developed the conceptual framework for the thesis based on the supply chain management literature. By combining this conceptual framework with the conceptual framework developed in Chapter 2 based on underpinning theory, the conceptual framework for the whole thesis was developed. This framework was then further extended to represent the different levels of integrative capabilities that enable the business upgrade for each stage.

According to the conceptual framework, four key research questions were identified to explore the empirical data. The first four research questions identify the offerings and competitive priorities, collaboration intensity among the network partners, level of demand and supply integration, and integrative capabilities. Research question 5 understands the linkages between offerings, competitive priorities, collaboration intensity and integrative capabilities that provide guidance in developing a supply network model for a business upgrade from one stage to the next.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

4 RESEARCH DESIGN

4.1 Introduction to the chapter

Section 4.2 explains the research philosophies and the researcher. It seeks to explain the meaning and importance of ontology, epistemology and methodology and, more importantly, how these considerations relate to the author's personal beliefs and the rationale for the chosen methodology for the study.

Building upon this foundation, section 4.3 provides more detail about the methodology used for the study. Accordingly, this section provides the reason for choosing the case study as the method of data collection (Section 4.3.1).

Section 4.4 identifies the process followed for conducting case study research using a five step approach. This section describes the research parameters, Instrument development, method of data gathering, method of data analysis and cases study reporting.

Section 4.5 addresses the rigour of the case study research by considering the application of four tests that are common to all social science methods (construct validity, internal validity, external validity and reliability).

The chapter concludes in section 4.5 with a summary.

Figure 4-1 provides the structure of the chapter.



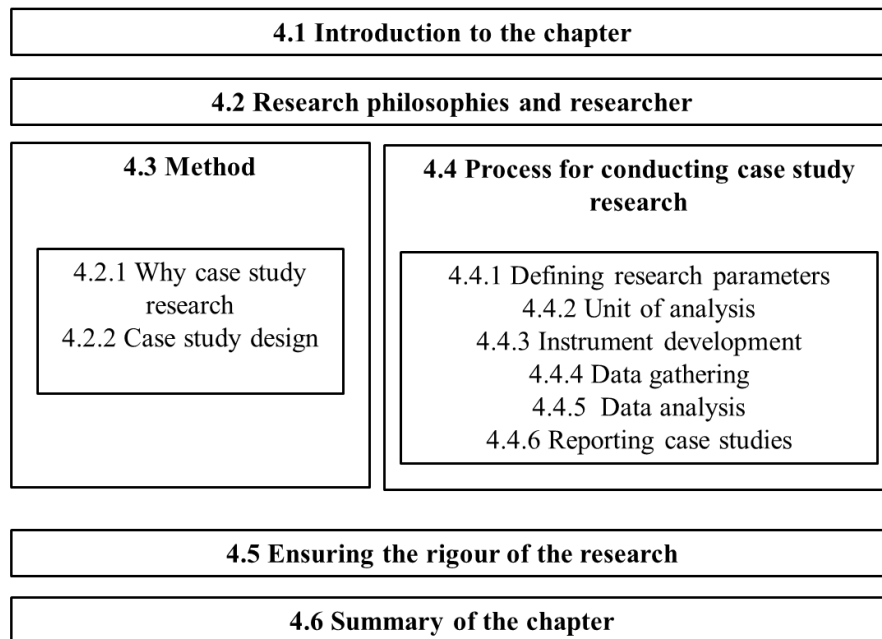


Figure 4-1 Topic breakdown of Chapter 4

4.2 Research Philosophies and researcher

“Ontology logically precedes epistemology which logically precedes methodology”



University of Moratuwa, Sri Lanka.

Electronic Theses & Dissertations

www.lib.mrt.ac.lk

(Hay, 2002, p5)

Section 4.2.1 describes the different ontological positions and introduce two philosophical positions in line with the ontological positions, section 4.2.2 the different epistemological positions and section 4.2.3 the different methodological positions. Standing in between the two contrasting philosophical positions, section 4.2.4 describes critical realism as the author’s research philosophy. Accordingly, the methodology for the thesis is described.

4.2.1 Ontological positions

Ontology is the starting point of all research, after which one’s epistemological and methodological positions logically follow. Ontology is defined as,

“Claims and assumptions that are made about the nature of social reality, claims about what exists, what it looks like, what units make it up and how these units interact with each other.” (Blaikie, 2000, p8).

Accordingly, ontological assumptions are concerned with what we believe constitutes social reality. Examples of ontological positions are those contained within the perspectives ‘objectivism’ and ‘constructivism’. Objectivism is an ontological position that declares social phenomena and their meanings have an existence that is independent of social actors. Constructivism, on the other hand, is a different ontological position that states social phenomena and their meanings are continually being accomplished by social actors. (Blaikie, 2000). Table 4-1 presents the two different ontological positions.

Table 4-1 Different ontological positions

ONTOLOGY-WHAT WE BELIEVE	
Objectivism	Constructivism
Social phenomena and their meanings have an existence that is independent of social actors	Social phenomena and their meanings are continually being accomplished by social actors.

Source: (Blaikie 2000)

William James (1996), cited in (Chia, 2002), identifies two philosophical positions aligned to the two ontological positions described above. Rationalism was introduced as aligned with objectivism and empiricism as aligned with constructionism.. Rationalism explains particulars in terms of universalist and idealized categories, while empiricism is known as explaining universalities from the particulars of experience; the former view is known as Platonism, the latter as Aristotelian as defined in Table 4-2.

Table 4-2 Different philosophical positions

PHILOSOPHY-HOW WE EXPLAIN IT	
Rationalism (Platonism)	Empiricism (Aristotelian)
Explains particulars in terms of universalist and idealized categories	Explains universalities from the particulars of experience

Source: (Blaikie 2000)

4.2.2 Epistemological positions

Epistemology, is concerned with the theory of knowledge, especially in regard to its methods and validation. Blaikie (2000, p8) defines epistemology as:

“..possible ways of gaining knowledge of social reality, whatever it is understood to be. In short, claims about how what is assumed to exist can be known.”

Hence, epistemology focuses on the knowledge gathering process and is concerned with developing new models or theories that are better than competing models and theories. Synthesizing the two philosophical paradigms, two contrasting epistemological paradigms have emerged to understand the way a researcher could explore the world. Positivism and phenomenology (Interpritivism) emerged as the two ends of the epistemological paradigms. The key principle of positivism is that the social world exists externally, and that its properties should be measured through objective methods, rather than being inferred subjectively through sensation, reflection or intuition. Thus social and natural worlds are both regarded as being bounded by certain fixed laws in a sequence of cause and effect (Hussey & Hussey, 1997). At the other end, phenomenology, also known as interpretivism, argues that reality is socially constructed rather than objectively determined. Hence the task of the social scientist should not be to gather facts and measure how often certain facts occur, but to appreciate the different constructions and meanings that people place upon their experience (Hussey and Hussey, 1997).



University of Moratuwa, Sri Lanka
 Electronic Theses & Dissertations
www.lib.mrt.ac.lk

The two ends of the epistemological positions are given in Table 4-3.

Table 4-3 Different Epistemological positions

EPISTEMOLOGY- HOW WE GATHER KNOWLEDGE	
Positivism	Interpritivism
Social world exists externally, and its properties should be measured through objective methods, rather than being inferred subjectively through sensation, reflection or intuition.	Strategy to appreciate the different constructions and meanings that people place upon their experience which grasps the subjective meaning of social action.

Source: (Hussey & Hussey, 1997)

4.2.3 Methodological positions

After identifying the epistemological position of the researcher (author), the methodology (how to go about acquiring new knowledge) needs to be considered.

The methodology that aligns with empiricism is known as inductive methodology where the researcher develops theory using the empirical data, while rationalism calls for a deductive approach where the theory is tested against the empirical data. Deductive reasoning begins by thinking up a theory about the topic of interest which is then narrowed down into more specific hypotheses that can be tested. This approach ultimately leads to being able to test the hypotheses with specific data and confirmation (or not) of the original theory. Inductive reasoning works the other way, moving from specific observations to broader generalizations and theories. Inductive reasoning begins with specific observations and measures, begins to detect patterns and regularities, formulates some tentative hypotheses that can be explored, and finally develops some general conclusions or theories (Blaikie, 2000).

While positivism aligns with the deductive approach, Interpretivism aligns with the inductive approach. Table 4-4 presents these different methodological positions.

Table 4-4 Different methodological positions

METHODOLOGY: PRACTICE TO GATHER DATA	
Deductive methodology	Inductive methodology
Develops a theoretical framework and test the empirical data against the hypothesis developed. Theory is confirmed as true/false	Detect patterns/regularities based on empirical data and formulate hypotheses that can be explored which develop a general theory.

Source: (Blaikie, 2000)

4.2.4 Author's philosophical position and methodology selection

Methodology should be aligned with the author's epistemological position as well as the research agenda for the thesis.

4.2.4.1 Critical realist epistemology

Acknowledging the fact that the two ends of the epistemological positions have their own strengths and weaknesses, various epistemological positions emerged in between the two extremes, in order to maximize the strengths and minimize the weaknesses. Accordingly, realism was introduced as an epistemological position in between positivism (rationalism) and Interpretivism (empiricism). Critical realists

accept that the world is socially constructed but argue that this is not entirely the case. They interpret rather than construct the world.

“Critical realism acknowledges that social phenomena are intrinsically meaningful, and hence that meaning is not only externally descriptive of them but constitutive of them (though of course there are usually material constituents too). Meaning has to be understood, it cannot be measured or counted, and hence there is always an interpretative in social science.” (Sayer, 2000, p7).

Therefore critical realism is built on the principle that social reality consists of structures and internally related objects but that we can only attain knowledge of this social reality if we go beyond what is empirically observable by asking questions and developing concepts that are fundamental to the phenomena under study. Accordingly critical realism is further described as a post positivism approach where critical realists tends to explain “why” a certain phenomenon exists.

Accordingly in studying the industry upgrade process, this thesis explores the research questions to identify the internal underlying mechanisms that generate the different stages in the industry upgrade continuum.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Contemporary critical realism is largely attributed to the ideas of British philosopher Bhaskar (1978) who defines three layers or domains of reality: empirical, actual and real. Empirical is made up of experience and events through observation, actual includes events whether observed or not, and real consists of the processes or mechanisms that generate these events – see Table 4-5.

Table 4-5 Layers of reality

Layers of reality	Description
Empirical	Experience and events that can be observed
Actual	Events that may/may not be observed
Real	Processes or mechanisms that generate the events

Source: (Bhaskar, 1978)

Accordingly, critical realism moves beyond empiricism and understands the causes or underlying mechanisms of the observable events, which are the real domain of the

phenomenon. Bhaskar (1978) argues that causes are not constant conjunctions of actual impressions in which one event invariably follows another, but rather that causes refer to *powers, mechanisms, or structures* by which objects are capable of acting. Therefore under critical realism, cause is to be understood not as a combination of actual events, but as a power belonging to a thing.

Theory therefore for the realist becomes the means of describing the relations between the unobservable causal mechanisms or structures and their observable effects Layder (1990) cited in (Chia, 2002).

Being a critical realist, the author of this thesis wishes to understand the *unobservable causal mechanisms (enablers for industry upgrade (servitization))* for the *observable phenomenon-outcome (Offerings)*. Therefore, the overarching research question for the study is:

What enables the industry upgrade from one stage to the next?

Looking beyond the observable events makes the realist become a rationalist who studies the unobservable causes behind the observable phenomenon. Realism is a position that raises rationalism over empiricism and hence is diametrically opposed to the view that phenomenology presents. Blaikie (2000) explains how rationalism and realism share a common starting point, as both recognize the importance of theoretical conceptualization. However, the difference is in the kinds of claim they make about real definitions. Unlike positivism, realism takes seriously the view that there are different “levels of reality” which can be systematically revealed through the rigorous application of the methods of science.

Accordingly, realism draws substantially from the Aristotelian approach (empiricism) by combining logic and rationality with empirical observation, as it shares the view that knowledge is advanced through the process of theory building in which new discoveries of the nature of reality are cumulatively added to what is already known.

4.2.4.2 Methodology selection

Wallace (1971) as cited in Blaikie (2000), introduced two strategies which combine the inductive and deductive approaches to maximize the strengths and minimize the weaknesses of each. These two alternative strategies are known as the retroductive and abductive methodologies and are based on cyclical processes as opposed to the linear processes of inductive and deductive strategies.

Retroduction involves moving from an origin of some phenomenon of interest to an origin of a different kind of thing (power, mechanism) that could have generated the given phenomenon. The retroductive methodology starts with observed regularity, as in deductive methodology, but seeks different explanations achieved by locating real underlying mechanisms that are responsible for producing an observable regularity. Under a retroductive strategy, to discover the underlying mechanisms the researcher first constructs a hypothetical model of the mechanisms and then proceeds to establish its existence by observation.

Abduction is a means of forming associations that enable the researcher to distinguish relations and connections that are not otherwise evident. This allows the researcher to articulate new ideas and to see something else. The aim is to identify data that are beyond the initial theoretical principle. Therefore the crucial difference between abduction and deduction is that abduction shows how something might be, whereas deduction proves that something must be a certain way.

In this thesis, in line with critical realist epistemology, a retroductive research methodology will be used. Blaikie(2000) consider retroductive research strategy as a top down approach where the researcher postulate underlying mechanisms and try to examine their existence through a top down approach. Thereby, as explained in Figure 4-2, the researcher searches for evidence of the underlying mechanisms (enablers) that generate the observable events. Therefore the author constructed a theoretical framework that highlights the observable events (Offering) and also the underlying mechanisms (Competitive priorities, collaboration intensity and integrative capabilities) and then identifies their existence through empirical data.

In line with the above view, the overarching question can be given as:

How does the servitization process impact on the competitive priorities, collaboration intensity and integrative capabilities of an apparel manufacturer's network?

The author of thesis research considers sub questions to move along the three layers of reality (Top down approach). The descriptive questions are used to capture observations-outcomes (empirical/actual domain) of the industry upgrade process. The exploratory phase develops underlying mechanisms/causes (real domain) to try and explain what enables the industry upgrade.

Accordingly, the sub questions include descriptive questions which describe the empirical domain that describes the offering, the actual domain which describes the competitive priorities, network relationships, and the real domain that explores the level of demand and supply integration, and integrative capabilities which are the unobservable mechanisms behind the empirical domain.

Figure 4-2 shows how the different sub research questions will enable the author to move along the three domains of reality, as described by Bhaskar (1978).

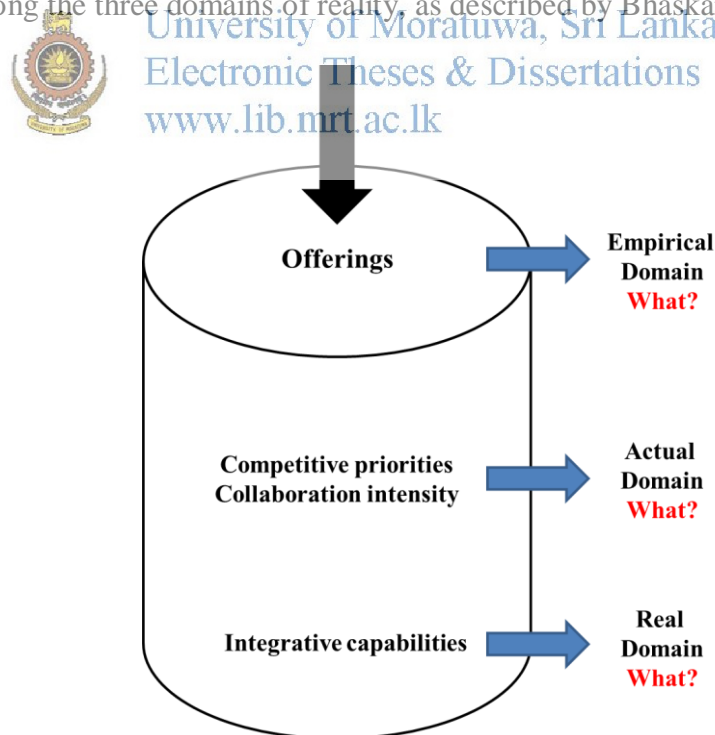


Figure 4-2 Critical Realist: Moving from empirical to real domain

4.3 Methodology

This section identifies the research method and sources of data collection used for collecting empirical data, to refine the theoretical framework.

4.3.1 Why case study research?

Case study methodology really aligns with the author's critical realist epistemology which uses a retroductive research strategy for gathering data. Yin (2009) asserts that the researcher can use a conceptual framework in defining the research propositions and can gather the empirical data based on the conceptual framework. Hence, aligned with the retroductive strategy, the case study method helps the researcher to combine deductive and inductive research methodologies. Therefore the case study becomes the most suitable research method, over ethnography and grounded theory as it avoids specifying theoretical propositions at the outset of an enquiry.

According to Yin (2009), a further fit with the case research approach can be ascertained by considering the nature of the research questions. In general, 'what' questions may either be exploratory (in which case any of the research strategies can be used) or descriptive (in which surveys or the analysis of archival records would be favoured). 'How' and 'why' questions favour the use of case studies, experiments or histories (Yin, 2000).

Yin (2009) introduces three types of case study: descriptive, explanatory and exploratory. The explanatory case study method enables the author to describe the 'empirical' and 'actual' domains of the phenomena (events) as well as explain the causes behind the phenomenon, i.e. the 'real' domain of the phenomena (underlying mechanisms). Using the case study as the method, the author can gather empirical data using descriptive "what" questions (empirical domain) and can search enablers for upgrades (real domain) using explanatory "How" questions. Case study research fits well with this thesis project as the main research question is to understand "How industry upgrades from one stage to the next?"

Yin (2009) further emphasizes the fact that the case study is useful when the boundaries of the phenomenon and the context are not clearly evident. He discusses

that an empirical inquiry which investigates a *contemporary phenomenon* within its real-life context, especially when the *boundaries* between phenomenon and context are not clearly evident, case study method is useful.

The objective of this thesis is to empirically study the contemporary phenomenon of the industry upgrade within the context of the supply network. Hence the boundaries between the phenomenon and the context are not clearly evident which really emphasizes the need for using the case study method.

Therefore author of this research select the case study as the research method to collect the empirical data due to three reasons. First, is that case study method aligns with critical realist epistemology, which uses retroductive methodology in gathering the data. Second is that research investigates a “How” industry upgrade from one stage to the next, which needs an exploratory case study. Third is that since the study considers the contemporary phenomenon of industry upgrade within the context of supply network, boundaries of the phenomenon and the context is not clearly evident.

4.4 Process for conducting case study research

This section explains the process carried out to collect data through case study method. The author of this research uses the 5 staged process described by Yin (2009), in order to ensure the rigour of the research design.

4.4.1 Define research parameters

Yin (2009) identifies three types of research parameters: research questions, study propositions/hypothesis, unit of analysis.

4.4.1.1 Research questions

The purpose of this thesis is to identify what enables the industry upgrade considering the fact that the industry is positioned within the network. As shown on in section 3.4.1 (pg 81-87), enablers that are appropriate for the investigation are competitive priorities, collaboration intensity and integrative capabilities. Being a critical realist, the author develops the sub research questions to understand the three domains of reality. In this study, the type of offering helps to understand the top layer

of reality (Empirical domain), which is known as the empirical observable events behind the phenomenon. These will be investigated using descriptive ‘what’ questions. The second layer (actual domain) will understand the events that make the observable events, which identify the competitive priorities and collaboration intensity between network partners. The third layer (Real domain) describes the reality underneath the series of observable events. These will be discussed under the ‘how’ or exploratory ‘what’ questions in order to understand the level of demand and supply integration and integrative capabilities which will enable the industry upgrade.

The author for this research also includes a final research question to understand the linkages between the offerings, competitive priorities, collaboration intensity and integrative capabilities. This question understands the appropriate supply network design that enable the industry upgrade from one stage to the next.

Therefore the research questions for this study can be given as follows, where descriptive ‘what’ questions are followed by exploratory ‘what’ questions (Blaikie 2007).



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations

RQ1: What are the different types of offering provided by the manufacturer and what competitive priorities do they need?

RQ2: What level of collaboration intensity between network partners is required to deliver the different types of offering?

RQ3: What level of demand-supply integration is required to deliver the different types of offering?

RQ4: What types of integrative capabilities are required to deliver the different types of offering?

RQ5: What are the linkages between the offerings, competitive priorities, collaboration intensity and integrative capabilities?

4.4.1.2 Study hypothesis

Based on the conceptual framework developed in Chapter 3, the research hypotheses that outline the expected responses to the research question are provided in Table 4-6.

Table 4-6 Research Hypotheses

Research Question		Hypothesis	
RQ1	What are the different types of offering provided by the manufacturer and what competitive priorities do they need?	H1a	Stage 1 provides basic product with low cost as competitive priority
		H1b	Stage 2 provides product variety with availability as competitive priority
		H1c	Stage 3 provides special product (existing needs) with innovative product as competitive priority.
		H1d	Stage 4 provides special product (future needs) with high tech product as competitive priority.
RQ2	What level of collaboration intensity between network partners is required to deliver the different types of offering?	H2a	Stage 1 has transactional relationship with network members
		H2b	Stage 2 has collaborative relationship with network members
		H2c	Stage 3 has extensive collaborative relationship with network members
		H2d	Stage 4 has extensive collaborative relationship with network members
RQ3	What level of demand-supply integration is required to deliver the different types of offering?	H3a	Stage 1 has internal to external integration of supply processes to align the demand requirements.
		H3b	Stage 2 has external integration between demand and supply processes in decision making
		H3c	Stage 3 has external integration between demand and supply processes in decision making
		H3d	Stage 4 has external integration between demand and supply processes in decision making
RQ4	What levels of integrative capabilities are needed to provide the required offering?	H4a	Stage 1 needs integrative capabilities to integrate cost requirements.
		H4b	Stage 2 needs integrative capabilities to integrate product variety requirements.
		H4c	Stage 3 needs integrative capabilities to integrate innovative product requirements
		H4d	Stage 4 needs integrative capabilities to integrate advance technology product requirements
RQ5	What are the linkages between the offerings, competitive priorities, collaboration intensity and integrative capabilities?	H5	Explore in the empirical investigation

4.4.1.3 Unit of analysis

According to Yin (2009), the unit of analysis defines the ‘case’. Unit of analysis will be the organization positioned within the network of suppliers and customers. This is due to the fact that when an organization upgrades to provide the required customer offering, it does not upgrade as a sole entity but with the network partners.

Yin (2009, p33) asserts:

“..Previous literature also can become a guide for defining the case and unit of analysis.”

When Jüttner et al. (2010) introduced the strategic level demand and supply integration to include the network partners, they stressed the need for selecting the unit of analysis as the firm positioned with the network partners and highlighted that in order to develop network business models this unit of analysis is more suitable.

The literature review in Chapter 3 identified four different positions of a firm, where the firm upgrades to provide different offerings.

Therefore this study defines four embedded units of analysis that represent different positions in the industry upgrade continuum. These embedded units of analysis are the individual business units that provide the offering in each stage of the industry upgrade continuum. Based on Chapter 3, the specific embedded units of analysis were identified as the business units that acquire the value chain activities in different positions. Accordingly, the different stages of the industry upgrade continuum add different value chain activities such as Cut-and-Make, Design and development, Research and development (Basic) and Research and development (Applied). (Table 4 7)

Table 4-7 Embedded units of analysis

Stages in the industry upgrade continuum	Embedded unit of analysis-Business unit
Stage 1	Cut-and-Make
Stage 2	Design and development
Stage 3	R&D (Basic)
Stage 4	R&D (Applied)

Yin also highlights the need to identify the scope of data collection, in order to distinguish between data about the subject of the case study (phenomenon) and data external to the case (context).

As depicted in Chapter 3, the unit of analysis which is considered as the business unit for a specific offering can be further represented using a value chain framework for the evolutionary environment. In chapter 3, value chain for the evolutionary environment was further described as demand chain and supply chain.

Since the main consideration of this study is to understand how industry upgrades from one stage to the next, it mainly concentrates on the demand and supply interface. The objective is to study the conversion of demand to supply from the customer through the focal firm to the supplier. Thereby the focus of the empirical element of the study can be explained using two dimensions: the physical dimension, which converts the physical inputs into outputs and the process dimension, which controls the physical dimension. As the study considers the firm to be positioned in a network, the physical dimension of the study covers the supplier as well as the customer for the specific business unit. Hence the physical dimension spans from the customer to the supplier of a specific business unit.



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Accordingly the supply chain activities of the business unit transform the physical product/service representing the physical dimension. Demand chain activities identify the planning activities related to the specific offering, which controls the physical conversion of the material from supplier to customer through the focal firm. Therefore this study focuses on the planning department of the specific offering, where the business unit develops the demand and supply plan to deliver the specific offering to the customer. Accordingly, the scope of the study is the demand planning and supply planning processes of the particular type of offering – see Figure 4-3.

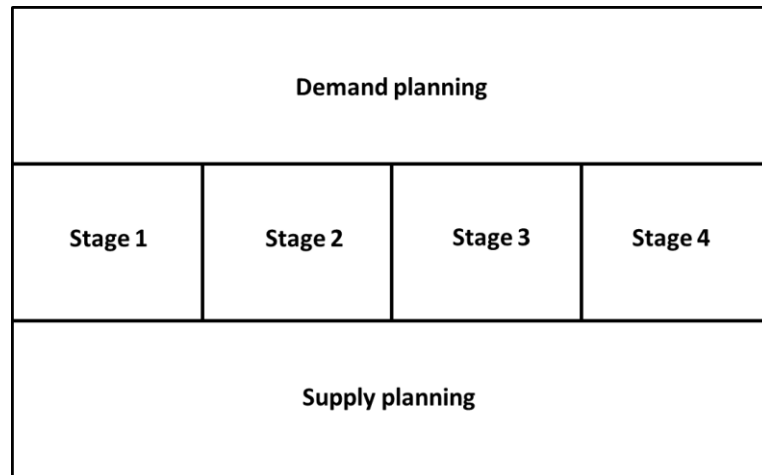


Figure 4-3 Focus of the study

Therefore the focus of this study will be the planning process of the specific offering, where the demand and supply is integrated to provide the particular offering. Accordingly, the scope of the study will be the demand and supply planning process of each business unit that controls the physical conversion of material from supplier to customer. The scope of the study is highlighted in Figure 4-4.

The activities related to the physical conversion of the activities can be represented using the supply chain processes and the planning processes are depicted using the demand chain processes which convert demand to supply from the customer through the focal firm to the supplier.

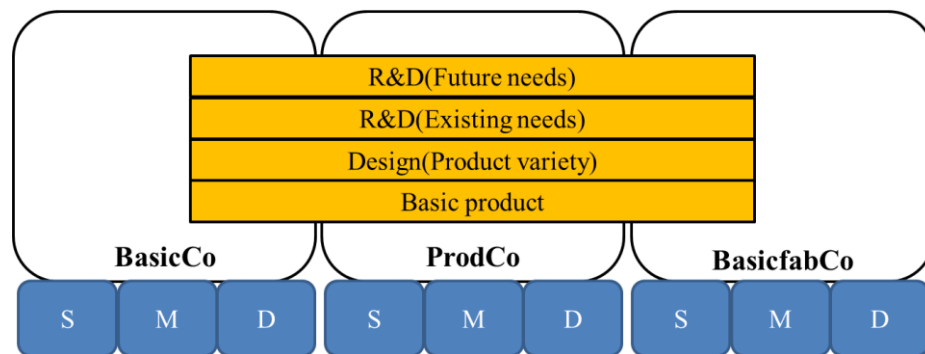


Figure 4-4 Scope of the study

4.4.2 Instrument development

Yin (2009) identifies three main elements in instrument development as case study selection, instrument selection and the case study protocol.

4.4.2.1 Case study Selection

Miles and Hubberman (2004) describes the suitability of purposive sampling, for qualitative research which is informed a priori by an existing body of social theory on which research questions may be based. Accordingly, the author of this research selects a “case” based on the purposive sampling method, where the case was selected is based on the conceptual framework and the research questions developed in the chapter 3.

Hence the study will seek analytic generalization as opposed to generalization for the universe. According to Yin (2009), analytic generalization is a type of generalization in which the inquirer attempts to link findings from a particular case to a theory.

According to Yin (2009, p38),

“In analytic generalization, the investigator is striving to generalize a particular set of results to a broader theory.... To generalize to a theory is to provide evidence that supports (but does not definitively prove) that theory. Generalizing to a theory is different from generalizing to a population.”

Yin (2009) further discusses the need of critical cases in testing the theoretically developed propositions or hypotheses. According to Yin, critical/unique case is especially useful for new theoretical insights when there is a need to empirically validate the research hypothesis. Recognizing this dilemma, several authors suggest less number of cases, enhance the opportunity for depth of observation. (Voss et al., 2002 and Dyer and Wilkins, 1991) Accordingly, the author of this thesis selected one large apparel company based in Sri Lanka that represents all four stages in the industry upgrade continuum. Having started in 1980s, this company has evolved throughout the years from a mere “cut-and-make” entity to an innovative product provider. The company has four main clusters under them according to the product categories they are focused on. Cluster 1 focus on lingerie, cluster 2 focuses on the active/sportswear and cluster 3 focuses on the backward integration for both lingerie and activewear, where the company has joint venture partners in manufacturing the key raw material components. Cluster 4 focuses on providing information technology solutions to the apparel companies.

For the purpose of this thesis, author selects the specific cluster that manufacture lingerie, as this category was the starting category of the company from the very beginning in 1980s. For the purpose of this thesis author name this cluster as ApparelCo. The company has evolved throughout the years providing different levels of offerings to the consumers, which represents the all four stages in the industry upgrade continuum presented in the conceptual framework in chapter 3. Therefore the company has established different business units within the industry upgrade, which cover the specific value chain activities presented in the chapter 3. Hence the company which has been started as cut and make assembler opened up a design and development center in 2000, Research and development center to deliver innovative products and later a division called future business. Along this path the company has developed partnerships with their customers as well as the suppliers and currently has a very reputed customer base which includes reputed retailers from USA and EU who have become their strategic partners. In year 2013, the company generated \$390million income.

Furthermore as described by Yin (2009), this study considers multiple embedded units of analysis, which includes specific business units that provide the specific offering in different stages of the industry upgrade continuum. Yin (2009) also mentions the opportunity of having embedded case units within a large case study, as it enables the researcher to look at sub-units that are situated within a larger case where those data can be analyzed within the sub-units separately (within case analysis), between the different sub-units (between case analysis), or across all of the sub-units (cross-case analysis), to engage in rich analysis which only serves to better illuminate the case. Barratt et al. (2011) highlights that multiple cases can augment external validity while Eisenhardt (1989) specifically suggested that 4–10 number of cases are appropriate for the multiple case study. Therefore four embedded units of analysis within the case company were selected to represent the different stages in the industry upgrading continuum. By doing so researcher hopes to do a cross case analysis within the sub units to provide a rich analysis. Since the four units develop different offerings, it allows researcher to understand how different offerings impact

on the enablers, i.e competitive priorities, collaboration intensity and integrative capabilities.

According to the conceptual framework developed in chapter 3, embedded units of analysis are the specific business unit for a given client which has different positioning in the value chain, which was presented in Unit of analysis

According to Yin (2009), the unit of analysis defines the ‘case’. Unit of analysis will be the organization positioned within the network of suppliers and customers. This is due to the fact that when an organization upgrades to provide the required customer offering, it does not upgrade as a sole entity but with the network partners.

Yin (2009, p33) asserts:

“..Previous literature also can become a guide for defining the case and unit of analysis.”

When Jüttner et al. (2010) introduced the strategic level demand and supply integration to include the network partners, they stressed the need for selecting the unit of analysis as the firm positioned with the network partners and highlighted that in order to develop network business models this unit of analysis is more suitable.

The literature review in Chapter 3 identified four different positions of a firm, where the firm upgrades to provide different offerings.

Therefore this study defines four embedded units of analysis that represent different positions in the industry upgrade continuum. These embedded units of analysis are the individual business units that provide the offering in each stage of the industry upgrade continuum. Based on Chapter 3, the specific embedded units of analysis were identified as the business units that acquire the value chain activities in different positions. Accordingly, the different stages of the industry upgrade continuum add different value chain activities such as Cut-and-Make, Design and development, Research and development (Basic) and Research and development (Applied). (Table 4 7)

Table 4-7. Specific business units which represent the four stages from stage 1 to stage 4 of the industry upgrade continuum are known as ProdCo, VarietyCo, LaunchCo, AdvanceCo. Since the relevant business unit is positioned within the supply network, the business unit also includes the customer and supplier, as shown in Table 4-8.

Table 4-8 Embedded units of analysis for the study

Stages in upgrade	Customer	Business unit	Supplier
Stage 1 (Cut-and-make)	BasicCo	ProdCo	BasicfabCo
Stage 2 (Design)	FashionCo	VarietyCo	FashLaceCo
Stage 3 (R&D existing)	InnoCo	LaunchCo	InnoElasCo
Stage 4 (R&D future)	TechCo	AdvanceCo	TechFabCo

4.4.2.2 Sampling parameters

Miles & Hubberman (2004) describe the need for specific sampling parameters in data collection using case studies. Accordingly, sampling parameters such as settings, events, actors and processes need to be selected based on the conceptual framework developed in chapter 3.

In this thesis, demand planning and supply planning will form the scope of the study and may include both customer and supplier. Therefore the sample frame will include the sampling parameters at the planning division of the specific offering in each stage. Each parameter is discussed below.

The *setting* will be the sampling frame which is the demand and supply planning unit of the particular offering. *Events* that occur at the interface will be the joint meetings/ decision making related to developing the demand and supply plan. *Processes* will be the demand and supply planning process which was described as integrative (learning) processes, i.e. sensing, shaping and seizing processes related to the offering in Chapter 3. *Actors* will be the people or the roles (organization structures) involved in demand and supply planning, i.e. integrative (learning) processes.

4.4.2.3 Instrument Selection

Yin (2009) identifies six different sources of evidence (and their relative strengths and weaknesses) that can be used as part of case study research: documentation, archival research, interviews, direct observation, participant observation and physical artefacts.

The primary source of evidence or instrument for this thesis will be semi-structured interviews. Interviews have the benefit of allowing the researcher to focus directly on the subject under investigation whilst also providing the opportunity for the interviewee to provide perceived causal inferences (Yin, 2009). The semi-structured interview also provides the flexibility to request secondary sources of archival and documentary evidence which aid in data triangulation and the minimization of bias through poor interviewee recall or reflexivity. Therefore the proposed study will collect sources of evidence through semi-structured interviews and the related documents.

4.4.2.4 Case study protocol

A case study protocol is a comprehensive approach to defining the procedures, general rules that govern the use of the selected research instruments. Its purpose is to increase reliability. Given that the research design for this thesis is based on multiple embedded units of analysis, the use of a case study protocol is essential (Yin, 2009). There are three main elements to the case study protocol: field procedures, interview protocol and reporting protocol.

Field procedures determine the key phases of the study. Phase 1 will be the scoping study, which will be conducted to understand the company overview and the offerings provided by the company. It will also collect information on different business units with different offerings in order to decide on the four embedded units of analysis. The next four phases will focus on the specific embedded units of analysis. Each of these phases carries out two steps: the scoping study that understands the overview of the specific business unit and the main study which addresses the key research questions, and identifies the offering, competitive priorities, collaboration intensity, level of demand and supply integration, and

integrative capabilities. Phase 2 will be the pilot case which is on the 1st embedded unit of analysis that collects empirical evidence from the 1st stage of the industry upgrade process (ProdCo). Phase 3 will collect empirical evidence from the 2nd stage of the industry upgrade process (VarietyCo). Phases 4 and 5 collect the empirical evidence of the 3rd and 4th stages of the industry upgrade, from LaunchCo and AdvanceCo respectively. Each of these phases has two steps where the 1st step does the scoping study of the specific business unit and the 2nd step is the main study – see Table 4-9.

The second element of the case study protocol is the interview protocol. This is comprised of a series of main headings which act as topic guides supported by a list of more detailed questions. Three interview protocols were developed to conduct the two levels of scoping studies for the company case and business unit overviews, and the main study that carries out the data collection from the embedded units of analysis. The aim of scoping study 1 is to identify the evolution of the company within the industry upgrading process. In particular, the scoping study covers the questions related to mission, vision and overview of the company evolution. Furthermore, it understands how value chain activities evolve with the industry upgrade. Scoping study 2 understands the business strategy of the different embedded units of analysis and the drumbeat of the planning cycle for the particular offering. Moreover, it understands the overview of the supply network for each offering.

Table 4-9 Phases of the study

Phase	Step	Topic	Interviewees - Persons to be interviewed	Other Instruments
1 Scoping study	Scoping study	Company overview Evolution of the company	CEO Technical Director	Organization chart Documents on company mission/vision
2 Pilot study Stage 1 ProdCo	2a. Scoping Study	Overview of the business unit	Business manager	Market analysis
	2b. Main study	Offering Competitive priorities Network relationships Level of DSI	Demand planning and supply planning	Order details of offering Organization chart of planning division
		Integrative capabilities	Specific Integrators	Process maps Integrative Role
3 Stage 2 VarietyCo	3a. Scoping Study	Overview of the business unit	Business manager	Market analysis
	3b. Main study	Offering Competitive priorities Network relationships Level of DSI	Demand planning and supply planning	Order details of offering Organization chart of planning division
		Integrative capabilities	Specific Integrators	Process maps Integrative Role
4 Stage 3 LaunchCo	4a. Scoping Study	Overview of the business unit	Business manager	Market analysis
	4b. Main study	Offering Competitive priorities Network relationships Level of DSI	Demand planning and supply planning	Order details of offering Organization chart of planning division
		Integrative capabilities	Specific Integrators	Process maps Integrative Role
5 Stage 4 AdvanceCo	5a. Scoping Study	Overview of the business unit	Business manager	Market analysis
	5b. Main study	Offering Competitive priorities Network relationships Level of DSI	Demand planning and supply planning	Order details of offering Organization chart of planning division
		Integrative capabilities	Specific integrators	Process maps Integrative Role

Since scoping study 1 is concerned with the company overview, the interviewee will be a top manager in the company. Scoping study 2 will be conducted with the Head of a specific business unit who is known as the Key Account Manager (KAM). Appendix B-1 provides the interview protocol for scoping study 1 and Appendix B-2 for scoping study 2.

Table 4-10 Topic Guide- Scoping studies 1 & 2

Scoping study	Main topic	Description			
Scoping study 1	Company overview	Vision Mission Evolutionary stages and the drivers behind the evolution Value chain activities			
Scoping study 2	Overview of the business unit	Business strategy Drumbeat of the planning cycle	Business strategy Drumbeat of the planning cycle	Business strategy Drumbeat of the planning cycle	Business strategy Drumbeat of the planning cycle
	Overview of the customer and supplier network	Customer base Supplier base Manufacturing base	Customer base Supplier base Manufacturing base	Customer base Supplier base Manufacturing base	Customer base Supplier base Manufacturing base
	Value chain activities	Value chain activities	Value chain activities	Value chain activities	Value chain activities

The interview protocol for the main study covers the main research questions in the study. These have been developed based on the conceptual framework developed in Chapter 3. Firstly, in order to gather the information related to the empirical domain, descriptive questions related to the offering will be used. The respective interviewee will be the demand and supply planning person of the specific business unit. Secondly in the actual domain, descriptive questions related to competitive priorities and collaboration intensity are explored using demand and supply planning personnel in the interview. Thirdly, to understand the real domain, exploratory questions are used to understand the level of demand planning and supply planning integration and integrative capabilities. Demand and supply planning personnel will be used again for these interviews. The people involved in sensing, shaping and seizing, known as the integrators/boundary spanners will be also considered for the interviews. Table

4-11 provides a topic guide that covers the main study interview protocol. The main study interview protocol is provided in Appendix B-3.

Table 4-11 Topic guide-Main study

Main topic	Description			
	Stage 1	Stage 2	Stage 3	Stage 4
Offering Competitive priorities Network relationship	Head of demand planning Head of supply planning	Head of demand planning Head of supply planning	Head of demand planning Head of supply planning	Head of demand planning Head of supply planning
Level of demand and supply integration	Head of demand planning Head of supply planning	Head of demand planning Head of supply planning	Head of demand planning Head of supply planning	Head of demand planning Head of supply planning
Integrative capabilities	Integrators	Integrators	Integrators	Integrators

(Easterby-Smith, Thrope, & Lowe, 2000) explain laddering as a technique to move respondents from a statement of ‘fact’ or ‘descriptive’ accounts about the question to more explanatory questions through using ‘why’, or exploratory questions using ‘how’. Further, these authors identify different types of probe that can be selected by the interviewer depending on how the interview develops. There is also the flexibility to veer from the list to probe more deeply into areas of particular interest and to request archival forms and documentary sources of secondary evidence to support the points being made. Accordingly, integrative capabilities were further explored using probing questions related to organization structures, organization design and key performance indicators. Appendix A-3 provides the detailed interview protocol for the main study.

The third element of the case study protocol, i.e. reporting protocol, is frequently overlooked. Whilst this may appear to be a little out of sequence it is beneficial to have a plan of the types of report and their intended audience at the outset of the research (Yin, 2009). The reporting protocol for this thesis has two primary audiences: the case company and the wider academic community.

Individual case results were submitted and presented to the academic panel in the progress review committee in each of the four cases. Further to this pilot, a case

study was presented to the wider academic community through participating in the EUROMA Conference 2014.

For the case company, a case study report on the cross-case comparison will be submitted for the purpose of report submission for verification. With findings verified by both the focal firms, final verification will be sought from the wider academic community through attending conferences and publishing the work in academic journals.

4.4.3 Data Gathering

Yin (2003) proposes three interdependent phases that strengthen the data collection phase.

1. Use of multiple sources of evidence
2. Create a case study database
3. Maintain a chain of evidence

4.4.3.1 Use of multiple sources of evidence

Data gathering will be in the form of fieldwork. As mentioned previously, the primary research instrument will be semi-structured interviews which were developed using an interview protocol. Firstly, if at all possible, a private and neutral space was found in which to conduct the interviews. This was usually in the form of a meeting room that was booked for the duration of the fieldwork. The second step was to request from the interviewees that the interviews were recorded using a mini-disc recorder. It was possible to record 95% of the interviews. The author also took notes during all the interviews conducted.

Miles and Hubberman (2004) states that the field worker's reflection is an important factor after each interview. This is done using contact summary sheets on which the field worker reviews the written up field notes and the interview records, and answers each question on the summary sheet briefly to develop an overall summary of the main points Raised during the interview. Therefore a contact summary sheet was developed after each interview within 24 hours to keep records of the

summarized points of the interview. The layout of the contact summary sheet is presented in Figure 4-5.

FIELD WORK- CONTACT SUMMARY SHEET

Interviewee		Contact sheet No.	
Job title		Date	
Contact details		Location	

1.0 INTERVIEWEE BACKGROUND

2.0 MAIN ISSUES OR THEMES ARISING

3.0 SUMMARY OF INFORMATION GATHERED

4.0 OTHER SALIENT, INTERESTING, ILLUMINATING OR IMPORTANT ASPECTS

5.0 NEW/OUTSTANDING QUESTIONS FOR NEXT VISIT

6.0 SECONDARY DATA



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations

www.lib.mru.ac.lk

Where possible, secondary data in the form of documentation (e.g. reports of previous studies) and archival records (e.g. organization charts) were sought to triangulate the primary data and were recorded in the final section of the contact notes as secondary data. A sample of the contact summary sheet is provided in Appendix C.1. Sample evidence of secondary data is also provided in Appendices C.2.1 and C.2.2.

4.4.3.2 Creating a case study database

In order to keep track of the primary and secondary data sources, a case study database was formed.

Contact notes were made in electronic format and author tried to collect the secondary sources of evidence in electronic format. All documents were then stored in a project specific folder, the format of which was common to all cases to enable

easy navigation. A summary of the case documents was produced in word format and held in the project folder. Field notes were made in a specific book and the numbering aligned with the contact sheets in order to make it easy to refer back to them if needed. In order to represent the specific embedded case, each contact sheet was numbered against the number of the stage which the case represents. Key roles interviewed were numbered against the case number, as given in Table 4-11, where the Business manager was numbered as 1-01. Similarly, recordings were also represented with R1-01 and field notes as F1-01. Since there are number of integrators for each stage, 1-03a, 1-03b...etc. was used to represent the integrators. Integrators were added when moving towards the following stages. Part of the case study database which provides a summary of the contact sheets for ProdCo is given in Table 4-12. Appendix D.1 includes the whole case study database.

4.4.3.3 Maintain a Chain of Evidence

The chain of evidence (COE) for this study is a combination of the documentation recorded within the case study data base and the reports within the reporting protocol. Arguably the most important documents for the COE are the case contact notes. Given their importance, an example of the contact notes for one interview is given in appendix C.1, which is based on the record of the interview; field notes, documentary evidence and supporting documentary evidence are provided in Appendices C.1.1 and C.1.2.

The reporting protocol which considers the verification of the data through presenting it to the wider academic community, as described in section 4.3.4, also supports maintaining the COE.

4.4.4 Data Analysis

Data analysis for the thesis is described under two main headings; Individual case analysis which analyses each embedded units of analysis and cross case analysis which analyse across the embedded units of analysis.

Table 4-12 Summary of the case study database: ProdCo

Key Role of the interviewee	Key area to be interviewed	Contact Sheet details Stage 1(ProdCo)					
		Interviewee	Date and location	Contact sheet No.	Record no.	Field note no.	Documentary evidence
Business Manager	Scoping study	Business Manager Mr. Anurudda	07/01/14 ProdCo conference room	1-01	R1-01	F1-01	Marketing environment analysis
Demand planning Supply planning	Offerings Competitive priorities Network relationships Level of demand and supply integration	Development merchant (Mr. Kenneth)	02/01/14 Board room @ Head office of ApparelCo	1-02	R1-02	F1-02	Order details of offering Organization chart of planning division
Integrators-OW	Integrative capabilities	Technical and quality manager Mr. Udayanga Work Study officer (Mr. Deegayu)	22/01/14 ProdCo manager's room	1-03a 1-03b	R1-03a R1-03b	F1-03a F1-03b	Process maps Description of Role of integrators Performance measurement systems
Customer representative	Offerings Competitive priorities Network relationships Level of demand and supply integration Integrative capabilities	Asst. Technical Manager (Mr. Dhanusha)	25/01/14 Residency	1-04	R1-04	F1-04	
Supplier representative	Offerings Competitive priorities Network relationships Level of demand and supply integration Integrative capabilities	Marketing Manager Ms. Sinindu	30/01/14 By phone	1-05	R1-05	F1-05	

4.4.4.1 Individual case

Easterby Smith et al. (2008) explain five different methods that allow for the analysis of natural language data: content analysis, discourse analysis, narrative, conversion and argument analysis, grounded analysis. The choice of analysis method depends largely on what the researcher wants to find out.

Content analysis is more deductive while grounded analysis is more inductive. Content analysis is more fully discussed in Miles and Hubberman (1994). At the heart of this process is a matrix format which captures the themes and codes on the basis on the theoretical data. On the other hand, ground analysis involves developing themes and codes more inductively with the use of empirical data.

A good source of understanding how codes are developed and then applied can be seen in Miles and Hubberman (1994). They advocate one of three positions when starting out on research: the first is to have pre-defined codes/a priori codes based on the theoretical position of the research; the second is to develop codes after some initial exploration of the data; and the third is to take a halfway position with some initial codes (possibly from the interview questions) and refine them after exploration of the data.



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Therefore in line with the Miles and Hubberman (1994) position¹, template analysis will be used in analyzing the data collected from each embedded unit of analysis. Template analysis involves the development of a coding ‘template’, which summarizes themes identified by the researcher through the initial theoretical framework, and organizes them in a meaningful and useful manner. Hierarchical coding is emphasized, using broad themes encompassing successively narrower, more specific ones. Yin (2008) describes the method of template analysis based on predefined codes as pattern matching. According to Yin, pattern matching compares an empirically based pattern with a predicted one. If the patterns coincide, the results can help to strengthen the internal validity of the case study. The patterns will be related to both dependent and independent variables of the study.

In line with critical realist epistemology, here the author develops predefined codes to understand the observable phenomenon (empirical domain) as well as the

unobservable mechanisms (Real domain). Within the retroductive methodology, using the empirical exploration, the author will be able to test the existence of the unobservable mechanisms matching with the conceptual framework.

In the proposed study, the event (observable phenomenon) in the empirical domain is the offerings, which is the dependent variable of the study. Competitive priorities and network relationships are in the actual domain and act as independent variables that develop the offering. While a positivist approach will determine the relationship between these two domains (empirical and actual) as cause and effect, being a critical realist, the author uses the post positivistic approach. Accordingly, as described by Bhaskar (1978), “causes” for a post positivist will be the underlying mechanisms. Hence the author identified the underlying mechanisms which generate the observable events. Thereby integrative capabilities also become an independent variable.

The author uses an analysis template that analyzes the empirically based pattern against the predicted pattern given in the theory – see Appendix E1. In each case, the main study data was analyzed against the template developed for individual cases. If the results did not match against the predicted pattern in the theory, they were highlighted with the use of shading. An example of the coding structures for the individual case analysis is included in the Appendix F1.

4.4.4.2 Cross-case analysis

According to Yin (2009), pattern matching can also be done with multiple cases. If identical results were to be obtained in multiple cases, literal replication over single cases would be accomplished. Appendix E.2 presents the analysis template developed for the cross-case analysis. The results which do not match the predicted pattern are highlighted using shading. An example of the coding structures for cross case analysis is included in the Appendix F2.

4.4.5 Reporting case studies

An important aspect of case study research is dissemination. Whilst the reporting protocol provides the main backbone of the dissemination strategy for this thesis, it is

not the full picture. In terms of disseminating results, it is more useful to consider the target audiences and the types of media most appropriate to their needs.

The conceptual framework for the study was disseminated to a wider academic community through presenting a paper in the EUROMA conference in 2013. The results of the first case were also disseminated in the EUROMA conference in 2014. The results of the all four cases in terms of integrative capabilities as enablers for servitization will be published in a journal related to supply chain management.

The author will deliver a case study report to the case company. Also the author wishes to write a practitioner paper to disseminate the research to a practical audience.

4.5 Ensuring the rigour of the research design

The five-stage process (Yin 2009) was used to structure this methodology. By doing this, it is hoped that the rigour of the research design has been ensured, but as a final check it was considered appropriate to assess the research design against the four basic tests commonly used in empirical research. These are summarized in numerous textbooks (Yin, 2009, p41).

1. Construct validity: establishing correct operational measures for the concepts being studied
2. Internal validity (for explanatory or causal studies only): establishing a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships
3. External validity: establishing the domain to which a study's findings can be generalized
4. Reliability: demonstrating that the operations of a study – such as data collection procedures – can be repeated with the same results.

The COSMOS Corporation, cited in Yin, has developed a series of case study tactics that link to different phases in the research, as illustrated in Table 4-12. This model was used as a checklist to ensure that, where appropriate, the proposed tactics have been utilized as a way of maintaining the quality of the studies for this thesis.

Specifically, the external validity of the studies should be improved by using a multiple case study.

Table 4-13 Case study tactics for four design tests

Test	Case study tactic	Employed for this study	Phase of research
Construct validity	Theory triangulation	Y	Research Design
	Use of multiple source of evidence (Data triangulation)	Y	Data collection
	Have key informant to review the case study report	Y	Data Analysis
Internal validity	Do pattern matching	Y	Data analysis
	Explanatory building		Data analysis
External validity	Use theory in multiple embedded case units (units of analysis)	Y	Research design Data analysis
Reliability	Use case study protocol	Y	Research Design
	Develop case study database		Data collection
	Maintain a chain of evidence		Data collection

4.6 Summary of the chapter

This chapter presents the research design of the study which is based on the case study. First it identifies the researcher's philosophical position. Secondly aligning to the researcher's philosophical position, i.e. critical realist, the research methodology was selected for the study. Based on these arguments and the research agenda for the thesis, the case study method was selected. A single case study was chosen as the case study design.

Afterwards, the process for conducting case study research was discussed under key headings presented in Yin (2009). Accordingly, the research parameters were discussed and the unit of analysis for the study was identified as the specific business unit that represents a given stage of the industry upgrade. Four embedded units of analysis were selected based on different stages of the industry upgrade process. Scope of the study was identified as the demand and supply planning unit of each business unit that convert the demand requirements in to the supply processes. The major instrument for the data collection was selected as the semi-structured interview

protocol, while secondary data were also considered for data triangulation. All the interviews were recorded and stored in a case study data base. Contact summary sheets were developed and also stored in the database. Data analysis was selected to be done using template analysis by using the matrix, based on the pre-defined codes. Analysis considers patten matching logic. The rigour of the research design has been ensured using four tests.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

5 PILOT CASE: INVESTIGATION OF THE STAGE 1 OF THE INDUSTRY UPGRADE CONTINUUM

5.1 Introduction to the chapter

This chapter presents the results of the first of the four embedded case units within the apparel manufacturer ApparelCo. This chapter is focused on stage 1 of the industry upgrade continuum of an apparel manufacturer, where the industry upgrade is to provide for the evolving needs of the customer in the existing market.

As illustrated in Figure 5-1, there are four parts to this chapter following the introduction. The case context is presented in section 5.2. Section 5.3 presents the results of the case study. This section discusses the results of the study based on the analysis templates developed against the conceptual framework. Section 5.4 presents the summary of the chapter which brings the chapter to a close.

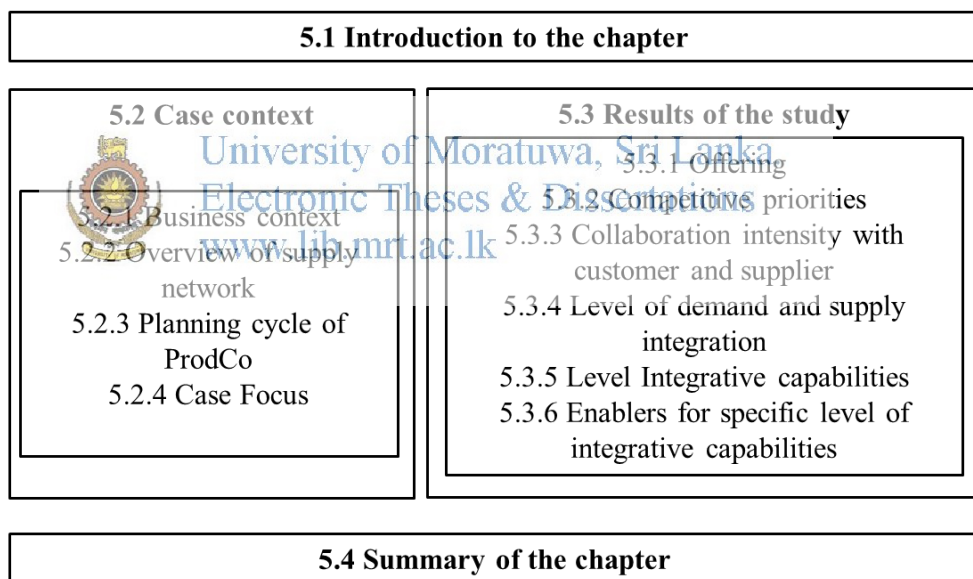


Figure 5-1 Topic breakdown of chapter 5

5.2 Case Context

The case context is divided into four key sections. It begins with a broad overview of the business context (section 5.2.1) to position the case. This is then followed by more detailed information of the supply network for the specific embedded case unit

(section 5.2.2) and planning cycle (section 5.2.3) critical to understanding the case context. Section 5.2.4 describes the case focus.

5.2.1 Business context

There are two key elements of the business context necessary to position the case: firstly, an overview of the positioning and strategy of the division which provides the product provision (Product division) in section 5.2.1.1; secondly an overview of the external environment in which Product division operates based on a Porter's 5-Forces analysis in section 5.2.1.2.

5.2.1.1 Product division – Positioning and strategy

ApparelCo started over 25 years ago as a company that provides cut-and-make assembly operations. Over the years it has moved up through the customer centric servitization process in which they have developed more added value offerings to the customer. This led the company to introduce separate divisions, i.e. Divisions A and B which focus on high value-added offerings for more upmarket customers. In this journey, in 2012, ApparelCo recognized the need for a separate division to deliver the basic products focusing on cost focused customers that look for cut-and-make assembly operations. This division is known as the Product Division for the purpose of this thesis. Within this division, the customer provides product specification and ApparelCo just focuses on the cut-and-make of the product. The business is also called the tech pack business – see Figure 5-2.

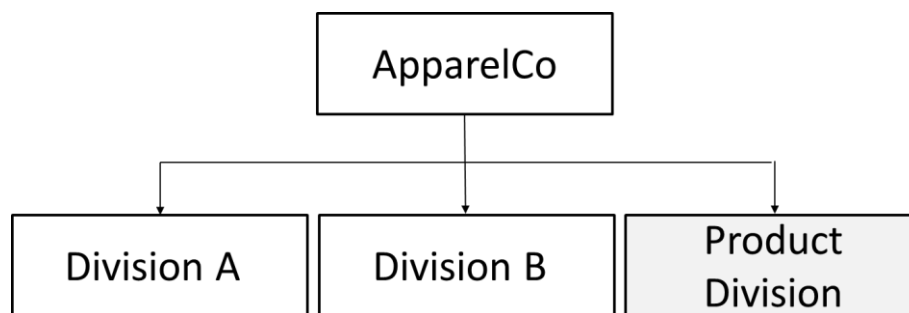


Figure 5-2 Positioning of the Product division

Strategic objectives in terms of providing a specific division are to grow the volume of affordable fashion, i.e. mid to low priced products. The main drivers behind this

mandate are twofold. First is that focusing on product provision will mitigate the risk of concentrating on high fashion more service oriented market segments. Therefore the Product division acts as a backup for ApparelCo. Secondly the business unit is concerned with obtaining the benefits of factory long run performance with stable high volume order quantities. In particular ApparelCo can earn profits through high efficiency.

Currently, the volume of the Product division is growing and provides about 20% of ApparelCo's total income.

The Product division focuses on women's Lingerie and mainly concentrates on briefs. The female lingerie sector has been identified as the highest growth sector among other apparel categories, having recorded 4% growth from 2010 to 2013. Geographically, the Product division mainly concentrates on the USA and Europe.

5.2.1.2 Overview of the external environment

The Product division of ApparelCo competes with local and overseas competitors with a focus on low cost. The main overseas competitors are Bangladesh and China which have cheap labour rates in comparison to Sri Lanka. However, the main strength of the Product division is their reputation for quality and compliance. Furthermore ApparelCo has over 25 years of expertise in women's lingerie working with major apparel brands in the western markets.

The following consider the external environment in which the Product division operates in terms of the five dimensions of Porter's Five Forces (Porter, 1980).

Customer power: Customers have huge bargaining power since they provide the product specification for only the cut-and-make part of the product.

Supplier power: Customers of the Product division usually nominate the suppliers. Therefore the level at which the company could negotiate on price is low. Even when the company suggests other raw material suppliers, ApparelCo needs to gain the approval of the customer.

Threat of new entrants: Since the Product division offers a basic product the threat of new entrants is high. The countries that have low cost production emerge as the low cost suppliers.

Threat of substitutes: This threat is also high as it is a basic apparel product.

Competitor Rivalry: Since ApparelCo has credibility and accountability on guaranteed delivery and high quality together with high standards in labour compliance, competitor rivalry can be regarded as low.

On the whole it is clear that the bargaining power of the Product division is low compared to its customers, suppliers, etc.

5.2.2 Overview of supply network

5.2.2.1 Customer base

The Product division deals with different brands from the US and EU, that consider the tech pack business which just focuses on the cut-and-make of the product.

BasicCo is the main brand that buys the product from the Product division. It accounts for around 60% of the revenue for the Product division, and 12% of the total revenue for ApparelCo. Given the strategic importance of the account, the relationship with BasicCo is the focus of this embedded case study.

BasicCo is a Swedish customer mainly concentrated in Europe. Recently BasicCo has expanded their stores into Malaysia, Thailand and Singapore. The BasicCo product portfolio contains apparel categories for women, men, teenagers and children. Furthermore, BasicCo also sells shoes, accessories, handbags and home furnishings. However, the ProdCo focuses on supplying Lingerie products to BasicCo.

While BasicCo's main brand targets the cost conscious consumer, it has other sub-brands that target more fashion conscious consumers at a more premium price point. These sub-brands incorporate a broader service provision to the consumer and have a price point 15 times that of BasicCo's basic products. Although ApparelCo has plans

to make products for the sub-brands in future, under their specific sub-unit the Product division specifically caters to BasicCo's basic commodity brand.

The BasicCo commodity portfolio for Lingeries is sub-divided into Basic products, Fancy products and Cotton products.

BasicCo has their head office in Sweden. It focuses on product design and sales and marketing. They have three main buying offices that deal with the supply operations related to three different main categories of products, which are located in Turkey, Hong Kong and Shanghai. The Hong Kong office deals with apparel categories such as lingerie, shoes, casual wear etc. where they have a wide supply network for lingerie in different low cost countries such as China, India and Sri Lanka. BasicCo Hong Kong buying office connects with Sri Lanka to source commodity Lingeries from Sri Lanka. Therefore Sri Lanka has a buying office which deals with the local manufacturers for Lingeries which in turn connects with Product division.

The product division of ApparelCo is further divided into business units focusing on different customers. The business unit that specifically caters for BasicCo is known as ProdCo for the purpose of this thesis.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

5.2.2.2 Supplier base

While the Product division business unit works with a nominated supplier base, ProdCo also works with a nominated supply base. The supplier is nominated by the customer whom ProdCo needs to procure the raw material. For different raw material components customers provide a list of raw material suppliers. ProdCo has freedom to decide the supplier from the nominated list. As ProdCo deals with a basic product, the supply base is also nominated for basic/core material components that are predescribed using a specific specification. BasicCo has the freedom to suggest a raw material supplier if the supplier can meet the RM specification standards provided and approved by the customer. For the briefs, which is the product category made under ProdCo has number of key raw material components such as fabric, lace and elastics.

BasicCo has segmented the supply base according to the product portfolio i.e. cotton, Fancy and basic products. For cotton products, cotton fabric suppliers are sourced from Sri Lanka and China. Fancy products are mainly produced using Lace fabrics and key suppliers are situated in the Far East, Hong Kong and China. The Basic products use both cotton fabrics and lace fabrics. They share the same supply base for lace and cotton with the fancy and cotton briefs. Synthetic suppliers are also used for basic products. Other raw materials components such as elastics and other accessories are taken from a set supply base that has been suggested by ProdCo across all other brands under ProdCo.

BasicfabCo delivers almost all the cotton fabric quantity required by the BasicCo. Therefore the raw material supplier for the ProdCo is selected as BasicfabCo for the purpose of this thesis.

5.2.2.3 Manufacturing base

The manufacturing base for the Product division is mainly outsourced or subcontracted. The Product division subcontracts its cut-and-make operations for small and medium companies in Sri Lanka as well as outside the country. In particular, they outsource the products from lower labour cost countries such as Bangladesh.

The Product division currently subcontracts 90% of BasicCo's orders to subcontractors in Sri Lanka and retains 10% in-house. ProdCo do not outsource to Bangladesh as it is difficult to control the quality and compliance. There are three main subcontracting facilities: one leased factory and two outside factories. According to the BasicCo product portfolio, the more complex, fancy items are made at a locally owned facility while others, i.e. basic and cotton products, are subcontracted.

5.2.3 Planning cycle of ProdCo with respect to selected customer and supplier

BasicCo has two seasons for their basic Lingerie products with ProdCo. – spring/summer and autumn/winter – from January to June and July to December respectively. BasicCo seasons are numbered as 0,1,2,3,4,5,6,7,8,9,0 where odd

seasons falls under spring, even numbers falls under autumn. Thereby in one year they have two seasons as 0 and 1 whereas in the second year it continues as 2 and 3 until the numbers reach the 10th season.

When the styles are planned for a specific season, BasicCo plans for two different product ranges called top products and stars.

Top products (Top ranges) are also known as the core lines for the season. These are the continuous styles or the repeats from the previous season. These products drive sales with high volumes and are at the maturity stage in the product life cycle. BasicCo selects the top 10 products that had the highest sales in the previous season as the core lines for the new season. Modifications are minimal for the high selling ranges which go as core lines for the new season. Planning is done twice a year based on projections. The volume for a specific season is about nine million pieces. They usually do not manufacture the products that are called stars under the ProdCo.

Table 5-1 Planning cycle: ProdCo

Planning cycle	Seasons	Timing	Volume
Two times per year	Spring/summer Autumn/winter	Jan-Jun Jul-Dec	Approximately 9,000,000 pcs

5.2.4 Case Focus

The focus of the empirical element of the study can be explained using two dimensions, known as physical dimensions, which convert the physical inputs into outputs and process dimensions which control the physical dimension.

As the study focuses on the firm positioned in a supply network, the physical dimension of the study covers suppliers as well as customers for ProdCo. Hence the scope of the study, in terms of the physical dimension, spans from the customer to the supplier of ProdCo. Therefore the study focuses on BasicCo as the customer and BasicFabCo as the supplier.

Further, the study focuses on the process dimension or the planning activities related to the particular offering provided by ProdCo. Therefore the focus of the study will be the planning process of ProdCo, where the demand and supply is integrated to

provide the particular offering. Accordingly, the focus will be the demand and supply planning which controls the physical conversion of material from BasicfabCo to BasicCo. The scope of the study is highlighted in Figure 5-3.

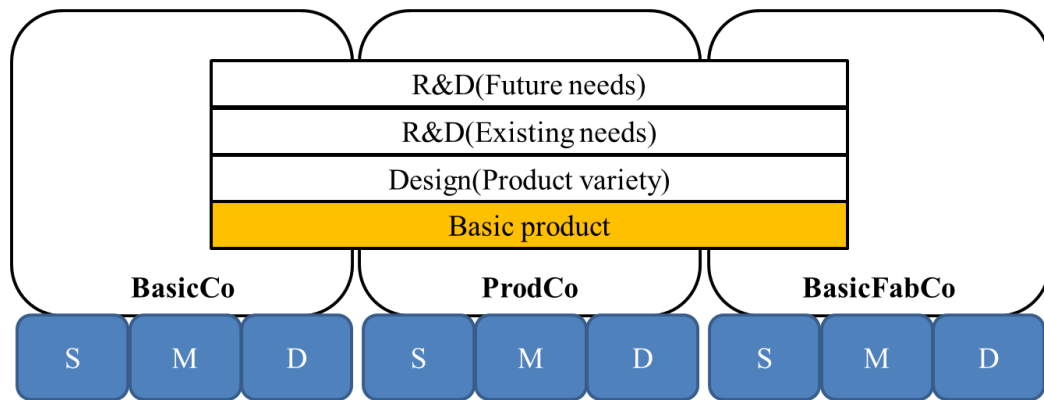


Figure 5-3 Scope of the study

5.3 Results of the study

5.3.1 Product Offering

The offering of BasicCo can be described as a basic or standard product, which is a repeat/continuous style from the last season. The BasicCo sales team, operating from the Sweden head office, does a historical sales analysis to identify the styles that have been sold in the past season in a specific period. The head office sales team then selects the styles to be repeated in the next season. These are called as core lines or top lines. Usually the top 10 items sold in last season are selected as core lines for the new season. Furthermore, some styles are selected with few modifications for the new season based on past sales figures. Hence the silhouette (shape), fabric type and colour of the products are considered as basic and standardized. Usually fabrics and other materials, i.e. colours, prints etc., are selected based on availability from the supplier. BasicCo does not invest in the development of new fabrics and materials, as this would add an additional cost. The fabric types used for these products are predominantly standardized cottons and micro fabrics which have to meet a standard BasicCo specification. Basic briefs are typically made from a 95% cotton and 5% elastine 160gsm fabric which is used for all seasons. In terms of colours, these products use standard/core colours available from the raw material suppliers for the season. Black, nude (skin) and white colours are used across both seasons. They are

usually supplemented by 2-3 season specific colours. BasicCo do not request any specific colour developments as, once again, this would add to the cost. Furthermore, the styling (or silhouette) of the products is developed using basic styling and standard block patterns. In the BasicCo brief product range, they only have three style; briefs, hot pants and string.

The limited material, colour and style options ensure limited product variety for BasicCo's range of basic briefs. As the basic/core product ranges are mainly repeats from the previous season, the demand of this offering is very predictable and the sales team are able to statistically forecast the sales quantity based on actual sales from the last season. Volumes of these products are high and may be produced by two or more apparel manufacturers. The duration of the product life cycle is also long and continues throughout the different seasons of the years. Some styles have been produced for over three consecutive years by ProdCo. After deciding on the specific styles for a season, the sales team identifies the specific period that the particular style is to be in the stores. (For a specific season they have periods that a particular style will be in the stores). The specific week which the style needs to be in the store is known as the ISW (In store week). The time window for delivery is regarded as high, as the lead time from order placement to order delivery is about 12 weeks.

Table 5-2 Offering: ProdCo

Offering			ProdCo	
			Theory	Actual
Offering	Product	Standard /Special	Std.	Std.
		PLC	Long	2-3 year
		Phase in PLC	Maturity	Maturity
	Demand	Volume	H	H
		Variety	L	L
		Variability	L	L
	Service	Lead time	H	12 weeks
		Delivery reliability	H	H
		Delivery frequency	L	L

5.3.2 Competitive Priorities

In the BasicCo offering, the customer's business concept is given as

“Fashion and Quality at best price”

(This is BasicCo 2013 Report)

The BasicCo report *“This is BasicCo”* on page 1 indicates that they offer the *“Best price”* through being *“cost conscious at every step”*. The demand and supply planning person (Contact no. 1-02) described how the actual retail market is very cost competitive, as the consumers are very price sensitive and will switch retail stores in order to obtain the lowest price for basic products.

To support the strategic objective of lowest cost, BasicCo sources suppliers who can cut-and-make the product for a low price. The Hong Kong office, which manages operations for BasicCo products, focuses on price when allocating a particular style to a country of supply. Basically the Hong Kong office sends artwork to each of the buying offices in the countries supplying lingerie products. From the price quotations received, the Hong Kong office decides with which supplier to place the order. Therefore the order winner for the offering related to ProdCo is cost.


However cost is not the only factor in becoming a supplier of choice for BasicCo. BasicCo also values the quality of the offering as well as compliance. BasicCo does not just go for the lowest price quotation when selecting their supplier, but also considers the ability of the supplier to meet the specific quality requirements. As a pre-requirement, the supplier should pass their audit for quality and compliance. Furthermore, BasicCo also values the timely delivery of the product. Accordingly, BasicCo is also concerned with the capacity availability of the manufacturer within a season, in order to make sure that the manufacturer can meet the delivery dates.

To support BasicCo's low cost strategy, ProdCo follows a four-stage process to identify a suitable manufacturing plant. First, the supplier must meet BasicCo's compliance requirements. Second, there is a quality process audit where the

manufacturing plant has to demonstrate that it has the necessary machinery and skills needed to make the products to meet the quality required by BasicCo. The third consideration is the capacity of the manufacturing plants, where the plant should be able to meet the minimum order quantity requirement. Finally, the manufacturing plant has to demonstrate its ability to meet the target price and produce the products to the required specification; they produce a ‘capability sample’ against which they are assessed.

In summary (as illustrated in Table 5-3) in order to meet BasicCo’s strategy of ‘fashion and quality at best price’, the order qualifiers (OQs) are quality, time delivery and compliance whilst the order winner (OW) is cost.

Table 5-3 Competitive priorities: ProdCo

Competitive priorities		Stage 1	
		Theory	Actual
 University of Moratuwa, Sri Lanka. Electronic Theses & Dissertations www.lib.mrt.ac.lk	Cost	OW	OW
	Availability		
	Product leadership		
	Technology leadership		
	Quality		OQ
	Timely delivery		OQ
	Compliance		OQ

In line with theory, Section 5.3.1 identifies the offering in stage 1 as a basic product, with stable demand, high volume and low variety. The theory suggests that the lead time for this product is long and empirically it is understood that lead time is three weeks. According to section 5.3.2, the competitive priority to provide the basic product is stated as being low cost, whereas the order qualifying criteria include quality, timely delivery and compliance. Hence it can be concluded that stage 1 supports hypothesis 1a and further provides empirical evidence for OQs. See- Table 5-4.

Table 5-4 Hypothesis 1a: Offering and competitive priorities: ProdCo

Hypothesis	Supported/ Not supported	Key insights
Stage 1 provides the basic product with low cost as competitive priority	Supported	OQs- quality, timely delivery and compliance

5.3.3 Collaboration intensity with supply partners

There are two aspects of the inter-organizational relationships that need to be considered; the intensity of collaboration with the customer (5.3.3.1) and the intensity of collaboration with the supplier (5.3.3.2). Each will now be discussed in turn.

5.3.3.1 Collaboration intensity- Customer

The relationship with BasicCo is considered to be transactional as the customer will switch to the lowest cost supplier who meets the qualifying quality, compliance and delivery criteria. As the product is a standard product of low complexity, it is relatively easy for BasicCo to change supplier. Even when the style is made by ProdCo for one season, supply will switch to a competitor for the next season if they can produce it at a lower cost. Accordingly, the demand and supply planning person (No.1-02) stated that

“...when the same product which ProdCo got the order in last season is quoted for a reduced price by another competitor this season, they go for that company. If in a next season, if ProdCo quote for a better price, the style will come again.”

Furthermore, contact no.1-02 believed that BasicCo was not interested in building relationship with their suppliers because they do not want to increase their overheads (and in turn their product costs) by unnecessary expenditure on developing relationships. BasicCo’s relentless pursuit of cost reduction is typified by the advice that they gave to ProdCo at their first meeting. To quote No. (1-2).

“...They asked us not to send them cards or flowers as they considered them as a cost. Even when they come to ProdCo for a visit they advised us to provide them with a basic lunch. When they are invited for a dinner the dinner bill has to be split between the customer and the company....”

This shows that the relationship between ProdCo and BasicCo is very transactional and that they do not have relationships with companies even at a social level as it will create a cost which will in turn be charged by the consumer. BasicCo want ProdCo to share the saving of unnecessary expenditure on relationship building with the consumer.

5.3.3.2 Collaboration intensity- Supplier

It is predominantly the customer, i.e. BasicCo, that identifies and selects the raw material suppliers. BasicCo nominates the supplier to ProdCo who then liaises with the supplier to procure the necessary raw materials for a product. As mentioned previously in section 5.3.2.1, the raw materials for the basic products have standardized fabrics and colourways. It is essential that the core fabric types are manufactured in a consistent way that ensures the standardization of colour and quality. Once again, the order qualifying criteria for BasicCo's selection are quality and compliance, with the order winning criteria being cost. This led BasicCo to contact suppliers for capacity booking for BasicCo's global requirement, i.e. total order quantity. This is mainly due to the fact that BasicCo can gain a price benefit through booking the material for the total order quantity. Further, as the volumes of the core products are high and the products are manufactured in different countries, BasicCo needs to maintain consistency of colour.

ProdCo can also suggest raw material suppliers. ProdCo has a strong supply base that it has developed over a number of years. The company has taken time to develop a relationship with its supply base. Whilst this can provide significant benefits for more premium products, where value-added services are required, for basic fabrics where cost is the main differentiator, they are less competitive. It is unusual for BasicCo to favour a ProdCo supplier with whom a relationship has been developed. BasicCo opt for a more transactional approach to raw material supplier selection based on cost. They do not wish ProdCo to develop a relationship with the suppliers they select.

ProdCo has a set supply base for other non-core raw materials, e.g. elastics. However, even with these materials they don't work with their own supply base or joint venture (JV) partners but the lowest cost suppliers determined by BasicCo.

As summarized in Table 5-5, the relationship that ProdCo has developed with both BasicCo (the customer) and the raw material suppliers (BasicfabCo) are transactional.

Table 5-5 Collaboration intensity between customer and supplier: ProdCo

Collaboration intensity		ProdCo	
		Theory	Actual
Collaboration intensity	Customer	Transactional	Transactional
	Supplier	Transactional	Transactional

In line with theory, Section 5.3.3 identifies the collaboration intensity between the customer and supplier in stage 1 as transactional. Hence it can be concluded that stage 1 supports hypothesis 2a.

Table 5-6 Hypothesis 2a: Collaboration intensity: ProdCo

Hypothesis	Supported/ Not supported	Key insights
Stage 1 has transactional relationships with network members	Supported	Cost focus culture constrain the network partners to build relationships.

5.3.4 Demand supply integration

The planning processes of ProdCo's business unit can be categorized as demand planning which concentrates on the sales and marketing plan (section 5.3.4.1) and the supply plan which concentrates on the operations plan. Demand planning provides demand related decisions while supply planning provides supply related decisions.

In ProdCo, demand planning and supply planning is done on an internal basis in order to confirm the requirements of BasicCo.

5.3.4.1 Demand planning

ProdCo decides their sales volume using the capacity availability of their subcontracting plants, which is usually about 900,000 pcs per month. This is an

internal decision making with the integration between the demand planning person (development merchant) and the internal capacity planning person (operations manager). Since BasicCo contacts with raw material supplier for booking the capacity, deciding the sales volume of ProdCo does not involve the raw material supplier. The decision on the volume per month needs to meet the minimum requirement of capacity that is provided by BasicCo, before the season prior to placing an order.

ProdCo also needs to decide on the price of the offering. After the sales volume is confirmed, ProdCo receives the artwork for specific styles with a target price. The demand and supply planning person provides a price quotation for each style after a discussion with the consumption team on raw material consumption and the operations manager on the SMV of the product. In this stage the sub plant is also involved to understand the cut-and-make price. As the price of raw material is pre confirmed by BasicCo, ProdCo does not have contact with the RM supplier. After several rounds of price negotiations BasicCo's Hong Kong office decides on the styles that are suitable for ApparelCo.

In the demand planning stage, the development merchant also needs to confirm their company's capability to develop the product with the required quality specified by BasicCo. Since most of the styles are continuous or have only minor changes, BasicCo does not usually have problems in meeting the specification. Generally, the demand and supply planning person hands over the product artwork and measurement list to the technical team to confirm the capability of meeting the specification. The details of styling and measurement lists are provided to the garment technical team while the details of colour and quality specifications are provided to the fabric technical team (colour team). The process to confirm the quality requirements is an iterative process, where the samples are produced and tested against the garment specification and fabric specification. The process is mainly to confirm the quality, not to make changes in the garment/fabric specification, since the products are standard products.

5.3.4.2 Supply planning

The supply related decisions related to the offering can also be discussed as follows, where ProdCo decides the internal suppliers who can meet the supply capacity, cut-and-make price and quality. As discussed in section 5.3.3, raw materials suppliers are not planned by ProdCo.

According to the internal capacity planning person (operations manager), first and foremost ProdCo plans its sub plants based on whether or not they meet the minimum requirements for compliance and quality. ProdCo's compliance auditor audits the sub plant against the standards and guidelines provided by BasicCo and influences the sub plant to develop the requirements before considering the sub plant with which to place a particular order. Secondly, the quality process auditor needs to confirm that a particular sub plant meets the capability requirement criteria to meet the expected quality level required by BasicCo. Thirdly, the sub plant needs to meet the minimum capacity requirements. ProdCo requires their sub plants to have a capacity of 1 million pieces per month.

In order to place the order, ProdCo decides the price to be paid to the sub plants, which is known as the cut-and-make price. The decision on the cut-and-make price involves the sub plant factory manager and the operations manager.

5.3.4.3 Integrative planning

Decision making on volume (capacity) and quality and compliance is done prior to actual decision making, where the supply planning person (operations manager) assesses the sub plant against the compliance, quality and capacity guidelines provided by BasicCo.

Actual decision making is done based on cost, where ProdCo selects the specific subcontracting firm with which to place the order. When considering the level of demand supply integration for decision making, it is evident that the price decision is an internal decision made by the internal marketing and manufacturing functions, which ProdCo makes in order to confirm the target price provided by BasicCo. The technical and quality manager, who is an expert in identifying the methods of

reducing SMV, is also involved in the decision making in order to influence the deciding the price and select the specific sub plant.

Furthermore after making the decision on price and when the order is placed, BasicCo confirms the order and sends the delivery deadlines, with the tech pack which provides product specification and the SMV. The demand planning person is responsible for handing over the delivery deadlines and product specifications with SMV details to the supply team so that it can focus on the supply processes (bulk production) to meet the delivery deadline and the given product specifications within the SMV provided. Thereby internal supply processes are aligned with the demand plan. However, it should be noted that demand plans related to delivery date and product specifications are not only aligned internally but also need to be aligned with the customer and supplier. The delivery deadline for the particular order from the subcontracting plant is calculated working backwards from BasicCo's ISW, which is the particular week the style should be in the store. Similarly, the deadline for raw material in-house is also calculated and provided to the raw material supplier. Moreover, the product specification according to the fit and construction is aligned with the internal sub plant, through quality auditors and also, in terms of raw materials, is aligned with the fabric inspection team at the sub plant.

It can be concluded that decisions with regard both to the demand and supply plans is taken at the internal level in order to confirm the capacity (delivery), quality specification and compliance requirements of BasicCo, as well as the target price provided by BasicCo. Since decisions are taken integrating demand and supply planning, it can be concluded that internal marketing and the SC are integrated and also that the internal and external SC processes are aligned with the demand plan provided by BasicCo to develop the offering.

Table 5-7 shows how demand and supply planning is integrated internally and how supply chain processes are integrated externally to align the demand plan of BasicCo.

Table 5-7 Level of demand supply integration: ProdCo

Demand supply integration			Theory	Actual
Type of integration	Supply chain integration	Internal	High	High
		Customer	High	High
		Supplier	High	High
	Demand chain and supply chain integration	Internal	Low	High
		Customer	Low	Low
		Supplier	Low	Low

In line with theory, Section 5.3.3 identifies the level of demand and supply integration as supply integration. Moreover empirical data shows that demand and supply is integrated internally. Hence it can be concluded that stage 1 supports hypothesis 2a. See Table 5-8

Table 5-8 Hypothesis 3a: Level of demand and supply integration: ProdCo

Hypothesis	Supported/ Not supported	Key insights
Stage 1 has internal to external integration of supply processes for decision making	Supported	Demand and supply processes are integrated internally.

5.3.5 Integrative capabilities

The integrative capabilities of ProdCo are described using the process dimension which discusses the integrative processes and structures that can be further described using governance and decision making structures, organization design and key performance indicators.

5.3.5.1 Process dimension

Process dimension includes the processes that integrate order qualifier as well as order winner criteria. Since order winning criteria represent the actual decision making, integrative processes related to order winner criteria are explained using the learning processes that are described as sensing, shaping and seizing processes. Processes related to prior decision making that describe the processes related to order qualifying criteria are also included.

5.3.5.1.1 Sensing processes

ProdCo receives a target price from BasicCo, which is the price requirement from the market and also the product specification for the basic product requirement of the customer. ProdCo has a fixed volume.

5.3.5.1.2 Shaping opportunities and capabilities

ProdCo does not shape the opportunities as the target price is confirmed by the customer and product specification is also decided by customer. ProdCo shapes the capabilities of the sub plant to meet the target price provided by BasicCo. However, when deciding the price quotation, contact no. 1-02 (demand planning person) stated that they try to keep the styles which they have had before. Accordingly, the technical and quality manager (1-03a) emphasized that they have identified the skill levels of different sub plants in handling different constructions and once the specification is handed in, they select the sub plant that aligns with the specific capabilities. Thereby the technical manager's team helps when considering the relevant methods to cut down the cut-and-make cost of the garment. Also the consumption team works with possible methods to reduce the consumption of raw material for a particular product. They provide appropriate cut-and-make methods to improve the efficiency of the sub plant through incremental learning.

Technical manager (Contact no.1-03) highlighted that in future they also hope to involve sub plants in the sample manufacturing process so that they can train the sub plant sample operators in the necessary methods to cut down the cost of cutting and making the product through reducing the SMV. The technical and quality manager mentioned that even though ApparelCo's own plants have implemented lean, six sigma in their processes, the sub plants currently do not have these practices. However, in future they hope to implement these operating systems into their leased plants.

5.3.5.1.3 Seizing processes

ProdCo's actual decision making is done to confirm the price. ProdCo has an internal decision making process with regard to confirming the price. This decision making process is to quote a competitive price for the basic, continuous style.

When the demand planning person receives the product and target price details, the development merchant needs to decide the price by using the consumption details and the cut-and-make price. When deciding the sales price of the product, the development merchant makes the price decision with the involvement of the consumption team, who provides the raw material requirements for the product, and the operations manager who makes the SMV calculation. Further, they obtain the involvement of the factory manager in deciding the cut-and-make price. As price is the order winner, there are several rounds of negotiation where BasicCo asks for price reductions. Therefore ProdCo have an iterative process, i.e. 1st quotation, 2nd quotation etc. in determining the sales price. However, in order to quote the lowest price, for these styles, the decision making process is wider and ProdCo has recognized the need to involve an expert in the technical aspects and consider obtaining the help of a technical and quality manager.

Moreover, it should be also highlighted that ProdCo has processes to integrate the order qualifying criteria. Accordingly ProdCo uses the guidelines provided by BasicCo to identify the internal sub plants. They use compliance and quality process guidelines as well as product quality guidelines to confirm that manufacturers meet the order qualifying criteria. Furthermore, they assess the capacity availability, before an order is placed with a sub plant, against the minimum and maximum level of capacity requirements.

Therefore integrative processes that align the OW and OQ criteria can be presented as in Table 5-9.

Table 5-9 Integrative capabilities- Process dimension: ProdCo

Integrative capabilities		Theory	Actual
Integrative Processes	Cost	Sense- Price Shape- Capabilities Seize- Supply plan	Sense- Target price Shape capabilities– Method study/work study to meet efficiency Seize - Internal supply plan
	Availability		
	Product leadership		
	Technology leadership		
	Quality		Quality process audit Quality product
	Timely delivery		Minimum and maximum capacity requirement
	Compliance		Compliance audit

5.3.5.2 Governance and decision making structures

Internal decision making is done, when selecting the particular manufacturing plant, mainly considering the price. Since ProdCo realized the input of expertise in deciding the price of the product based on SMV, the decision making process uses the help of a technical and quality manager. The technical manager can influence the internal subcontracting teams on price decisions. However, it is difficult to negotiate the price with the customer. Similarly, BasicCo also has a technical person who influences ProdCo in price decisions. Therefore Mode 2 coordination structures are available to act as an influencer in decision making on price. In ProdCo, the technical and quality manager acts as the mode 2 structure. However although the technical manager influences the price decision of the sub plant, he does not have the power to influence the price decision of BasicCo as it is fixed.

In ProdCo, Mode 3 structures are also available to make prior confirmations on compliance/quality and delivery in terms of capacity availability. Thereby a separate compliance and quality auditor is available in ProdCo to assess the quality standards and compliance standards specifications provided by BasicCo. However, compliance and quality are again audited by the BasicCo auditors before order placement with

the sub plant. The capacity availability with the sub plant is also taken into account before placing the order and the capacity planner acts as an integrator in confirming the capacity with the sub plant.

Table 5-10 shows the governance and decision making structure for ProdCo.

Table 5-10 Integrative capabilities-Governance and decision making structure: Prodco

Integrative capabilities		Theory	Actual
Governance and decision making structure	Cost	Boundary spanning person	Technical manager(Act as a person with expertise. But not a boundary spanner)
	Availability		
	Product leadership		
	Technology leadership		
	Quality		Quality auditor
	Timely delivery		Capacity planner
	Compliance		Compliance auditor

5.3.5.3 Organization Design

According to the technical manager (Contact no. 1-03), the line manager of the sub plant is very efficiency focused and does not consider the quality of the products in production.

“Both production manager and quality manager get together and push for the efficiency....the culture of the sub plant to meet the quality is very poor.”

The leader is considered to be a cost focused person and this has become an inhibitor in meeting the quality requirements expected by the customer. As a solution they have kept their own quality inspector in the sub plant to assess the quality of the products. Furthermore ProdCo hopes to have a rotating technical person in the sub plant that will make sure that the sub plant meets the SMV requirements.

Moreover, ProdCo has a merchandiser who is overlooking the delivery deadlines to ensure that the sub plant meets the delivery date.

In ProdCo there is a liaison person who is continuously monitoring both the overtime working hours and working conditions to make sure that the sub plant works according to the compliance standards of BasicCo. (See Table 5-11)

Table 5-11 Integrative capabilities- Organization Design: ProdCo

Integrative capabilities		Theory	Actual
Leadership and culture	Cost	OW	Cost focus
	Availability		
	Product leadership		
	Technology leadership		
	Quality		Does not focus on quality (becomes an inhibitor)
	Timely delivery		Focus on the delivery date
	Compliance		Focus on compliance
Liaison devices	Cost	OW	Work study officer
	Availability		
	Product leadership		
	Technology leadership		
	Quality		In line quality
	Timely delivery		Capacity planner
	Compliance		Compliance auditor

5.3.5.1 Key performance indicators

Key performance indicators need to be available in the sub plant, focusing on the customer requirement for quality, delivery, compliance and above all to meet the cost.

The technical and quality manager stated that the sub plant monitors the workers' performance against efficiency, where output numbers are considered according to the quality of the products. ProdCo has a rating system where they rate the sub plant against these measurement systems; in that system they consider the level of quality to be met by the sub plant, meeting the delivery dates etc., as shown in Table 5-12.

Table 5-12 Integrative capabilities- KPIs: ProdCo

Integrative capabilities		Theory	Actual
KPI	Cost	OW	KPIs focus on the efficiency in terms of the output of products with zero defects.
	Availability		
	Product leadership		
	Technology leadership		
	Quality		KPIs focus on the efficiency in terms of the output of products with zero defects.
	Timely delivery		Rating system assesses the sub plant on meeting the delivery deadline.
	Compliance		

In line with theory, Section 5.3.3 identifies that integrative capabilities are aligned with the competitive priorities related to order winning criteria as well as the order qualifying criteria. Hence it can be concluded that stage 1 supports hypothesis 4a. However, it should also be noted that integrative processes related to OW, provided different empirical evidence. Thereby the shaping processes only shape the supply capabilities but not the opportunities. The integrative structure that acts as an influencer only influences the supply planning, not the demand planning. Although the literature suggests that this structure is a boundary spanner, technical manager is a person who has complementary knowledge in manufacturing. See-Table 5-13

Table 5-13 Hypothesis 4a: Integrative capabilities : ProdCo

Hypothesis	Supported/ Not supported	Key insights
Stage 1 needs integrative capabilities to integrate cost requirements.	Supported	Integrative capabilities also integrate the order qualifying criteria. Integrative processes related to OW criteria only shape supply processes aligning the opportunities.
		Integrative structures related to OW that act as influencers only influence the internal supply planning. Hence on the internal supply planning is shaped not the opportunities. Therefore the technical manager is not a boundary spanner.
		Leader concerns with both OW and OQ criteria. Efficiency driven cost focus culture. Liaison devices are available. Eg: Work study, Quality inspection, delivery
		KPIs also focus on OW and OQ criteria. No. of quality outputs per hour.

5.4 Summary of the chapter

This chapter provides the case study results of ProdCo which represents stage 1 in the industry upgrading continuum. Accordingly the case results identify how basic product offering impacts on the competitive priorities, collaboration intensity and integrative capabilities of an apparel manufacturer's network. The empirical evidence collected from stage 1 of the industry upgrade continuum supports the hypotheses from 1a-4a, where hypothesis 4a provided key insight. Though theory suggest that shaping process shape both opportunities and capabilities, ProdCo empirical data suggest that processes are available to shape internal supply capabilities but not demand. Therefore the person influence in the decision making is not considered as a boundary spanner. Moreover, it also provided key insights to the theory. The summary of the empirical evidence, which was tested against the relevant hypothesis developed against the conceptual framework in Chapter 3, is provided in See - Table 5-14.

Table 5-14 Test of hypotheses against the empirical evidence: ProdCo

No.	Hypothesis	Supported / Not supported	Key insights
H1a	Stage 1 provides the basic product with low cost as competitive priority.	Supported	OQ- Quality, Timely delivery and compliance
H2a	Stage 1 has transactional relationship with network members.	Supported	The costs focus culture of the network members do not allow them to build relationships.
H3a	Stage 1 has internal to external integration of supply processes for decision making.	Supported	Though demand and supply processes are not integrated externally, they are integrated internally within the node. Supply processes are integrated externally.
H4a	Stage 1 needs integrative capabilities to integrate cost requirements.	Supported	Integrative capabilities also integrate the order qualifying criteria. Integrative processes related to OW criteria only shape supply processes aligning the opportunities.
			Integrative structures related to OW that act as influencers only influence the internal supply planning. Hence on the internal supply planning is shaped not the opportunities. Therefore the technical manager is not a boundary spanner.
			Leader concerns with both OW and OQ criteria. Efficiency driven cost focus culture. Liaison devices are available. Eg: Work study, Quality inspection, delivery
			KPIs also focus on OW and OQ criteria. No. of quality outputs per hour.

In stage 1, since the supply chain needs to upgrade to provide the evolving consumer needs in the existing market, as depicted in Chapter 2, single loop learning, where industry develops incremental learning capabilities to meet the cost requirements, will be appropriate. This is done at the internal level by each node in the supply chain. Therefore learning processes that align with the order winning criteria consider incremental learning at the internal level within the supply processes through a work study/method study to meet the cost requirements. So that the decision making role related to order winning criteria is not a boundary spanning person but a person with a complementary knowledge on internal manufacturing processes who will shape the internal supply capabilities but not the opportunities,

Since each node in the network requires internal level incremental learning to meet the cost requirements, the network partners do not learn from each other. Hence there is no need to have a relationship between customer and supplier. Therefore collaboration intensity between customer and supplier is transactional. However, with the use of order qualifying criteria the members are potentially aligned to meet the OQ and specifically chosen according to the cost requirement. Accordingly, although the network relationship is transactional, there are potential members in the network.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

6 CASE 2: INVESTIGATION OF THE STAGE 2 OF THE INDUSTRY UPGRADE CONTINUUM

6.1 Introduction to the chapter

This chapter presents the results of the first of the four embedded cases within the apparel manufacturer ApparelCo. This chapter is focused on stage 2 of the industry upgrade continuum of an apparel manufacturer, where the industry upgrade to provide the evolving needs of the customer in providing the product variety needs.

As illustrated in Figure 6-1, there are 4 additional parts to this chapter following the introduction. The case context is presented in section 6.2. Section 6.3 presents the results of the case study. This section discusses the results of the study based on the analysis templates developed against the conceptual framework. Section 6.4 presents the summary of the chapter which brings the chapter to a close.

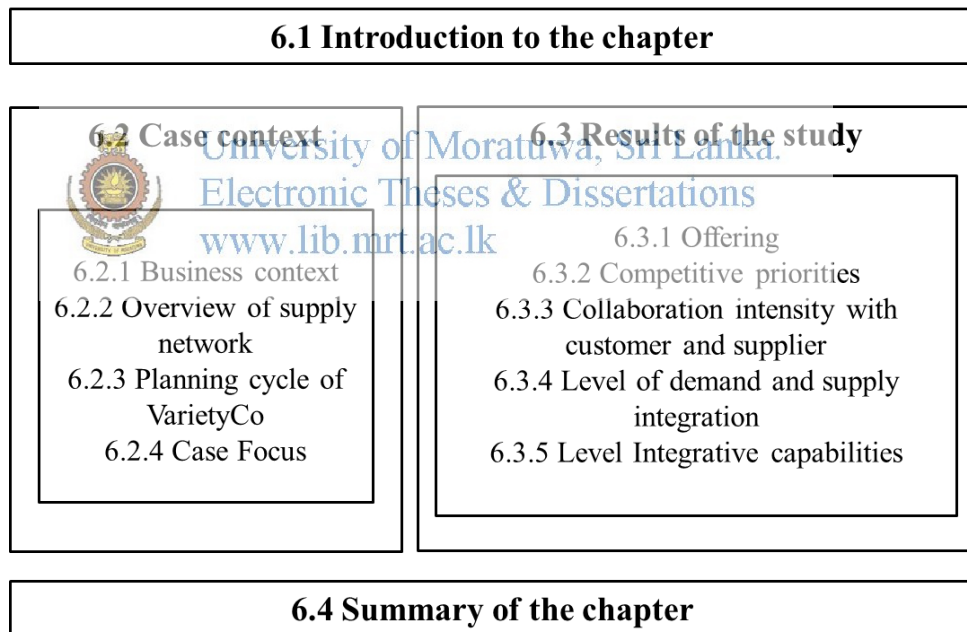


Figure 6-1 Topic Breakdown of chapter 6

6.2 Case context

6.2.1 Business context

There are 2 key elements of the business context necessary to position the case. Firstly an overview of the positioning and strategy of the division which provides the

service in terms of Variety (Variety division) in section 6.2.1.1, secondly an overview of the external environment in which variety division operates based on a Porter's 5-Forces analysis in section 6.2.1.2.

6.2.1.1 Positioning and strategy

Along the years from its beginning in 1988, ApparelCo developed its brand portfolio to include low cost focus commodity retailers as well as more value-added retailers.

Due to the threat of quota removal in 2005, ApparelCo took a major step forward in their strategy to offer design services to the customer which enable them to provide add value products. This was mainly due to the fierce competition they faced at that time with the larger commodity product providers such as China and also emerging low cost bases such as Vietnam and Madagascar. Introduction of design as a service enabled the company to move into the second stage in the customer centric servitization process. This led the company to introduce separate divisions as Divisions A and B, which focus on high value-added offerings for more upmarket customers.

While both division A and B focus on providing the high value-added offerings, main customer for ApparelCo belongs to a separate division called division A and other customers who focus on services are included in the Division B. (Figure 6-2). From \$390million income generated in 2013, the main customer, which is the focus of division B included \$220million which is more than 50% of the total income of ApparelCo. Therefore the study focuses on the Division A of ApparelCo which focus on the main customer, FashionCo.

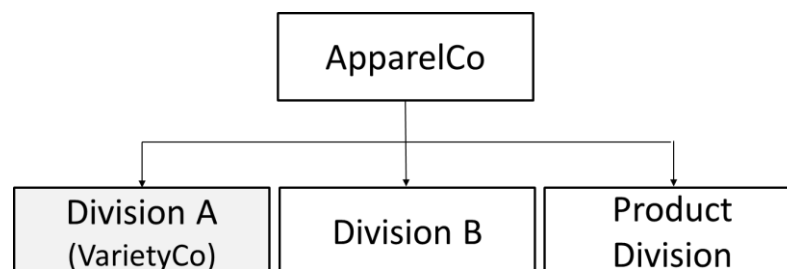


Figure 6-2 Positioning and strategy

6.2.1.2 Overview of the external environment

The specific divisions which focus on providing design services compete with local and overseas competitors in providing seasonal products. The main overseas competitors are Mexico when consider the US market due to the close proximity. However the main strength of VarietyCo is their reputation for quality and compliance in producing Lingerie for world leading companies.

Considering the external environment in which the Variety Division operates in terms of the 5 dimensions of Porter's Five Forces (Porter, 1980).

Customer power: Customer has a bargaining power as customer has the upper hand in selecting the product specification. However ApparelCo design and product development team also participates in designing the product. Further VarietyCo has power in providing the availability of product according to the seasonal demand.

Supplier power: Suppliers are having a bargaining power as they provide the prints/textures/ colours of the fabrics, laces align to the designer's needs. Suppliers can directly present these to the FashionCo without going through ApparelCo designer. However, ApparelCo develops designs together and negotiates a price. With the availability of products on-demand, supplier has a bargaining power as they need to keep the capacity to provide the material requirements.

Threat of new entrants: Since the VarietyCo offers basic product with seasonal changes, the threat of new entrants is medium. Within their business model innovation to provide the surge demand, it is difficult for a new supplier to enter.

Threat of substitutes: Threat of substitutes is also medium as it is a basic product which aligns to the seasonal trends.

Competitor Rivalry: Since apparel company has credibility and accountability on guaranteed delivery and high quality together with high standards in labour compliance, competitor rivalry can be mentioned as low. Further business model innovation in providing the on demand products make them distinguish from the competition.

As a whole it can be mentioned that bargaining power of VarietyCo is medium compared to it's competitors, customers, suppliers etc.

6.2.2 Overview of the supply network

6.2.2.1 Customer base

As noted earlier, VarietyCo under division A is the focus of the study. Therefore VarietyCo deals with the main customer for the ApparelCo who provides the highest income in terms of revenue generation which is more than 50% of ApparelCo's total income. This customer is based in USA and is a specialty retailer who focuses on women's Lingeries that includes bras, briefs and other apparel categories that fits within women's underwear.

The customer has two main supply chains, one focus on high value-added products in terms of fashion and innovative products, which is sourced from Sri Lanka and India and the basic cost products that is sourced from China.

Given the strategic importance of the account where more than 50% of the revenue is accounted from this customer, the specific business unit which focuses on providing the service provision to the customer is considered as the embedded case unit for the study. For the purpose of this thesis, the customer is known as FashionCo and the embedded case unit is known as VarietyCo.

While FashionCo source bras, briefs and apparel categories from VarietyCo has further divided their business unit according to the different product categories. Focus of the specific embedded case unit will be the specific sub business unit that focuses on the brief range. These sub-units are again dividing into sub divisions according to the core material type they use in production, such as cotton and synthetic. Therefore the main focus of the study is the cotton brief product range.

The main focus of the end consumer age range is 34-40 years which falls into the middle income level group. These women are more fashion conscious and considers Lingeried as a special product in their wardrobe. Therefore they tend to pay more price for the Lingeries which align with the seasonal trends.

6.2.2.2 Supplier base

As mentioned earlier, FashionCo product portfolio has two different products ranges for briefs, as cotton briefs and synthetic briefs. VarietyCo works with a common supply base for cotton fabrics and also synthetic fabrics, which is approved by the FashionCo. When considering the briefs, other main raw material suppliers include lace suppliers and elastics suppliers. VarietyCo works with a wider supply network in sourcing new designs for lace and elastics that fit with the seasonal trends. FashlaceCo delivers most of the lace products required by the FashionCo. Therefore the raw material supplier for the VarietyCo is selected as FashlaceCo for the purpose of this thesis.

6.2.2.3 Manufacturing base

The manufacturing base for the products done under VarietyCo also segmented according to the different product ranges where manufacturers are specially equipped with necessary capabilities i.e machines and skills for making the specific product category. Therefore there are five main manufacturing plants which they use to produce cotton briefs for FashionCo. Key manufacturing unit they use to manufacture the cotton brief products is situated in Koggala while two other in India and Killinochchi in Sri Lanka. A special plant is situated in Biyagama Zone to provide the surge demand volume.

6.2.3 Planning cycle of FashionCo

FashionCo has 5-6 seasons namely spring, summer incl high summer, fall, holiday and resort. The number of seasons has been increased since the end consumer needs variety in their products for different seasons. (Table 6-1)

Table 6-1 Planning cycle: VarietyCo

Planning cycle	Seasons	Timing-Sales months	Volume
6 times per year	Spring	Feb-mar- Spring	35 million pcs per year-Base demand volume
	Summer-High Summer	Apr-May- Summer	
	Fall	Jul-Aug-Fall	1.5 million pcs as speed delivery- Surge demand volume
	Holiday	Aug-Dec-Holiday	
	Resort	Jan- Feb-Resort	

6.2.4 Case focus

As mentioned under section 6.2.4, the focus of the embedded case will be the planning process of a specific service provision in terms of product variety.

Since the planning process incorporates the supply network case focuses on the customer and supplier who are dealing with VarietyCo. Accordingly the customer will be FashionCo and supplier is a lace material supplier for VarietyCo that is named as FashLaceCo.

According to the planning process that spans from FashionCo to FaslaceCo will be the focus of the case.

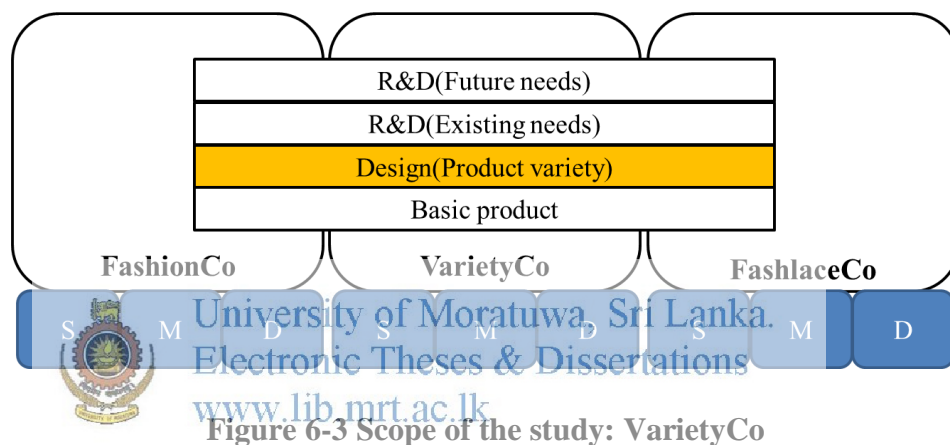


Figure 6-3 Scope of the study: VarietyCo

6.3 Results of the study

6.3.1 Offering

For each season, VarietyCo plans for three different product ranges. First is the Cotton core range, which is used as a Basic every day wear. This product range uses very basic shapes with basic waist band elastic and very basic leg elastic. Second is the Lace waist range which has Basic shapes like cotton core range but has a lace in waist and leg which makes the range more expensive and prettier. In these two product ranges they have a standard fabric across the core ranges and this is 95% cotton and 5% Lycra. In their synthetic range the core fabric is 83% Nylon and 17% Spandex. While there are about 14 different styles offered per season as core styles, they have 7 specific styles under the cotton core range (Elastic range) and another 7 specific styles under the lace range. Further there are about 14-20 season specific

colours offered per season per style. The core ranges described above change according to the seasonal trends with the use of colours/ prints/embellishments that add on to the standard, core fabrics/lace and elastics they use.

Designer(Contact no.2-3) mentioned,

“When it is Xmas sequin may come and when it is summer, flowery prints may come.....“

The third range is the Fashion range which involves the design teams in developing new products using newness in lace/elastic etc. While there are about 4-5 new products introduced under the fashion range, the fabric, style or silhouettes (shapes) will remain the same as in the core styles. Mainly for the new styles, they change the texture/structure(design) of the lace and elastics according to the new concepts introduced in the particular season.

Designer(Contact no.2-2) mentioned,

“We may use hearts in the elastics or may use floral structure in the lace to match the season.”



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

When consider the FashionCo brief product range, variety of product range can be mentioned as high with the number of shapes or silhouettes they use and the range of new season specific colours and prints. Further along with their fashion range they offer new textures in elastics and laces as new products for a season in order to fit with the seasonal trends to ensure higher variety to meet the preferences of fashion conscious consumer.

Since the different shapes (styles) are provided throughout the year in different seasons, sales and marketing team can predict the demand pattern for core shapes (stylings) based on past sales figures. However, as consumers are with range of preferences in terms of seasonal specific colours/prints, their buying behaviour is not predictable in terms of the seasonal product variety they offered. Once again sales and marketing team at FashionCo can forecast the sales figures in terms of colours based on past sales in the specific season, but this is not very predictable. Hence the number of garments that will be sold from each colour/print is not very predictable.

Volumes of the core products are about 100,000 whereas new fashion products are about 50,000 pieces. Duration of the product life cycle is about 2-3 years and the phase of the life cycle is in maturity stage. But as these act as seasonal products, the duration of the specific product with seasonal colour and prints is 3 months which is the duration of the season. Time window for delivery can be mentioned as high as the lead time from order placement to order delivery is about 12 weeks. FashionCo surge demand products will require very shorter lead time which is about 14 days and delivery frequency for surge orders are high.

Table 6-2 shows the offering of VarietyCo.

Table 6-2 Offering: VarietyCo

Offering			Theory	Actual
Offering	Product	Standard /Special	Std.	Std. Core material/ Core styles
		PLC	L	L -Top ups 3 months
		Phase in PLC	Maturity	Maturity
		Volume	H	H
	Demand	Variety	H	H
		Variability	H	H
		Lead time	L-Base demand S – surge demand	Base- 2-3 months/ Surge-14 days
	Service	Delivery reliability	H	H
		Delivery frequency	H	H

6.3.2 Competitive priorities

FashionCo website describes their target market as,

“Customers are sexy, confident and have a desire for sensual fashion”

These women are more fashion conscious and consider Lingeries as a special product in their wardrobe. Even though they tend to pay more price for Lingeries which align

with the seasonal trends, however they also consider the cost as these customers fall into the middle income group. (Contact no.2-2)

In line with the competitive priorities of the consumer, FashionCo always make sure that they offer a range of products that captivate the customer experience. The mission statement of FashionCo provides evidence for this.

"FashionCo is committed to building a family of the world's best fashion brands offering captivating customer experiences that drive long-term loyalty and deliver sustained growth for our shareholders."

For each season VarietyCo design team identifies the fashion trends and present these to FashionCo design team. When the concept for the specific season is finalized, both designer and fabric tech work in SL together in identifying the laces, elastics or embellishments align with the conceptual download provided. In terms of selecting the raw material suppliers, VarietyCo does not select the new design if it does not meet the target price of the FashionCo. However it was emphasized that since the designer wants to see variety of options from the raw material suppliers, the selection of the raw material suppliers is not bounded by the price limit.

Designer, Contact No.2-3a mentioned,

"We do not want to limited ourselves only because of the price point. We want to open ourselves to see more options in terms of new designs"

Further she described,

"It is better to have an expensive lace which provides the appropriate design, and then reengineer it to hit the price afterwards."

This led VarietyCo sourcing team to work with a wide range of suppliers who are capable of offering new designs in lign with the seasonal trend. When they find a better option, they work further to reduce the price of the particular component. Accordingly, VarietyCo consider the availability of product variety as the order winner in selecting the supplier within the target price.

FashionCo also consider this kind of process in selecting the vendors. They ask vendors to present the print/ embellishment ideas to FashionCo. FashionCo again pick some of the ideas and ask to do a 3D garment product from the ideas. Customer gives the direction which one they would like to move forward with.

FashionCo ask the vendor to quote a price for the product along with the 3D product. FashionCo may again ask for price reductions in the 3D product by doing alterations in the 3D product. Once again the competitive priority becomes product variety at low cost.

Although it was emphasized that competitive priorities of VarietyCo is availability in terms of product variety within the low cost, it should be also emphasized that the FashionCo is really concern in quality and the compliance of their suppliers. According to the FashionCo website,

“FashionCo takes much pride in sourcing their products from places that meet their strict standards and no tolerances”

According to above quotation, FashionCo do not, keep tolerances in environmental and ethical aspects.



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Therefore all the raw material suppliers used by the VarietyCo needs to be in the customer nominated group of suppliers who meet the compliance and quality standards as per the guideline given by the customer. Further the manufacturers who make the FashionCo products also needs to meet the compliance and quality standards specified by the FashionCo. If VarietyCo suggests a new raw material supplier who provides a new design, then VarietyCo needs to ensure that these suppliers meet the quality and compliance standards specified by the customer. Hence it is assessed whether they have Aucotex certificate, ISO certificate etc. More over FashionCo has product specifications that provide the fit requirements, VarietyCo needs to ensure that they can meet the product specification in order to place the order. FashionCo also has a raw material specification for each RM component, which needs to be approved before the order placement.

Furthermore they consider the timely delivery of the product. Since the product variety is high and unpredictable, volume is difficult to predict. Therefore FashionCo gets prior confirmation from the manufacturer about their minimum and maximum order quantities for stable volume quantity and also for the surge demand volumes. Align with FashionCo, VarietyCo also consider the minimum and maximum order quantities for stable volume quantity and also for surge demand.

To conclude, when consider the order winning criteria and order qualifying criteria for FashionCo, it can be said the most critical factor which acts as the order winner for FashionCo becomes availability in terms of product variety while cost is also considered. Therefore cost is considered as order winner 2 while availability in terms of product variety as order winner 1. Quality, compliance and timely delivery become the order qualifiers. (Table 6-3)

Table 6-3 Competitive priorities-VarietyCo

Competitive priorities		Theory	Actual
 OW/OQ Criteria	Cost	-	OW2
	Availability	OW1	OW1
	Product leadership		
	Technology leadership		
	Quality		OQ
	Timely delivery		OQ
	Compliance		OQ

The empirical evidence supports the hypothesis 2a which address the research question 2 on offerings and competitive priorities. While theory suggest the order winning criteria as availability of products in terms of product variety, empirical evidence suggest the order winning criteria is product variety at low cost. Further it identifies order qualifying criteria as quality, timely delivery and compliance Table 6-5

Table 6-4 Hypothesis 1b: Offering and competitive priorities: VarietyCo

Hypothesis	Supported/ Not supported	Key insights
Stage 2 provides product variety with availability as competitive priority	Supported	Order winning criteria identified as product availability at low cost. Order qualifying criteria as quality/ time delivery and compliance.

6.3.3 Collaboration intensity

There are two aspects of collaboration intensity that need to be considered; the intensity of collaboration with the customer (6.3.2.1) and the intensity of collaboration with the supplier (6.3.2.2). Each will now be discussed in turn.

6.3.3.1 Collaboration intensity- Customer

Demand and supply planning person (contact no. 2-2) emphasized that in order to design the raw material prints/ embellishments/ textures, continuous coordination with the customer, FashionCo is very important. She further mentioned that there are different presentations that they do to the design team at FashionCo, where VarietyCo designers travel to USA and several design visits from customer’s design team to VarietyCo to collaboratively work with them.

These visits are also taken as relationship building activities. Demand and supply planning person (contact no.2-2) mentioned,

“We have 2-3 design visits from FashionCo where we organize outings, dinners to build relationships.”

Designer (Contact No.2-3a) in VarietyCo stated that they really wanted to have a closer relationship with the customer in order to understand what customer requirements in new designs. She further described that it was the main reason for them to have a separate design facility in Newyork so that the people in Newyork can read the minds of the FashionCo design needs as well as the trends in the USA market, in identifying the design requirements of the consumer.

She further described the relationship they have with the customer (Contact no. 2-3a),

“Normally FashionCo do not allow any one of the vendors to get into their design studio but once when I was there they took me to the design studio, to show how they share their learning.”

In summary it can be said that VarietyCo has to develop relationship with the FashionCo in providing the service offering in terms of availability of seasonal designs.

6.3.3.2 Collaboration intensity - Supplier

When consider the supply base for VarietyCo, the unit has a wide range of raw material suppliers for laces and elastics who really works closely with them. Some of these suppliers are local based while some others are foreign based. However demand and supply planning person (contact no.2-2) mentioned that they always tend to use suppliers who have better relationship with them when developing new designs.

She further explained that when they have close relationships, they can rework or redevelop an artwork to meet the customer specific seasonal trend without an extra charge.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

“Some of the foreign suppliers which are not very close with ApparelCo may ask for a development cost to do alterations. Eg: lace width etc. which is not in the artwork. Sometimes this is a risk as there is no confirmation from the customer that they will buy the style.”

So they usually work with the suppliers who are close with them who will do the minor changes in the design with out and extra change because of the relationship.

Also at the time when they really need to cut the cost of the new design in order to get the order from the customer, the suppliers who have better relationships will provide benefit over the others.

Contact No.2-2 mentioned, they can call lace supplier and say,

“Can you reduce the price by 2 cents as we really need the style to be in...?”

Not only with fashion (new) products for the season, but also with the core products that alters with the colours and prints to fit the seasonal trends, again the supplier relationship important in developing the specific colours and prints for the specific season. Demand and supply planning person (Contact no. 2-2) mentioned,

“Sometimes Sample yardage is needed today it self since customer need the sample tomorrow. For these we need load of relationship”

Furthermore, the surge order deliveries really need continuous coordination with the customer and supplier.

Accordingly, collaboration intensity with customer and collaboration intensity with supplier can be considered as relational.

Table 6-5 Collaboration intensity : VarietyCo

Collaboration intensity		Theory	Actual
Collaboration intensity	Customer	Coordination	Coordination
	Supplier	Coordination	Coordination

Empirical evidence for collaboration intensity, suggest that relationship with customer and supplier is relational, where the firm works with customer and supplier in developing new designs to match with the seasonal trend requirements. (Table 6-6)

Table 6-6 Hypothesis 2b: Collaboration intensity: VarietyCo

Hypothesis	Supported/ Not supported	Key insights
Stage 2 has collaborative relationship with network members	Supported	Relationship building activities are held to develop the relationships.

6.3.4 Level of demand and supply integration

6.3.4.1 Demand planning

Demand planning for the offering in terms of product variety mainly considers the product variety as well as the price of the product. Moreover also plans for the delivery dates in terms of volume needed.

First and foremost the capacity per year need to be confirm to the FashionCo at the beginning of the year as well as capacity per season at the beginning of each season. Usually in each year they confirm the minimum and maximum order quantities for stable volume deliveries as well as the surge volume deliveries. Accordingly, VarietyCo demand and supply planning persi with the help of the centralized capacity planner confirm the capacity availability. Capacity for the stable demand deliveries will be provided separately based on the supply capacities available with the manufacturers who are dealing with the demand deliveries, while capacity of the surge demand delivery will be given based on the capacity availability of the manufacturers as well as RM suppliers who are dealing with the surge orders.

Design team comes up with new seasonal products in terms of product variety. Decision of the relevant products is made integrating with the technical team in VarietyCo and also with the manufacturer and RM supplier when needed. The price of the product also decided integrating with the internal technical team and the supplier's technical team within the target price of the customer. The decision of the product range to be sold in the specific season will be taken by the buying team in the FashionCo.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

6.3.4.2 Supply planning

The capacity is also booked with the manufacturers against the proposed forecasted plan given by the customer for the year. Demand and supply planning person provides a delivery plan to the supply base. Variety of products to be manufactured will be decided according to the designer's product specification that is confirmed through integrative planning. The product specification is provided to the supply base through the technical details to reduce the cost of manufacturing and with the quality requirements.

6.3.4.3 Integrative planning

Product range in terms of product variety will be planned interactively with customer and supplier. Therefore this planning process is discussed under integrative planning.

Demand and supply planning person(Contact no.2-2) states,

“In April 2014, designer in US and SL works for spring 15”.

Accordingly, designer at FashionCo, VarietyCo as well as in FashionLaceCo work together in finding a trend for the season and then appropriate design eg: lace/embellishment/ print align to the season. Then they develop a 3D sketch as an appropriate design for the specific season. VarietyCo designer in USA sits with the customer and develops the sketch of the 3D product and the technical specification and send to Sri Lankan designer to start work with the sample product.

Demand planning and supply planning person calls for a tech pack meeting which is known as DRA(Design Risk Assessment) that assess the risk associated with the product in the bulk production. Every one gives their feedback to measure the feasibility of the design in the production and identifies the resource needed to manufacture the particular style.

FashionCo designer presents the styles to their planners, sales merchants, directors and decide what styles will go for the season. Designer tries hard to market their ideas to the top management. Sales team and top management are very conscious in the decision as if the style will not sold then there is a problem. They research for US buying history and look at the market and take a decision whether to buy it or not to buy it. FashionCo sales and marketing team plans the products that will be sold in the next season with the cost. Probable when they plan they ask for price reductions. Accordingly, VarietyCo technical team may have conversations for reducing the price through amending the style in terms of RM consumption/SMV or may work with RM supplier to reduce the price of specific components. This may do iterative till the target price is achieved.

FashionCo Sales and marketing team pick the best suited colours/prints for the particular styles and ask the VarietyCo to develop samples in these colours and prints. Samples need to be sent in the given colours for style review meeting. FashionCo has the style review meeting, where they display a board room in the form of a store with all the samples in specific colours and prints. Customer's sales team and the design team will pick all the colours and prints that will be going in that

season and provide the specific product order placement to VarietyCo with the colour/ print requests.

Accordingly in deciding the product variety interms of new designs integrative planning is needed where demand and supply plan is developed using the help of integrators such as designers and technical team.

However it should be noted that as noted earlier in section 6.3.3, when selecting the materials first and foremost designer needs to make sure that the particular supplier meets the quality and compliance standards. In order to confirm the quality requirements, FashionCo ask varietyCo to send samples from each and every colour and print and they approve the quality of material as well as the fit and construction against the quality specification. Accordingly, after the demand and supply plan is developed, order placement is done so that VarietyCo can go ahead with the bulk production. As per the supply plan, product specification and delivery date requirements that will be provided to VarietyCo supply team for sourcing, manufacturing and delivering the products. Accordingly, supply chain is integrated internally as well as externally with the supply chain partners.

Therefore, it can be concluded that in planning, demand plan and supply plan for the offering is interactively planned not only integrating the internal marketing and supply chain but also integrating the external customer and supplier in decision making. Supply chain is integrated to provide the offering according to the supply plan. (Table 6-7)

Table 6-7: Demand and Supply integration: VarietyCo

Demand supply integration			Theory	Actual
Type of integration	SC Integration	Internal	High	High
		Customer	High	High
		Supplier	High	High
	Demand chain and supply chain integration	Internal	High	High
		Customer	High	High
		Supplier	High	High

Empirical evidence for demand and supply planning suggest that demand plan and supply plan is developed interactively with customer and supplier, where the decision making related to the product design is taken together. Accordingly empirical evidence supports the hypothesis 2c. Furthermore while the volume requirement under stable vs. surge demand is provided by customer in prior decision making, the decision is made interactively using the input from customer and supplier. Moreover target price is provided by the customer, where the firm, customer and supplier work interactively to meet the target price through negotiations (Table 6-8).

Table 6-8 Hypothesis 3b: Level of demand and supply integration (VarietyCo)

Hypothesis	Supported/ Not supported	Key insights
Stage 2 has external integration between demand and supply processes in decision making	Supported	Offering is developed interactively by customer, supplier and firm aligning to the product design requirements and target price requirements of the consumer. Quality and volume are set aligned to the pre-set guidelines of the customer, FashionCo.



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

6.3.5 Level of integrative capabilities

As discussed in chapter 3, integrative capabilities can be discussed using learning processes, governance and decision making structures, organization design and key performance indicators which will be discussed in section 6.3.5.1 to 6.3.5.4.

6.3.5.1 Processes

Learning processes related to OW criteria influence the actual decision making on offering can be described under sensing, shaping, seizing processes. There should also be integrative processes to integrate the OQ criteria.

6.3.5.1.1 Sensing market requirements

FashionCo tries to offer a variety of designs in terms of new colors, prints and silhouettes that hold the interest of the customer. In order to meet this requirement, FashionCo offers season specific products. They work collaboratively with the manufacturers as well as the raw material suppliers to come up with a seasonal trend.

Therefore designer in the VarietyCo as well as FashionElasCo and also suppliers' designers do a trend research for a specific season and come up with a concept download. Usually they have access to trend forecast agencies who does the trend research for a specific season of the year. Usually they use websites that does trend predictions for the season. Some examples are WGSN, Style site which provide a global trend for all men's, women's, kids etc. Further designers go to Paris to a fashion shows to identify the key trends for the season. Move over designers does market research through competitive shopping in Paris, Newyork and London.

Accordingly FashionCo design team finalizes a concept download for the season which includes Key words. Eg: Cossy feelings, geometry, floral etc. Based on the concept download provided by FashionCo, the vendor designers has to come up with ideas for prints, embellishments. FashionCo develops a concept down load with all the ideas for a specific season.

6.3.5.1.2 Shaping opportunities and capabilities

6.3.5.1.2.1 Shaping Opportunities

VarietyCo designer source raw materials that align with the key words in the concept download. They come up with specific laces and elastics with appropriate structures align with the season/prints that align with the seasonal trend and present to the FashionCo. Usually the keep the base fabric as the core material and change the prints/ embellishments etc. Once a specific raw material component is selected with a trendy design, designers in FashionCo and VarietyCo US based designer develops a sketch of the 3D product and send to the VarietyCo SL based designer. Once again the shape of the 3D product will be according to a key block or may be a little modification.

6.3.5.1.2.2 Shaping Capabilities

VarietyCo demand and supply planning person calls for a tech pack meeting to assess the capability of developing the product. This is where VarietyCo works in shaping their capabilities to develop the products in terms of new varieties.

Garment technologist (Contact no. 2-4b) mentioned,

“Designers are having blue sky ideas that go along with the trends but we need to find away how we could produce them/ How to execute them”

Align with the above thought, Designer at FashelaceCo (Contact no. 2-05) mentioned that,

“I will tell them (Technical people) what it should be look like and they do all the hard hard work.”

VarietyCo has a Design Risk Assessment (DRA) meeting in order to assess whether the product is productionable and whether it will be manufactured in the same way to meet the appearance etc. Accordingly, garment technologist that act as the head of technical team needs to fill DRA (Design risk assessment) form which provide the guide line to assess the risk factors need to be filled from the point of view of all people such as Fabric technologists, garment technologists in the factory/machinery and attachment personnel etc. Technical team at VarietyCo use a traffic light system to show the risk associated with different areas in the DRA form. Thereby when a risk is identified there will be a pointed person to take the responsibility to reduce the risk.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

According to contact no.2-2,

“If it is a fabric issue, Fab tech is responsible to work with supplier and redevelop the material to solve the problem. In the same way, if Garment construction will not be appropriate to meet the fit measurements, then the responsible person will be the garment tech. “

Contact no.2-3b, Garment technologist who acts as the leader of the DRA meeting described the procedure in the DRA assessment where they assess the risk associated with each factor and uses the traffic light system to highlight the risk level.

Accordingly, once the sketch of the design is handed in with the construction requirements, first task is to identify a block pattern which the style is based on. Core styles will have a standard block pattern while the fashion style may need adjustments in the standard pattern according to the sketch. Therefore design risk

assessment meeting specifically assess whether they can meet the fit and construction specification provided by the customer. With new style developments garment tech may call for testing. Garment technologist (Contact no.2-4b) mentioned that before placing the order, VarietyCo needs to ensure that the product meet the standard product specification for product fit in terms of measurement details. However he also mentioned that if the new lace development affects the product fit, then they can negotiate with customer and ask for tolerances.

Garment technologist with the help of sewing technologist understands whether the operators have necessary skills to sew the product. Furthermore the machinery and attachment people need to ensure that the machinery needed is aligned with the resources available and if not need to ensure the availability of the machineries in the production. He further added that mainly since the product changes only within the standard shapes, and the construction methods are changed within the standard construction methods used in developing product, the requirements for new skills in operators or new machineries is at a minimal. He added that there may be occasions that they need specific attachments to sew the garment or may need specific skill level in different sewing operations. Thereby Machinery and folder team in the VarietyCo works on getting these attachments or folder or to find alternatives to fit the purpose. When there are very new styles come in with the changes in basic shapes, usually technical team at VarietyCo ask the technical head at the manufacturing team to participate in a meeting. If it is a very critical style with critical operations technical head ask for cut kits and train their operators with the cut kits. If it is similar style they are not called for an integration meeting. Integration trial is done to train their operators to have a smooth flow in the production. Here one of their sewing technician come to VarietyCo and stitch the style with operator. However integration meetings are very rare in this stage.

Further using the fabric technologist they assess whether the new prints, textures in the raw material components meet the garment quality specification needs. Therefore with new print developments, fabric technologist may call for testing. Once again since the fabric types remains same 95% cotton and 5% lycra the problems related to quality changes in the garment quality specification remains minimum. Mainly

changes in the raw material components come up with the prints, colours, embellishments or textures in the lace and elastics. Fabric technologist (Contact no.2-3c) stated that if they feel that there may be pop ups in the print, they need to consider that aspect as a risk and need to work with suppliers to minimize the risk. If the standards for quality cannot be achieved, fabric technologist/ garment tech will ask tolerances in meeting the standards given in the product specifications.

The other thing they consider in the DRA meeting is that whether they can achieve the target price. Once the sketch is received, Patterns are sent to consumption team, constructions are sent to industrial Engineering for SMV calculation and does the costing. Demand and supply planning does the total FOB costing.

Garment technologist (Contact No.2-4b) further added,

“Normally their sketches are in high price so mostly alternatives are done to meet the FOB price.”

If the costing exceeded the target price they inform the customer that due to the use of the construction, cost exceeds the limit. Meantime VarietyCo technical team will offer another option for construction with a new costing and may present another design to the customer with explanation. VarietyCo designer communicate further with the FashionCo to identify the best option. Consumption and the work study people involved in quoting lower price for the product where they identify methods to reduce the SMV of the construction. This is an iterative process where the VarietyCo communicates with supplier in getting prices reductions. Accordingly, Work study and method study personnel help in shaping the capabilities to reduce the price.

Although the risk assessments are done for all new styles, ie 20, actually the order may come for only 3 styles. Even though VarietyCo do this process in order to make sure that the products can be manufactured under the supply capabilities.

“If this process may not done customer may come back and say I thought you would have thought about it....Don’t tell it now after I presented this to my boss that it’s a failure.”

Therefore VarietyCo make sure that their production plants can produce these products without a problem. If there are any alterations in the sketch needed to be done to overcome the problems in the bulk, VarietyCo designer will write to the US based design team and FashionCo designer with suggestions for alterations.

There after FashionCo design team present the new design to the sales and marketing team. This is called as the style review meeting, where FashionCo display a board room in the form of a store with all the samples in specific colours and prints. Samples need to be sent in the given colours for style review meeting. FashionCo sales and marketing team, top management people will pick all the colours and prints that will be going in that season to plan the product range for the season with the specific product styles in terms of colours/prints need to be available in store.

6.3.5.1.3 Seizing

Seizing process determines the demand plan that identifies the product, price, place and promotion strategies which determines the sales and marketing plan and supply plan that determines the sourcing, manufacturing and delivery plan.

Sales and marketing plan will be sent to the sales and marketing team in the FashionCo, where they will understand the ISW of the specific product range to arrange the store according to the theme of the specific ranges for the season and to conduct the advertising and promotions accordingly.

The order is placed by FashionCo to VarietyCo. They provide the technical pack for both garment as well as the raw material components, which includes the product specification. Garment tech pack also includes the construction details to minimize the SMV. Demand and supply planning person at VarietyCo develops a time and action plan that provides fabric in house date to delivery date of a given style. Further she provides the date for preproduction meetings at the factory in order to hand in the specific style. Time and action plans will be provided to the procurement merchandiser (Sourcing and delivery), production manager and the relevant parties in the factory.

Even though the above processes highlighted the processes that integrate the OW criteria, there are processes to align the OQ criteria. These processes are concerned with the compliance, quality and on time delivery where the supplier should meet the minimum requirements before they qualify for the order placement. (Table 6-9)

Table 6-9 Integrative capabilities - Learning processes: VarietyCo

Integrative capabilities		Theory	Actual
Integrative Processes	Cost	-	Sense- Target price Shape capabilities- Method study/work study to meet efficiency
	Availability	Sense- Product variety needs Shape- opportunities and capabilities Seize – demand plan and supply plan	Sense- fashion trends Shape opportunities- Developing new design to meet the fashion trends using specific textures/ prints/ embellishments/ colors using the core material. Shape capabilities- through training to impart necessary skills and resources such as folders/ attachments etc. Seize- demand plan and supply plan – Eg: Tech pack/ delivery plan
	Quality		OQ
	Timely delivery		OQ
	Compliance		OQ
	Product leadership		
	Technology leadership		

6.3.5.2 Governance and decision making structure

Organization structure related to learning processes that integrate OW criteria influence the decision making on offering, and therefore can be described as the structures related to sensing, shaping, seizing processes. Integrative structures related to OQ criteria provides standards, guidelines so that organization structures related to order qualifying criteria audits the supply base accordingly prior to the actual decision making.

Decision structures involved in aligning product variety involves the roles that influence the decision making of demand and supply in developing the appropriate

offering to the customer. Accordingly, Designer reads the fashion trends for a specific season which is the market winner in the market. Therefore designer act as the receptor market trends. Design team tries to develop the products align with the trend, using the core material and core shapes.

Technical people who are involved in shaping opportunities in terms of the capabilities act as the influencers in decision making who are known as boundary spanning roles. These boundary spanners have complementary knowledge in supply as well as the market. In VarietyCo technical team includes garment technologist where the person has knowledge related to apparel fit and construction, fabric technologist who has knowledge about the raw material components of the product as well the market trends. Fabric technologist is a person with a degree in textile Engineering. Technical persons work with designer to shape opportunities when they come up with the new designs to meet the fashion trend requirements of the market. Furthermore technical team also works with the manufacturer in shaping the capabilities. This team also includes work study officers who are involved in improving efficiency cost effective construction methods. Once again the person has an Industrial Engineering knowledge. Moreover the person heading machinery and folder is a mechanical Engineer with the relevant knowledge in machineries and he introduce necessary attachments and folders that helps VarietyCo to improve the efficiency.

Moreover, FashionCo buying team works with designer to shape the trend opportunities in the market, within the sales and marketing capabilities. Accordingly, designer influences buyer to buy the new design to the next season. Therefore designer has complementary knowledge on the sales and marketing domain as well as the market requirements.

Further it should be noted that sensing structure extends from customer and supplier where all the supply chain partners collaboratively sense information of the market trends where they all have designers in their premises. Therefore FashionCo, FashionLaceCo and VarietyCo all have designer team who comes up with new

design ideas for the season. They also act as boundary spanners who shape the sales and marketing capabilities.

In the same way shaping structures to shape the opportunities within the available supply capabilities are also available in FashionCo and FashionLaceCo. FashionCo also has a garment technologist as well as a fabric technologist whereas FashionLaceCo has an engineer. The fabric technologists' boundary spanning role extends towards the external supply capabilities, while garment technologists' boundary spanning role extends towards the internal supply capabilities.

Although actual decision making structures are concerned with the integrators related to OW criteria, prior decision making is concerned with the organization structures related to order qualifying criteria. When consider the VarietyCo, Fabric technologist (Contact no. 2-4c) mention the need for confirming the compliance and quality requirements against the customer requirements. Mainly these are the specific guidelines provided by the FashionCo in which the the raw material bases needs to be assessed against. According to the fabric garment technologist (contact no. 2-4c) FashionCo ask them to assess whether the suppliers are certified with the certifications such as ISO 9001 (Quality standards) and ISO 14001(Environment standards). Furthermore she mentioned that they also need to meet the quality standards given by the FashionCo in all RMs, where FashionCo auditors, audits the samples of each product and provides the approval. VarietyCo also has auditors that are accredited by the FashionCo. Even for the compliance, FashionCo has their auditors to audit the supplier before placing an order. Furthermore they need to confirm the minimum and maximum order quantity of suppliers, through integrating with the capacity planners. (Table 6-10)


6.3.5.3 Organization Design

Organization design acts as an integrative capability. Accordingly, role of leadership is an integrative capability where leader's focus on OW criteria and OQ criteria act as an integrative capability that helps supply chain to reconfigure. Accordingly supply chain includes supply channel capabilities that need to be reconfigured

according to the new design needs and also the demand channel capabilities that should be reconfigured.

In the manufacturing firms that make products to the VarietyCo has factory managers with a focus on efficiency in providing low cost requirement and also concerned with the quality of the products and labour compliance. These leaders are also focus in flexibility in deliveries. In particularly, it was highlighted that the leader in the factory that is focus on surge volume orders is a very positive minded person.

Table 6-10 Integrative capabilities - Governance and decision making structures: VarietyCo

Integrative capabilities		Theory	Actual
Governance and decision making structure 	Cost	-	Industrial Engineer
	Availability	Receptor Boundary spanners	Designer Garment technologist Fabric technologist Machinery and folder
	Product leadership		
	Technology leadership		
	Quality		ISO 9001 Quality auditor
	Timely delivery		Capacity planner
	Compliance		ISO 14001 Compliance auditor

The culture of the organization also considered as an integrative capability. Demand and supply planning person (Contact no.2-2) mentioned how the new organization seating arrangement helped them to work collaboratively with each other sharing different cultures of thought integrating designer's market oriented view and supply oriented view. Under this team structure they all work together. Demand and supply planning person further explained that in earlier organization structure there have been two teams for concept and bulk which made demand and supply work in isolate in oppose to interactively.

According to contact no.2-2,

“In the previous structure, designers worked separately. No body saw the picture from start to end. Now the POD concept makes every one to see the full picture from design to delivery.”

Designer (contact no. 2-3a) added that this made a lot of conflicts among the concept team and the bulk team. Garment technologist (Contact no. 2-3b) also highlighted the fact that new seating arrangement provided much difference in their thinking. It creates a culture of sharing the design ideas and makes them productionable.

Contact no. 2-3b mentioned,

“Now the culture is changed. We can talk each other and solve the problem as a strong team that helps to smooth the processes..... Designers are having blue sky ideas that goes along with the trends but we need to find away how we could produce them/ How to execute them”

Demand and supply planning person further mentioned that although the head at the production plant is not seated together, they all work together as a team. Demand and supply planning person also highlighted that not only internally but also externally they have socializing events, where the design visits are available from the customer time to time.

Therefore boundary spanning personnel with complementary knowledge in market trends as well as the manufacturing is extended though socialization. These boundary spanning personnel are responsible from the garment sketch to bulk development.

Garment technologist(Contact no. 2-3b) stressed that,

“Thereby the order winning criteria is not only aligned up to the point they select manufacturing base or raw material base but also when doing the bulk production.”

VarietyCo has also kept a liaison device in the manufacturing facility who is named as a product integrator in order to make sure that the knowledge of making the product is transferred. This helps to integrate the new product design. They have work study offices to align the cost requirements and an inspection team to align the quality criteria. Also in the facility they have devices to monitor the labour ethics

issues. Moreover it was mentioned that they have a production planner who monitors whether the supply processes meet the schedule. (Table 6-11)

Table 6-11 Integrative capabilities- Organization Design: VarietyCo

Integrative capabilities		Theory	Actual
Leadership And culture	Cost		OW2
	Availability	OW	OW1
	Product leadership		
	Technology leadership		
	Quality		OQ
	Timely delivery		OQ
	Compliance		OQ
Liaison devices	Cost		Work study at factory
	Availability	OW	Product integrator
	Product leadership		
Liaison devices	Technology leadership		
	Quality		In line quality checkers for garment Quality inspection for RM
Liaison devices	Timely delivery		Production Planner
	Compliance		Compliance auditor

6.3.5.4 Key Performance Indicators

FashionCo has a rating system where they rate the raw material suppliers under three ratings as Tier1/2/3. Tier 1 suppliers are the Better or ideal suppliers who are easy to negotiate whereas Tier 2 suppliers are accredited in different ways, according to their delivery performance/ Colour achievement etc. Tier 3 suppliers are the basic suppliers. Therefore in designing products to meet the fashion trends VarietyCo tend to use tier 2 suppliers.

In terms of the manufacturing base key performance indicators assess the operators will be Efficiency which is assessed against the number of quality output. They also consider the learning curve performance to identify their new learning ability when a

new product comes to the facility. Moreover the facility needs to reduce their overtime working hours. Hence the KPIs are aligned with cost, quality, timely delivery, compliance and also with the product design. See-Table 6-12

Table 6-12 Integrative capabilities- KPIs: VarietyCo

Integrative capabilities		Theory	Actual
KPI	Cost		OW2
	Availability	OW	OW1
	Product leadership		
	Technology leadership		
	Quality		OQ
	Timely delivery		OQ
	Compliance		OQ

Empirical evidence for integrative capabilities supported the hypothesis 2d, where the integrative capabilities align the OW criteria. Beyond that empirical evidence were provided that integrative capabilities also align the OQ criteria though processes, decision making structures, organization design and KPIs.

Accordingly empirical evidence identified that although the supply base is mainly selected using the OW criteria, potential suppliers are identified through OQ criteria. Hence the supplier needs to be able to provide the quality, compliance and delivery requirements. In terms of delivery, supplier needs to have ability to provide the surge volume deliveries.

While literature suggested that receptors and boundary spanning structures are available to influence in decision making related to demand and supply plan, empirical evidence identified the role of the boundary spanners. Furthermore empirical evidence also identified that key decision maker is the retailer in identifying the offering. Also literature identified the specific roles who act as auditors to integrate OQ criteria.

While literature suggested the need for socialization capabilities in developing the culture, empirical suggested how team based seating structure enable this. Moreover

while literature suggests the need of liaison offices, empirical evidence identified the specific roles that align the OW criteria as well as the OQ criteria. See Table 6-13

Table 6-13 Hypothesis 4b: Integrative capabilities: VarietyCo

Hypothesis	Supported/ Not supported	Key insights
Stage 2 need integrative capabilities to integrate product variety requirements.	Supported	Stage 2 needs to integrate product variety as well as the OQ requirements. Opportunities in terms of product variety are shaped through applying fashion trends to the product components.
		While boundary spanning structures are available to influence in decision making, key decision making about the offering is taken by the FashionCo buying team.
		Socialization through team based working culture. Product integrator acts as the liaison device. Leader should be flexible.
		KPIs measure efficiency and learning curve.

6.4 Summary of the chapter

This chapter provides the case study results of VarietyCo which represents the stage 2 in the industry upgrading continuum. The empirical evidence collected from the stage 2 of the industry upgrade continuum supported the hypothesis from 2a-2d. Moreover it also provided key insights to the theory. Accordingly the case results identify how offering in terms of product variety impact the competitive priorities, collaboration intensity and integrative capabilities of an apparel manufacturer's network.

While theory suggest that competitive priority will be product variety, empirical evidence for VarityCo suggest that order winning criteria includes product variety at low cost. Further it also suggest that competitive priorities include order qualifying criteria which includes timely delivery, quality and compliance.

While theory suggests that demand and supply panning process include customer and supplier in developing the demand and supply plan, according to the empirical evidence collected from VarietyCo, customer becomes the key decision maker of the offering.

While theory suggest that integrative capabilities should be available to align the orrder winning criteria, empirical evidence suggest that integrative capabilities are also needed to align the order qualifying criteria. While boundary spanning structures are available to influence in decision making related to demand and supply plan, in deciding the offering in terms of shaping the opportunities and shaping the capabilities, key decision maker is the FashionCo. Liaison devices also align OQ as well as OW.

KPIs align both OW and OQ criteria. In stage 2, learning curve needs to achieve within 3 days.

The summary of the empirical evidence which was tested against the relevant hypothesis developed against the conceptual framework in chapter 3 is provided in the Table 6-14.

Table 6-14 Test of hypotheses against the empirical evidence: VarietyCo

No.	Hypothesis	Supported/ Not supported	Key insights
H1b	Stage 2 provides product variety with availability as competitive priority.	Supported	Order winning criteria identified as product availability at low cost. Order qualifying criteria as quality/ time delivery and compliance.
H2b	Stage 2 has collaborative relationship with network members	Supported	Design visits enable the relationship building activities.
H3b	Stage 2 has external integration between demand and supply processes in decision making	Supported	Offering is developed interactively by customer, supplier and firm aligning to the product design requirements, volume requirements and target price requirements set by the customer.
H4b	Stage 2 need integrative capabilities to integrate product variety requirements.	Supported	Stage 2 needs to integrate product variety as well as the OQ requirements. Opportunities in terms of product variety are shaped through applying fashion trends to the product components.
			While boundary spanning structures are available to influence in decision making, key decision making about the offering is taken by the FashionCo buying team.
			Socialization through team based working culture. Product integrator acts as the liaison device. Leader should be flexible.
			KPIs measure efficiency and learning curve.

The hypothesis 2e, which provides the link between offerings, competitive priorities, collaboration intensity and integrative capabilities are discussed below.

Competitive priorities identify the integrative capabilities of the network where the network members are aligned with the competitive priorities. The potential network members which could provide the offering is identified using the order qualifying criteria and order winning criteria helps in select the relevant members among the potential members.

Since all the network partners learn together in deciding the offering makes the collaborative relationship between the network partners. While all network partners sense the fashion trends to identify the order winning offering of the consumer and disseminate the trends to each other. Shaping the opportunities and capabilities make to develop the offering collaborate the network partners with the use of boundary spanning structures that span between demand and supply chain and also between customer and supplier. Accordingly design team who acts as receptors of market knowledge works together in coming up with new trends to meet the order winning criteria of product variety. Garment technologist and textile technologist are boundary spanning personnel that influence in decision of the offering through influencing in decisions. Garment technologist has complementary knowledge in internal supply capabilities while fabric technologist has complementary knowledge in external supply capabilities within the raw material suppliers. They act as main communicators in between the market oriented view (Design trends) and the supply oriented view (internal and external supply base). Designer also works as a boundary spanner who has the complementary knowledge in sales and marketing capabilities and market trends. Hence in order to influence the network members to learn collaboratively, integrative processes and structures act as enablers. It should also emphasize that since the decision making related to offering is done by FashionCo buying team customer is having the upper hand in driving the network. The organization culture and the leadership also act as enablers in integrating the new knowledge which is enhanced through the KPIs.

7 CASE 3: INVESTIGATION OF THE STAGE 3 OF THE INDUSTRY UPGRADE CONTINUUM

7.1 Introduction to the chapter

This chapter presents the results of the third of the four embedded cases within the apparel manufacturer ApparelCo. It is focused on stage 3 of the industry upgrade continuum of an apparel manufacturer, where the industry upgrades to provide the evolving needs of the customer is in the existing market.

As illustrated in Figure 7-2, there are four additional parts to this chapter following the introduction. The case context is presented in section 7.2. Section 7.3 presents the results of the case study. This section discusses the results of the study based on the analysis templates developed against the conceptual framework. Section 7.4 presents the summary of the chapter which brings the chapter to a close.

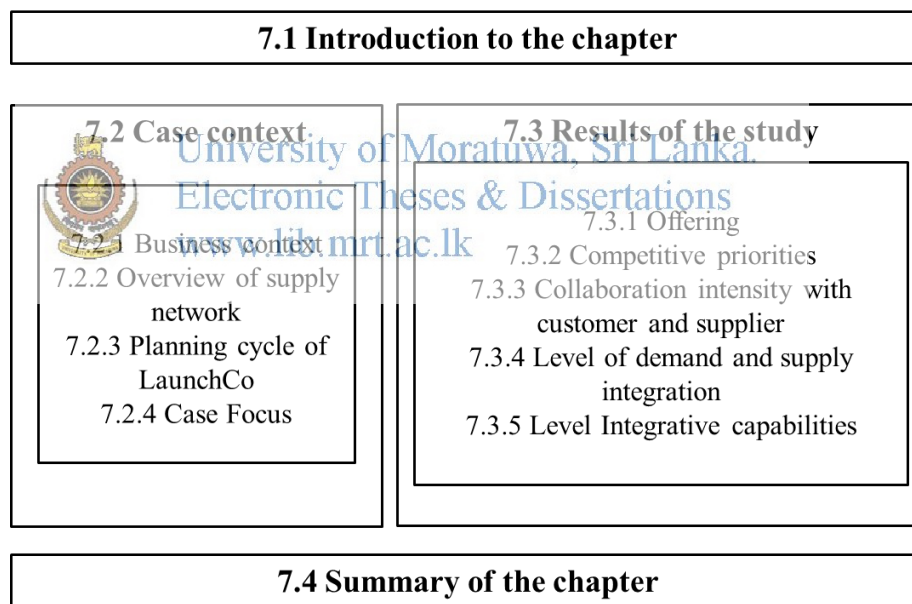


Figure 7-1 Topic breakdown of chapter 7

7.2 Case context

7.2.1 Business context

There are two key elements of the business context necessary to position the case: firstly an overview of the positioning and strategy of the division which provides the new products (LaunchCo) in section 7.2.1.1; secondly an overview of the external

environment in which the Launch division operates based on a Porter's 5-Forces analysis in section 7.2.1.2.

7.2.1.1 Launch division – Positioning and strategy

In the upgrading process of ApparelCo in providing value-added offerings to the customer, they started to offer innovative products as a new strategy. Providing new innovative products pushed them one step above offering product variety as a service. ApparelCo recognized the need for providing innovative solutions to retain their priority customers in their portfolio, as these brands were looking for more innovative products that act as solutions for consumer needs.

Strategic objectives in terms of providing the specific offering are to launch products as new ideas which will attract customers. As a result of ApparelCo's CEO's dream to become a key vendor for InnoCo launch products, in 2011 they started providing innovative product as an offering. This led them to be involved in the customer's launch products.

Business manager (Contact no. 3-1) of LaunchCo described the main driver behind this strategy was the consumer need for new products, something that is not available in the market and where the consumer may pay extra for the newness.

Business manager (Contact no. 3-1) also stated that:

“Consumers are more and more demanding and are very knowledgeable.”

She added,

“Future is innovation... In order to retain a customer you have to provide innovation.”

As discussed in Chapters 5 and 6, ApparelCo has three main divisions, where two divisions focus on value-added offerings and one focuses on the basic products at low cost. The main customer for launch products in ApparelCo belongs to a separate division called Division A – see Figure 6-2. This main customer is known as InnoCo. The business unit that provide launch products to InnoCo is known as LaunchCo, which is the focus of the specific case as shown in Figure 7-2.

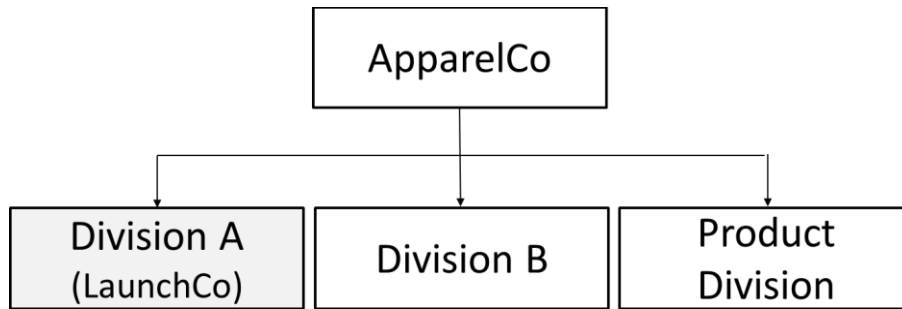


Figure 7-2 Positioning of Launch division

Currently, the volume of LaunchCo is growing. The Launch division focuses on women’s lingerie and mainly concentrates on bras. The reason is that the bra is more complex than briefs and therefore innovation as a service is needed more for bras than for briefs. Geographically, LaunchCo mainly concentrates on the USA and Europe.

7.2.1.2 Overview of the external environment

ApparelCo competes with only one local company in Sri Lanka in providing innovative products. The other companies that work with InnoCo in providing innovative products are based in China.



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

The following considers the external environment in which LaunchCo operates in terms of the five dimensions of Porter’s Five Forces (Porter, 1980).

Customer power: The customer’s bargaining power is lower as ApparelCo has the ability to provide the product concept.

Supplier power: LaunchCo sources suppliers for the new product requirements. However, since the innovation is mainly embedded in product components, not in the 3D product itself, component suppliers’ bargaining power is high. But, since ApparelCo has its own JV partners for providing the raw material, the bargaining power remains low.

Threat of new entrants: Since LaunchCo offers a special product, the threat of new entrants is low. Most of the countries that have low cost production do not have the capability to produce special products.

Threat of substitutes: Threat of substitutes is also low as it is a special apparel product.

Competitor Rivalry: The countries that offer innovative product offerings are not large when compared to low cost countries. Furthermore, since ApparelCo has credibility and accountability on guaranteed delivery and high quality, together with high standards in labour compliance, competitor rivalry can be regarded as low. Moreover, having about 25 years of experience in the bra business ApparelCo has the ability to manufacture more complex products.

On the whole it can be said that the bargaining power of LaunchCo is high compared to its customer, competitors etc., but bargaining power remains low when compared with components suppliers.

7.2.2 Overview of the supply network

7.2.2.1 Customer base

As noted earlier, LaunchCo is the focus of the study. Therefore LaunchCo deals with the main customer for ApparelCo who provides the highest income in terms of revenue generation, which is more than 50% of ApparelCo's total income. This customer is based in the USA and is a specialty retailer who focuses on women's lingerie that includes bras, briefs and other apparel categories that fit into the category of women's underwear. Furthermore, this customer has 33% of the market share in the USA which is the largest of all the lingerie companies.

The customer has two main supply bases where they source innovative products: Sri Lanka and China. In China they have four suppliers who provide innovation as a service. In 2010, they started to source innovative products from Sri Lanka when ApparelCo started its specific business unit for providing innovative service.

Given the strategic importance of the account, where more than 50% of the revenue comes from this customer, the specific business unit which focuses on providing the service provision to the customer is considered as the embedded case unit for the study. For the purpose of this thesis, the customer is known as InnoCo and the embedded case unit is known as LaunchCo.

7.2.2.2 Supplier base

InnoCo product portfolio has two different products ranges for bras: cotton and synthetic. LaunchCo works with a special supply base for the raw material components. When considering bras, other main component suppliers include supply chain partners such as cup (foam pad)/ elastic/ lace/ warp knit/ wires, hooks and eyes, bows (trims) suppliers. LaunchCo works with a locally based supply network in sourcing innovative components that suit their customers' needs, where they have JV partnerships with these suppliers and backward integration is considered to be a main strength of ApparelCo in providing the innovative solutions. Also InnoCo works with a overseas supply base for innovative products. They also have print suppliers who provide innovative printing technology. InnoElasCo works as a key unit in providing innovative elastic components to LaunchCo. ApparelCo is a JV between ApparelCo (65%) and LaceCo's main company in France (35%).

7.2.2.3 Manufacturing base

The manufacturing base for the products made under LaunchCo is mainly those key manufacturers who are specially equipped with the necessary capabilities, i.e. machines and skills for making the specific product category. These key manufacturers need to obtain special approval from InnoCo and are known as launch vendors. There are three main manufacturing plants which produce launch products for InnoCo. One of these companies produces the cotton range while the others produce the synthetic products.

7.2.3 Planning cycle of InnoCo

InnoCo has 5-6 seasons namely spring, summer (inc. high summer), fall, holiday and resort. There are three floor set dates to introduce new products in different seasons. However, it was noted that the new products are introduced after 1 years. The initial order quantity of a new product is 10,000 pcs which is used as an in store test (IST), to forecast the expected volume of the order. The first bulk order will be placed after 2-3 seasons. If the reading is really good, (A grade) the launch has about 5 million pcs for the season, for a B grade, 2-3 million pcs, or if the product is a fashion

product the volume is small and is about 200,000-300,000 pcs. If the IST does not provide a good reading the product will be discontinued – see **Table 7-1**.

Table 7-1 Planning cycle: LaunchCo

Planning cycle	Seasons	Timing-Sales months	Volume
Once a year	Spring Summer-High Summer Fall Holiday Resort 2-3 floor set dates per year for targeting a new product.	Feb-Mar- Spring Apr-May- Summer Jul-Aug- Fall Aug-Dec- Holiday Jan-Feb- Resort	10,000- IST Volume may be high if it becomes a core product with long PLC(2 million to 5 million) Volume is low if it becomes a fashion product. It might be discontinued after IST

7.2.4 Case focus

Since the planning process incorporates the supply network, the case focuses on the customer and supplier who are dealing with LaunchCo. Accordingly, the customer will be InnoCo and the supplier is an elastic material supplier for InnoCo named InnoElasCo.

Accordingly, the planning process that spans from InnoCo to InnoElasCo will be the focus of the case.

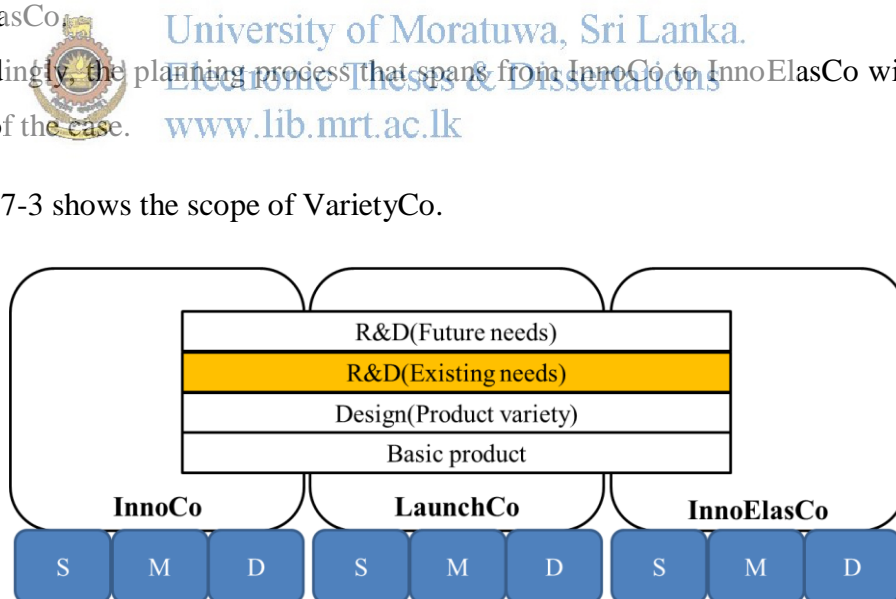


Figure 7-3 Scope of the study: LaunchCo

7.3 Results of the study

7.3.1 Offering

The offering can be explained as a special product that provides newness to the consumer. Accordingly, the core product which is made from cotton or synthetic material will be upgraded to provide that newness. There will be new elastics, new laces, new fabrics that offer more comfort to the consumer.

The LaunchCo variety will be high if it is a fashion product, but low if it is a core product. Therefore until the IST is completed, the variety remains unknown. If it is a fashion product, the designers are involved in improving the variety of the new product through incorporating decorations in terms of colours/ prints/ embossments etc. Usually the shape of the product remains same although the components are changed to meet the consumer needs.

Since the product is a new one, the sales and marketing team cannot predict the demand pattern for the new product, therefore demand is unpredictable and the volume cannot be known. The IST is done using about 10,000 pieces of the product and maybe the product will be discontinued after the IST if the consumers are not satisfied. Volumes become high if it is a core product but may be low if it becomes a fashion product. For core product the volume will be in between 2 million to 5 million whereas if it is a fashion product the volume is about 200,000-300,000.

The product life cycle is also not known. If the product becomes a core product the PLC is long and if it becomes a fashion product the PLC is short. The time window for delivery can be regarded as high, as the lead time for the new product development is high, i.e. about one year. Further, from order placement to order delivery is about 12 weeks. Delivery reliability is also high.

Table 7-2 shows the offering of VarietyCo.

Table 7-2 Offering: LaunchCo

Offering			Theory	Actual
Offering	Product	Standard /Special	Special	Special
		PLC	L/S	Not known
		Phase in PLC	Introduction	Introduction
	Demand	Volume	L	Unpredictable IST-10,000 pcs
		Variety	L	Not known
		Variability	H	High
	Service	Lead time	S	Long 12 weeks
		Delivery reliability	H	High
		Delivery frequency	H/L	High/Low

7.3.2 Competitive priorities

The main focus of the end consumer for InnoCo falls into the middle income level group, who focuses on the comfort of the product. Accordingly, InnoCo works with suppliers in developing innovative products to increase the comfort of their product range.



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Therefore InnoCo identifies apparel suppliers and also component suppliers who have strength in developing innovative products that meet consumer needs. Therefore, the order will be won by the supplier who has the ability to provide the innovative products.

However, the demand and supply manager (Contact no. 3-2) stated:

“Recently what we have noticed is that InnoCo has become very cost conscious. Customer keeps demanding reducing the cost.”

She added that,

“InnoCo scrutinises to the decimal point and is becoming tough with the cost.”

Therefore although newness becomes an order winner, cost is also considered in selecting the supplier.

When LaunchCo sources suppliers to provide the innovative components, it also selects the supplier who has the capability to develop innovative products to meet consumer needs. Together with InnoCo, LaunchCo works to reduce the price of the specific component in order to meet the target price of InnoCo.

Therefore it can be concluded that the order winning criteria for LaunchCo are innovative product to meet the customer needs, while InnoCo also considers the price for the offering. Accordingly, LaunchCo's order winner 1 is innovative product and order winner 2 is price.

It should be noted that the supplier also needs to meet the standards for quality and compliance requirements of InnoCo, and to ensure that the capacity requirement for bulk production can be met. However, the demand and supply planning person mentioned that there are some tolerances for launch products in terms of meeting the specification. If LaunchCo is able to gain InnoCo's approval for the tolerances they can deviate from the product specification (raw material/garment). Further, timely delivery is also an order qualifier where at the beginning of the year, LaunchCo needs to book the flexible capacity for the launch products. Moreover, it was also noted that in order to qualify for the manufacturing of the innovative products, LaunchCo needs to obtain special approval from InnoCo, which assesses the ability of LaunchCo in terms of their skill level and machinery availability.

Therefore order winners and order qualifiers are given as shown in Table 7-3.

Table 7-3 Competitive priorities- LaunchCo

Competitive priorities		Theory	Actual
OW/OQ Criteria	Cost		OW2
	Availability		
	Product leadership	OW	OW1
	Technology leadership		
	Quality		OQ
	Timely delivery		OQ
	Compliance		OQ

Empirical evidence for the offering and competitive priorities of LaunchCo supports the hypothesis that was developed based on theory; the empirical evidence also provides some insights about theory. In terms of the offering, theory suggests that the order volume for the launch product is low. Empirical evidence supports this by stating that IST order volume is 10,000 pcs. However, after obtaining the IST reading, the order volume may be high/low, even can be discontinued. Also, theory suggests that the variety of the launch product is low. However after IST, if the product is considered to be a fashion product, the order variety becomes high. Therefore volume is considered as unpredictable. Although theory suggest lead time as low, empirical evidence suggest lead time is long and is about 12 weeks.

Empirical evidence for competitive priorities also supports the theory and further suggests that innovative product at low cost becomes the order winner. Moreover order qualifiers are identified as quality/on time delivery and compliance. Beyond that, the quality dimension, which is considered to be an order qualifier, has tolerances where the vendor can negotiate with the customer. See-Table 7-4

Table 7-4 Hypothesis 1c: Offering and competitive priorities: LaunchCo

Hypothesis	Supported/ No supported	Key insights
Stage 3 provides special product (existing needs) with innovative product as competitive priority.	Supported	<p>Although order volume is considered to be low, after the IST reading based on an initial order of 10,000 pcs, the volume may be low or high. In the same way, in the IST the launch product will be with low variety but after the initial reading if it is considered as a fashion product the variety will be high.</p> <p>Order winning criterion is innovative product at low cost.</p> <p>Order qualifiers are quality, timely delivery and compliance/ capability</p>

7.3.3 Collaboration intensity

7.3.3.1 Collaboration intensity with customer

Contact no. 3-1, a business manager highlighted that:

“InnoCo wants to work with us. We are getting better at what we are doing. For us this is a big change and a useful change. InnoCo is now partnering with us.”

The designer (Contact no. 3-3b) also agreed with this; she said that there are more collaborative projects where the customer comes to Sri Lanka and the Sri Lankan team go to New York and therefore the relationship with the customer is becoming higher:

“These are like forums where you exchange ideas. We educate the customer and they also give their ideas.”

Accordingly, the collaboration relationship with the customer, InnoCo, is considered to be high.

Furthermore LaunchCo also has a technical team at HongKong in order to have a close collaboration with the InnoCo R&D team which is also located in HongKong. According to the demand and supply planning person, it enables the LaunchCo to have collaboration with the overseas suppliers, when they develop new components with overseas suppliers. In line with this view representative from InnoCo, mentioned that InnoCo R&D team is located in HongKong to collaborate with their vendor partners as well as the RM suppliers.

InnoElaCo representative also agreed with this. InnoCo Contact no.3-5 mentioned that it is really helpful to partner with LaunchCo to identify the consumer needs and also to develop the 3D product to understand the problems in manufacturing the components together.

7.3.3.2 Collaboration intensity with suppliers

When the customer R&D team visits LaunchCo, they likes to meet all the component suppliers with whom it works so they can all develop the product together.

According to business manager (Contact no. 3-01), when LaunchCo and component suppliers give their individual presentations, the customer had asked:

“You are ApparelCo? Why you are divided like this with your suppliers.”

The business manager further mentioned that LaunchCo now engages with their supply base where they collaborate and coordinate with them in developing new ideas into products.

She mentioned that:

“We partner with them through putting the components into garments.”

They have JV partners which mainly deal with when developing innovative products. (A Joint Venture Agreement is similar to a partnership, but lasts for a defined period of time. In a Joint Venture Agreement, they lay out their business objectives, and how much each party is contributing. They also detail how the profits and losses will be divided.)

Accordingly, LaunchCo partners with the elastic/ warp knitted material/ lace/ bra cups and other component suppliers (JV partners) in putting everything together to make a product. The business manager further added that the *“One stop shop is here.”* Therefore the customer can come to one place to get what they want. This led LaunchCo to have a strong relationship with the suppliers. Accordingly, through having better relationships, LaunchCo is able to help the suppliers and the suppliers are also able to strengthen through LaunchCo.

InnoElasCo representative (Contact no. 3-05) agreed with this.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mru.ac.lk

“Yes of course we need relationships. Some product concepts, we need special changes in the yarns, for that we need to have relationships with suppliers.”

Therefore InnoElasco further mentioned that in order to develop these new yarns they sign JDA (Joint Development Agreement) with the yarn suppliers. When considering LaunchCo, they also sign JDAs with the supply partners that are not under the group of the JV partners. The JDA acts as a Strategic Alliance Agreement which is a formal arrangement between two or more companies who have agreed to share resources within a specific project. The JDA is often used to share products, distribution channels, manufacturing capability, project funding, capital equipment, knowledge, expertise, or intellectual property.

Therefore it can be concluded that the collaboration intensity with suppliers is also considered to be high when providing offering interms of an innovative product.

Table 7-5 Collaboration intensity: LaunchCo

Collaboration intensity		Theory	Actual
Collaboration intensity	Customer	Extensive collaboration	Extensive collaboration (Through JDAs)
	Supplier	Extensive collaboration	Extensive collaboration (JV partners or sign JDA)

Empirical evidence for collaboration intensity supported the theory suggesting that collaborative intensity is high with customer as well as supplier. Further it is mentioned that they have JV partners with whom they work in developing new products together. The reason is to share the new product ideas and to work together in developing the new product together with the input from customer and supplier. If it is a new component supplier they usually sign JDAs. See-Table 7-6

Table 7-6 Hypothesis 2c: Collaboration intensity

Hypothesis	Supported/ Not supported	Key insights
Stage 3 has extensive collaborative relationship with network members	Supported	In order to share the new product ideas, they work with JV partners who develop the components. Sometimes they sign JDAs with the new partners. They work not only with channel partners but also with consumers in identifying their needs.

7.3.4 Level of demand supply integration

The demand plan and supply plan is worked out under integrative planning using integrators in decision making.

7.3.4.1 Demand planning

Demand planning for the offering in terms of product innovation mainly considers the product innovation as well as the price of the product. Moreover, it also plans for the delivery dates in terms of the volume needed.

The actual decision making, with regard to the demand plan, consists of decision making related to the innovative product offering, where the LaunchCo R&D team come up with new products as a solution to the customer problems. Decisions on the

relevant products are made by integrating with the internal as well as the external supply base and also with the customer.

The price of the product is also decided by integrating with both the internal and supplier's R&D teams within the target price of the customer.

The decision on the volume for an IST is consistent and is 10000 pieces. The floor set date which the style gets launched is confirmed through integrating with the supply personnel. Especially the dates need to be confirmed with the long lead time suppliers, such as bra cup suppliers. Accordingly, the team needs to plan the delivery to meet the floor set date.

The order volume is unpredictable and the supplier is expected to reserve capacity for launch products. Usually since the innovative product is developed over about 1½ years, InnoCo and LaunchCo have a rough idea about the launch orders they would receive at the beginning of the year. Accordingly, the capacity planner will be informed at the beginning of the year to keep a capacity free for a product launch. When it comes to the seasonal product delivery plan, the decisions of the delivery dates are done interactively with the supply personnel.

7.3.4.2 Supply planning

New products to be manufactured will be decided according to the product specification that is confirmed through integrative planning. The product specification is provided to the supply base through the technical details to reduce the cost of manufacturing to achieve target price requirements and measurement details to achieve the quality requirements.

The capacity is booked with the manufacturers against the proposed forecast plan given by the customer at the beginning of the year. Floor set dates are prior booked for the new styles with the vendor. (LaunchCo hopes to have a new facility to manufacture IST orders.) Usually, the bulk order comes after 2-3 seasons from IST. Usually within the development process, which takes about 1 year of lead time, the business manager can give notice to the capacity planning unit about the order, whether they will receive the order or not, so they understand there may be an order

from Launch products. Therefore the capacity planner can use the flexible capacity available with the manufacturer. The capacity planner uses aggregated production planning in capacity allocation.

7.3.4.3 Integrative capabilities

When LaunchCo comes up with an idea for a new product to meet the consumer expectations, they work with customer as well as internal and external suppliers in developing a new product. Hence they interactively develop the new product.

The price of the product is also decided interactively with the supply base to meet the target price. If the target price cannot be achieved LaunchCo negotiates with the customer.

With regard to the delivery dates the floor set dates are also decided according to the capacity availability of the supplier. Demand and supply planning person (Contact no. 2-02) mentioned that there are 2-3 floor set dates to target the launch and there are some weeks where the best readings are obtained (February 25th is a good floor set to obtain a reading for the summer). If the floor set falls the reading is not effective. If they target a summer launch they need to meet the floor set date. Therefore supplier tries their maximum to target the date.

Accordingly it can be concluded that the demand and supply plan is developed interactively with the use of integrative capabilities, while the supply chain processes are integrated both internally and externally to meet the product details, delivery deadlines etc. Demand and supply integration expands from internal to external to include the customer and supplier, in order to make decisions about the demand and supply plan. See- Table 7-7.

Empirical evidence for demand and supply integration supports the theory, suggesting that demand and supply integration is high at an internal level and also with network partners.

Table 7-7 Demand and supply integration: LaunchCo

Demand supply integration			Theory	Actual
Type of integration	SC Integration	Internal	High	High
		Customer	High	High
		Supplier	High	High
	Demand and supply integration	Internal	High	High
		Customer	High	High
		Supplier	High	High

Further it is worth mentioning that the reason to have demand and supply integration at both the internal and external level is because they work together in developing the demand and supply plan. See-Table 7-8

Table 7-8 Hypothesis 3C: Demand and supply integration: LaunchCo

Hypothesis	Supported/ Not supported	Key insights
Stage 3 has external integration between demand and supply processes in decision making	Supported	Decision related to product and prices are done interactively aligning the innovative product and price requirements of the cosumer, InnoCo. Negotiations can be done with order qualifying criteria aligning the requirements of customer: Quality and timely delivery requirements.

7.3.5 Level of integrative capabilities

As discussed in Chapter 3, integrative capabilities can be discussed using learning processes, governance and decision making structures, organization design and key performance indicators, which will be discussed in sections 7.3.5.1 to 7.3.5.4.

7.3.5.1 Processes

Learning processes related to OW criteria that influence the actual decision making on the offering can be described under sensing, shaping and seizing processes, while there are integrative processes available for integrating OQ criteria for prior decision making.

7.3.5.1.1 Sensing process

ApparelCo has a centralized R&I team. This team consists of a business person (Business Entrepreneur), technical person (Technology Entrepreneur) and a product

related person (Designer). The R&I designer undertakes research about the consumer needs and tries to offer a solution to the consumer in terms of a new product that becomes a solution to the consumer needs. InnoCo also has an R&I team who also does research and asks LaunchCo to offer solutions to a consumer requirement or sometimes LaunchCo's research team carries out consumer research to identify consumer requirement. Accordingly, the demand and supply planning person of LaunchCo mentioned that they may consider providing a lightweight, push up bra product to meet the consumer requirement.

7.3.5.1.2 Shaping opportunities

The technology entrepreneur in the R&I team identifies the specific properties of the material/ component/ constructions to develop the lightweight garment. The technical entrepreneur provides directions to the component suppliers where the suppliers have come up with a new cup/ new construction, to provide the requirements of the proposed lightweight garment. If the component suppliers have the components with these properties they will present them or else R&I team in LaunchCo work with the component suppliers in developing the product. Accordingly, the R&I team in LaunchCo shapes the opportunity through developing the existing product components applying the specific material property requirements. The project manager gave an example where they identify a consumer's needs as 'making the person cool for eight hours'. Then the team identifies the method of making a person cool by identifying the methods of improving the components using specific properties.

7.3.5.1.3 Shaping capabilities-level 1

Once the product idea is confirmed, R&I team presents the product idea to the top management, in order to get the necessary investment to proceed with the development of the product. Technology entrepreneur and business entrepreneur identifies the external supply channel and sales and marketing channel to develop the new product. Acting as the boundary spanning personnel, this team decides the offering to fit sales and marketing channel capabilities and the component supplier channel capabilities. The top management team assesses the risk associated with the

product in manufacturing and also considers the commercial ability of the product. This team is called Innovation Management Team (IMT) and it includes the business directors, manufacturing directors, technical director and supply chain director. IMT assesses the manufacturability of the product by considering the risk associated with the product. The specific business director who would think that the product will be sold through the particular retail channel (eg: InnoCo), will buy the product and confirm the investment needed.

7.3.5.1.4 Shaping capabilities-Level 2

Once the new product gets the approval for the investment needed, the product idea moves to the specific business unit. Accordingly, if the business director of LaunchCo buys the product then the product moves to the LaunchCo. LaunchCo designer and the R&D team present the idea to the InnoCo R&D team with a potential story explaining the consumer need for the product. They market the product to the brand. They present 3D product just to showcase the idea of the new component. If InnoCo R&D team is also interested in the idea, both R&D teams work very closely with the launch designer in developing the new idea to a 3D product.



Electronic Theses & Dissertations
www.lib.mrt.ac.lk

R&D team in LaunchCo produce a pilot product according to the 3D sketch provided by the launch designers. Therefore the priority is the construction of the 3D product and performance of the components within the garment.

The R&D Engineer - fabric and yarn engineer (Contact no. 3-3b) mentioned that:

“Components should adapt to a bra and perform according to the customer requirement.”

The R&D team assesses the performance of the product component in the 3D garment, in terms of construction and raw material testing. R&D team tests for durability for washing/ bra band elongation/ pull test to identify how far the test results to match with the InnoCo requirements. If there is any performance problem in terms of the accepted comfort level of InnoCo, R&D team further develops the product with the component supplier. After the testing of the material on the 3D

product confirms that it will perform according to the customer's specification, R&D team identifies the manufacturing capabilities to develop the 3D product to meet the expected performance level. R&D team calls manufacturing firm to integrate with them. Integrating with the manufacturer at this stage allows the manufacturer to understand the skills and machinery needed. If there is a need to set tolerances for the fit and construction of the garment, manufacturer will negotiate with InnoCo.

The R&D Engineer/Y(contact no: 3-3c) mentioned:

“During integration we tell them what skills they need.....In one style fortitube was attached to two different sides using two different machines/two different skills.”

Accordingly, in this stage, preparation will be done for the production in terms of new skills and resources.

When the integration with the manufacturer is done, pilot sample will be presented to the sales and marketing team and the top management team in the InnoCo. Launch designer will present the product with the expected price figures. This is called as first pipeline meeting. If InnoCo sales team and the top management are happy to proceed with the style, they will tell the floor set date and the particular season to sell the product.



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Once again designers further develop the 3D product to fit the particular season. At this stage the colours, prints are also done on the specific new component. Accordingly, the new component which has been improved to provide better product performance will create problems for the bulk production where the product may not meet the quality standard specification provided by InnoCo. Therefore LaunchCo ask supplier to do a test lot trial (TLT) to understand the problems they meet I the bulk production. TLTs are done with the manufacturer to understand the fit and construction issues in the bulk manufacturing. If there are any problems occurred in bulk production, LaunchCo sort approvals for the tolerances from the customer.

R&D Engineer-Garment technologist (Contact no. 3-3c) mentioned:

“Print may not be consistent. Get the approval from the customer so that they know the tolerances.....”

Once again the product will be presented to the sales and marketing team of InnoCo, where they as for further cut down the cost of the garment. Accordingly, industrial engineering team involves in this process to further cut down the cost of garment through identifying the appropriate methods.

Reducing the learning curve to reduce the bucket lost is a responsibility of the chief engineer who is the responsible person for a particular style. The Chief Engineer attends the R&D meeting in order to gain visibility. When the style is approved by the customer, and is passed to production, he becomes involved in reducing the learning curve and SMV. Since the Chief Engineer has the visibility from the concept stage to the bulk production, he tries to combine the new knowledge and the existing knowledge of the operators in developing the garment.

7.3.5.1.5 Seizing processes

Decision making is done regarding the offering, where a demand plan and supply plan are developed to align with the consumer needs. This considers product, price, place and promotional strategies that determine the demand plan and sourcing, manufacturing and delivery processes that determine the supply plan.

Seizing process of the offering, in terms of innovative product need demand and supply integration at two levels. First level is when the strategic level integration within the top management determines the investment capabilities. In this stage, business entrepreneur present the new product idea and influence the top management in making the investment. In the next level, the incubation team, which consists of the engineers and designers, works in identifying the suitability of the new product for commercialization as well as for bulk production, through shaping the operational capabilities. Once the product details are finalized They provide the technical pack for both garment as well as the raw material components, which includes the product specification. Garment tech pack also includes the construction details to minimize the SMV. The details of the tech pack will be provided to the manufacturing base.

While the integrative processes for OW consider the learning processes that described above, there are processes to align the OQ criteria. When a new product is

planned for a specific year, demand and supply planning person integrate with capacity planner to reserve capacity for a launch product. When the product is presented to the sales and marketing team at InnoCo and when they are happy to proceed with the product, the season which the product will be sold will be determined. Demand and supply planning person once again integrate with the capacity planner to reserve capacity for the particular season. Since the capacity planner use aggregated production planning, she will reserve the capacity with the manufacturing base. Once the IST is done and the quantity is given for the season, demand and supply planning person sends the delivery plan to procurement, manufacturing and the delivery personnel in the manufacturing base.

Once again the suppliers need to meet the compliance requirements which are predetermined by the customer, InnoCo. Further the material and also the components used for the product needs meet the product specification provided by InnoCo. However if the new component introduced do not meet the quality specification tolerances will be given by InnoCo quality auditors.

Therefore, it can be concluded that there are learning processes to integrate the OW criteria, while there are also integrative processes align the OQ criteria. Table 7-9 shows the integrative processes.



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

7.3.5.2 Governance and decision making structures

The organization structure related to the learning processes that integrate OW criteria influence the decision making on the offering, and therefore can be described as the structures related to the sensing, shaping, seizing processes. Integrative structures related to order qualifying criteria provide standards and guidelines so that organization structures related to OQ criteria audit the supply base appropriately prior to the actual decision making.

Decision structures involved in aligning the innovative product include the roles that influence the decision making of demand and supply in developing the appropriate offering to the customer. Since decision on the innovative product is done at two levels, decision making structures also have two teams.

Table 7-9 Integrative capabilities: Processes: LaunchCo

Integrative capabilities		Theory	Actual
Learning Processes	Cost		Shape Seize
	Availability		
	Product leadership	OW	<p>Sense customer's requirements in the existing products</p> <p>Shape the opportunities in terms of supplier capabilities and decide the specific new product to meet the customer solution.</p> <p>Core components used for the product are considered and ways identified to improve their performance to overcome the customer's problem.</p> <p>Component manufacturers (RM suppliers) also work backwards, in the same way identifying the development of their components in providing a solution.</p> <p>This helps to shape the opportunity within the limitation of supply capabilities where the capabilities do not need to be highly reconfigured to provide the new product.</p>
	Technology leadership		OO
	Quality		OO
Timely delivery		OO	
	Compliance		OO

Accordingly, the designer in the R&I team reads the consumer needs for new products to see where they could develop an innovative product that offers solutions to the consumer requirements. Therefore the designer in the R&I team acts as the receptor of market trends. Business entrepreneur and Technology entrepreneur act as influencers in decision making on the investment requirement. These structures influence the top management to invest the money on the project. Business entrepreneur is a person with marketing background where as technology entrepreneur is a textile engineer.

In the second stage, applying the specific product component to the garment, launch designer becomes involved. The R&D engineers who are involved in shaping the opportunities and capabilities act as the boundary spanning roles. These boundary

spanners have complementary knowledge about supply capabilities as well as the market. In VarietyCo, the technical team includes yarn and fabric engineers, Clothing engineers, and mechanical engineers. The clothing engineer is a person with a BSc in clothing engineering, a yarn and fabric engineers who has knowledge about the raw material components of the product. The mechanical engineers have knowledge about machines.

LaunchCo has an industrial engineering team which includes work study officers who are involved in improving efficiency through cost effective construction methods.

Furthermore there are quality specifications/ compliance requirements guidelines, issued by the InnoCo. Furthermore when consider the new component developed to achieve the consumer requirement, there are decision making structures are available to rework on the quality specification of the specific component in providing the tolerances needed. Table 7-10 shows the governance and decision making structures.

Table 7-10 Integrative capabilities: Governance and decision making structures: LaunchCo

Integrative capabilities		Theory	Actual
Governance and decision making structure	Cost	Shape Seize	Industrial Engineer
	Availability		
	Product leadership	Receptor Boundary spanners	Strategic level R&I team (R&I designer/ Business Entrepreneur and technology entrepreneur) Operation level R&D team (Launch designer/ Engineers related to RM/garment/machines launch designers)
	Technology leadership		
	Quality		ISO 9001 Quality specification with tolerances
	Timely delivery		Capacity planner
	Compliance		ISO 14001 Compliance Auditor

7.3.5.3 Organization Design

Organization design acts as an integrative capability. Accordingly, the role of leadership is an integrative capability where the leader's focus on OW and OQ criteria acts as an integrative capability that helps the supply base to reconfigure. According to the R&I designer (Contact no. 3-3a), IMT that act as the top management have an innovation driven leadership in order to provide the necessary investments. In the manufacturing firm, that makes products for LaunchCo, factory manager also focuses on innovation as well as the efficiency. Both the leader and the culture of the organization are focused on product innovation needs, where the manufacturing organization's mission statement also provides this.

Furthermore, LaunchCo R&I team that includes R&I designer, business entrepreneur and technology entrepreneur are seated together sharing the demand and supply oriented views. Also R&D team, that includes Demand and supply planning person, launch designer, clothing engineer, yarn and fabric engineer, and mechanical engineer also work together in the same location. Similarly, the technical team also sits together. Moreover, the R&D department works with the supplier and customer continuously sharing the new knowledge. It should be noted that LaunchCo is situated in the zone where all component suppliers are located inside the same zone in order to have the close collaboration with the component suppliers. Further more in order to share the knowledge with the customers, InnoCo R&D team which is located in HongKong has 4 visits to LaunchCo. So that it is evident that not only inside the company LaunchCo but also with the customers and suppliers, LaunchCo has a learning sharing culture.

Organization design also include liaison officers to ensure that the supply base is reconfigured to develop the new product. LaunchCo recently introduced a Chief Engineer concept, where the chief Engineer is the responsible person for a particular style. The Chief Engineer attends the R&D meeting in order to gain the from the concept stage to the bulk production. When the style is approved by the customer, and is passed to production, he becomes involved in reducing the learning curve and SMV. Therefore Chief Engineer has the visibility He tries to manage the knowledge of the workers in handling the garment, so that the learning can be shared, even

though different operators sew the garment. It should be note that not only the OW criteria but also the OQ criteria are aligned through the liaison devices. (Table 7-11)

Table 7-11 Integrative capabilities- Organization Design: LaunchCo

Integrative capabilities		Theory	Actual
Leadership and culture	Cost		Efficiency focus
	Availability		
	Product leadership	OW	Innovation focus learning sharing culture
	Technology leadership		
	Quality		OQ
	Timely delivery		OQ
	Compliance		OQ
Liaison devices	Cost		Work study
	Availability		
	Product leadership	OW	Chief engineer
	Technology leadership		
	Quality		Quality auditor
	Timely delivery		Capacity planner
	Compliance		Compliance auditor

7.3.5.4 Key Performance Indicators

InnoCo has a rating system within which it rates the raw material suppliers under three ratings: Tiers 1/2/3. Tier 1 suppliers are the better or ideal suppliers who are easy to negotiate with, whereas tier 2 suppliers are accredited in different ways, according to their delivery performance/colour achievement, etc. Tier 3 suppliers are the basic suppliers. Therefore in sourcing suppliers for new products to meet the consumer problems InnoCo tends to use tier 1 suppliers, who are flexible in new product development.

In terms of the manufacturing base, key performance indicators will be assessed against the number of quality products per hour. Also the manufacturing base is assessed against the learning curve performance as shown in Table 7-12.

Table 7-12 Integrative capabilities- KPIs : LaunchCo

Integrative capabilities		Theory	Actual
KPI	Cost		Efficiency
	Availability		
	Product leadership	OW	Learning curve
	Technology leadership		
	Quality		OQ
	Timely delivery		OQ
	Compliance		OQ

As suggested by literature, integrative processes and structure are available to align both the order winning and order qualifying criteria. Moreover the empirical data provided key insights. (Table 7-13)

Table 7-13 Hypothesis 4c: Integrative capabilities: LaunchCo

Hypothesis	Supported/ Not supported	Key insights
Stage 3 needs integrative capabilities to integrate innovative product requirements	Supported	<p>Stage 3 needs to integrate Innovative product as well as the OQ requirements. Opportunities in terms of customer's existing needs are shaped through applying newness to the product components.</p> <p>OW criteria are integrated in top management level in order to make sure that the investment will be provided for the JPD.</p> <p>OW criteria integrated in the middle management level through the boundary spanning roles that consist of the R&D team.</p> <p>Top management (IMT) should have an innovation oriented flexible leadership style with risk taking behaviour.</p> <p>Chief Engineer acts as the liaison device to align OW criteria. Innovation sharing culture within the network partners.</p> <p>KPIs focus on the efficiency as well as the learning curve.</p>

7.4 Summary of the chapter

This chapter provides the case study results of LaunchCo which represents stage 3 in the industry upgrading continuum. Accordingly the case results identify how offering, in terms of product innovation, impacts on the competitive priorities, collaboration intensity and integrative capabilities of an apparel manufacturer's

network. While the empirical evidence of LaunchCo supports the relevant hypothesis suggested by theory, it also provides key insights. The empirical evidence collected from stage 3 of the industry upgrade continuum supported the hypotheses from 3a-3d. Moreover it also provided key insights into the theory.

While the theory suggests that competitive priority will be product innovation, the empirical evidence for LaunchCo suggests that order winning criteria includes product innovation at low cost. Further, it also suggests that competitive priorities include order qualifying criteria, which includes timely delivery, quality and compliance and also the capability to manufacture complex products. The theory also suggests that collaboration intensity network members are high. This is supported and it was also noted that LaunchCo extends towards the consumer in obtaining relevant information. While the theory suggests that the demand and supply planning process includes both customer and supplier in developing the demand and supply plan, this fact was confirmed by the empirical evidence collected from LaunchCo, as the customer becomes the key decision maker of the offering. While the theory suggests that integrative capabilities should be available to align the order winning criteria, empirical evidence suggests that integrative capabilities are also needed to align the order qualifying criteria. As boundary spanning structures are available to influence decision making related to the demand and supply plan, in deciding the offering in terms of shaping the opportunities and shaping the capabilities, the key decision maker is InnoCo's buying team.

The summary of the empirical evidence which was tested against the relevant hypothesis developed against the conceptual framework in Chapter 3 is provided in Table 7-14.

Table 7-14 Test of hypotheses against the empirical evidence: LaunchCo

No.	Hypothesis	Supported/ Not supported	Key insights
H1c	Stage 3 provides special product (existing needs) with innovative product as competitive priority	Supported	<p>Order winning criterion is innovative product at low cost.</p> <p>Order qualifiers are quality, timely delivery and compliance/capability</p> <p>In terms of the offering, although order volume is considered to be low, after the IST reading based on an initial order of 10,000 pcs, volume may be low or high. In the same way, in the IST the launch product will have low variety but after the initial reading if it is regarded as a fashion product the variety will be high.</p>
H2c	Stage 3 has external integration between demand and supply processes in decision making	Supported	<p>In order to share the new product ideas, LaunchCo work with JV partners who develop the components.</p> <p>They work not only with channel partners but also with consumers in identifying their needs.</p>
H3c	Stage 3 has external integration between demand and supply processes in decision making	Supported	<p>While the decision related to product and prices are done interactively, negotiations can be done with order qualifying criteria eg: Quality and timely delivery requirements.</p>
H4c	Stage 3 needs integrative capabilities to integrate innovative product requirements	Supported	<p>Stage 3 needs to integrate Innovative product as well as the OQ requirements. Opportunities in terms of customer's existing needs are shaped through applying newness to the product components.</p> <p>OW criteria are integrated in top management level in order to make sure that the investment will be provided for the JPD.</p> <p>OW criteria integrated in the middle management level through the boundary spanning roles that consist of the R&D team.</p> <p>Top management (IMT) should have an innovation oriented flexible leadership style with risk taking behaviour.</p> <p>Chief Engineer acts as the liaison device to align OW criteria. Innovation sharing culture within the network partners.</p> <p>KPIs focus on the efficiency as well as the learning curve.</p>

Competitive priorities identify the integrative capabilities of the network where the network members are aligned with the competitive priorities. The potential network members that could provide the offering are identified using the OQ criteria. Order winning criteria helps in selecting the relevant members for the offering among the potential members.

Since all the network partners learn together in deciding the offering, this makes for a collaborative relationship between the network partners. While both InnoCo and LaunchCo sense the consumer needs to identify the order winning offering of the consumer, they also disseminate this information to their suppliers.

Integrative processes related to shaping the opportunities and capabilities in order to develop the offering, make the network partners collaborate with the use of boundary spanning structures that span between demand and supply functions both internally and externally between customer and supplier. This is done at two levels. The first is in the R&I team where the R&I designer identifies the consumer needs and the technology entrepreneur and business entrepreneur works on the external supply channel and sales and marketing channel. Acting as the boundary spanning personnel, this team decides the offering to fit sales and marketing capabilities and the component supplier capabilities. They influence the top management decision making for investment. In the second level, the R&D engineer (garment technologist) and R&D engineer (textile and yarn technologist) are the boundary spanning personnel who influence the decision making of the offering. The former has complementary knowledge of internal supply capabilities while the latter has complementary knowledge of external supply capabilities within the raw material suppliers. They act as the main communicators between the market oriented view and the supply oriented view (internal and external supply base), since they also have knowledge of the relevant marketing channel. The launch designer in LaunchCo also works as a boundary spanner, as Launch designer has complementary knowledge of sales and marketing capabilities and market trends. Hence in order to influence the network members to learn collaboratively, integrative processes and structures related to order winning criteria make for a collaborative relationship between the network members.

It should also be emphasized that since the decision making related to the offering is done by LaunchCo's sales and marketing team, the customer has the upper hand in driving the network.

8 CASE 4: INVESTIGATION OF THE STAGE 4 OF THE INDUSTRY UPGRADE CONTINUUM

8.1 Introduction to the chapter

This chapter presents the results of the fourth of the four embedded cases within the apparel manufacturer ApparelCo. This chapter is focused on stage 4 of the industry upgrade continuum of an apparel manufacturer, where the industry upgrade is to provide for the future needs of the customer.

As illustrated in Figure 8-1, there are four additional parts to this chapter following the introduction. The case context is presented in section 8.2. Section 8.3 presents the results of the case study. This section discusses the results of the study based on the analysis templates developed against the conceptual framework. Section 8.4 presents the summary of the chapter which brings the chapter to a close.

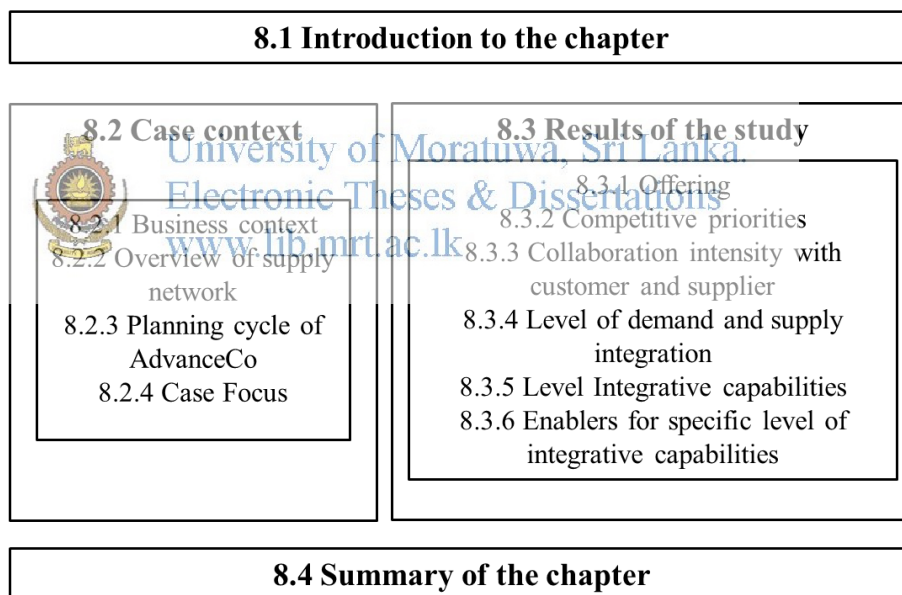


Figure 8-1 Breakdown of Chapter 8

8.2 Case context

8.2.1 Business context

8.2.1.1 AdvanceCo: Positioning and strategy

There are two key elements of the business context necessary to position the case: firstly an overview of the positioning and strategy of the division which provides the high technology products in section 8.2.1.1; secondly an overview of the external environment in which this division operates based on a Porter's 5-Forces analysis in section 8.2.1.2.

The fourth stage of industry upgrade focuses on building a sustainable business within ApparelCo through transformative and disruptive innovation by translating unmet consumer and market needs. This moves the firm beyond its core business to think about its future. Accordingly, in order to sustain the business, it needs to have the vision for innovation.

The Head of R&I, Contact no. 4-3a stated:

 *“The future of the business will be bringing innovation. Not only the core business but needs to consider the future of the business...This is important for survival.”*

University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mru.ac.lk

The drivers behind the strategic mandate are the “*techno savvy*” consumers.

The Head of R&I further mentioned that a product which was patented as the first bra, was made out of two silk handkerchiefs and a ribbon. With the innovation of the next generations, cut and sew, and bonded bras have been introduced.

She added

“Wearable technology (smart apparel) and wellness apparel are the next frontiers of the business.”

For the purpose of this thesis, the study focuses on Division A of ApparelCo which focuses on the main customer of ApparelCo. While Division A focuses on value-added offering to this customer, it also focuses on providing advanced products as a new offering. Therefore the focus of the specific case will be the specific business

unit of Division A, which provides advanced technology-based product offerings. This unit is known as AdvanceCo for the purpose of this thesis.

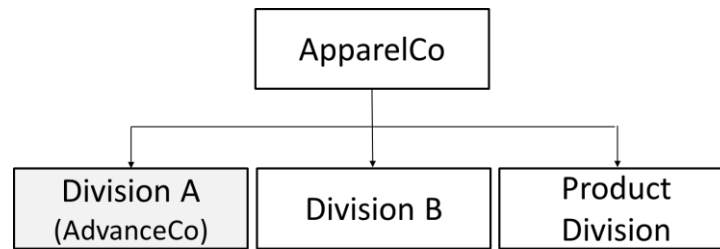


Figure 8-2 Positioning of AdvanceCo

8.2.1.2 Overview of the external environment

In Sri Lanka there is no other company that provides advanced product offerings. Other vendors which offer advanced product offerings, even the overseas vendors that provide advanced offerings are also rare.

The bargaining power of AdvanceCo is analyzed against the five dimensions of Porter's Five Forces (Porter, 1980).

Customer power: The customer's bargaining power is lower as AdvanceCo provides the advanced product concept which may be patented.

Supplier power: AdvanceCo sources suppliers to jointly develop advanced products. Technology suppliers as well as specific components suppliers are connected the company. If the total development is taken by the supplier the power is higher. When AdvanceCo jointly develops the product, the supplier bargaining power is lower. If AdvanceCo pays for the whole product development, then the bargaining power is very low. However, the risk of developing the product fully by AdvanceCo is that if it fails to secure the business the whole investment will be lost. In a joint development agreement (JDA), cost is incurred by the supplier with the order commitment for the business.

Threat of new entrants: Since AdvanceCo offers a very new and special product they may obtain a patent or have a non-disclosure agreement (NDA) with the suppliers. Therefore the threat of new entrants is low. The countries that have knowledge resources and a low cost of production are also rare.

Threat of substitutes: The threat of substitutes is also low as it is a special apparel product.

Competitor Rivalry: The countries that offer advanced product offerings are very low in number when compared to low cost countries. Even the countries that offer technology offerings will have high production costs. Furthermore, since ApparelCo has credibility and accountability on guaranteed delivery and high quality together with high standards in labour compliance, competitor rivalry can be regarded as low.

On the whole it can be stated that the bargaining power of AdvanceCo is very high compared to its customers, competitors etc.

8.2.2 Overview of the supply network

8.2.2.1 Customer base

As noted earlier, AdvanceCo is the focus of the study. Therefore it deals with the main customer for ApparelCo who provides the highest income in terms of revenue generation which is more than 50% of ApparelCo's total income. This customer is based in the USA and is a specialty retailer who focuses on women's lingerie, which includes bras, briefs and other apparel categories that fit into the category of women's underwear. Furthermore, this customer has a 33% market share in the USA and is the largest of all the lingerie companies.

The customer has two main supply bases from which they source innovative products: one in Sri Lanka and the other in China. In China they have four suppliers who provide innovation as a service.

Given the strategic importance of the account where more than 50% of the revenue is provided from this customer, the specific business unit which focuses on providing the service provision to the customer is considered as the embedded case unit for the study. For the purpose of this thesis, the customer is known as TechCo and the embedded case unit is known as AdvanceCo.

The main focus of the end consumer age range is from 34-40, which falls into the middle income level group. These women are fashion conscious and consider

lingerie as a special product in their wardrobe. Specifically these consumers focus on the comfort of the product and are wellness aware/conscious.

8.2.2.2 Supplier base

AdvanceCo works with a locally based supply network in sourcing innovative components that suit customers' unmet needs, and they have JV partnerships with these suppliers. The company also works with a very new supply base with which they have not worked previously. These suppliers may be from other industries offering different technologies, which can be used to develop offerings to consumers' unmet needs.

TechPadCo works as a key unit in providing advance foam pad components to AdvanceCo. TechPadCo is recognized by TechCo as an Official Launch Vendor. TechPadCo has developed patented advanced products for bras, such as pads that provide customized compression for shape and sportswear.

8.2.2.3 Manufacturing base

The manufacturing base for advanced products will be the key manufacturer among those manufacturers that were approved as launch vendors by TechCo or may be a very facility that is adjacent with the business as new technology enable the company move forward with a different technology.

8.2.3 Planning cycle of AdvanceCo

The advanced products usually take about 2-3 years for their development. New advanced products go through a design and build process in which AdvanceCo develops 1st and 2nd generation products with the lead consumers that are known as the early adapters in the market. Until the product builds to a position where it can approach the mass market consumer, it is not distributed through retailers. Once it starts to be distributed through retailers, the product is introduced in different seasons according to its suitability for a particular season – see Table 8-1

Table 8-1 Planning cycle: AdvanceCo

Planning cycle	Seasons	Timing-Sales months	Volume
Once per 2-3 years	Spring Summer-High Summer Fall Holiday Resort	Feb-Mar- Spring Apr-May- Summer Jul-Aug- Fall Aug-Dec- Holiday Jan-Feb- Resort	Design and build process- Very small volumes targeting early adapters. When it reaches the mass market IST-10,000 will be done and, depending on the read, the order volume will be decided.

8.2.4 Case focus

Since the planning process incorporates the supply network, the case focus is on the customer and supplier who are dealing with AdvanceCo. Accordingly the customer will be TechCo and the supplier is a pad supplier for TechCo named TechPadCo.

Accordingly, the planning process that spans from TechCo to TechPadCo will be the focus of the case.

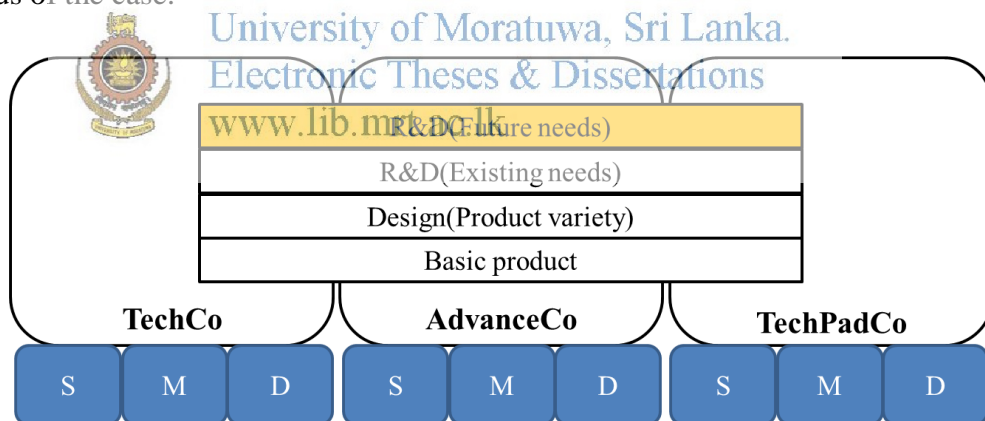


Figure 8-3 Scope of the study

8.3 Results of the study

8.3.1 Offering


The offering can be explained as a special product that provides newness in terms of advanced technology. Accordingly, the core product will be upgraded to meet the consumers’ future needs. There will be technology-based RM that offer a technology-based product to the customer.

AdvanceCo's product variety is unknown. Usually the shape of the product remains the same whereas the components are changed with the input of technology. After the IST, if the product is considered to be a core product, variety will be low, but if it is considered to be a fashion product, the variety will be high. Since the product is a new one, the sales and marketing team cannot predict its demand pattern, therefore demand is unpredictable. The volume of the product is also unknown. An IST is done using about 10,000 pcs of the product and maybe the product will be discontinued after the IST, if consumers are not satisfied.

The product life cycle is also unknown. If the product becomes a core product, the PLC is long and if it becomes a fashion product the PLC is short. The time window for delivery can be regarded as high as the lead time for an advanced new product is long at about 3 months. Delivery reliability is also high.

The product has a design and build process. The offering is discussed in Table 8-2.

Table 8-2 Offering: AdvanceCo

		Offering	Theory	Actual
	Product	Standard	Special	Special
		Special	L/S	L/S
		Phase in PLC	Introduction	Introduction
Offering	Demand	Volume	L	Not known IST-10,000
		Variety	L	Low/high
		Variability	H	High
	Service	Lead time	S	Long 3 months
		Delivery reliability	H	H
		Delivery frequency	L/H	Not known

8.3.2 Competitive priorities

The consumer for AdvanceCo considers comfort in their products to be a key requirement. Although this consumer does not have an existing need for a wellness product that provides future needs, introducing this kind of product will encourage

the consumer to buy the product. Accordingly, the competitive priority is to introduce an advanced product which will satisfy the future needs of the consumer.

When sourcing suppliers to develop the advanced products, AdvanceCo search for special suppliers, with whom they can work on developing technology-based high tech products. Usually the supplier who develops the specific technology-based material will be selected based on their technology innovation capabilities in a specific industry.

However, when applying specific technology to the apparel related raw material, they usually identify the JV partners who are pre-qualified in meeting the order qualifying criteria. AdvanceCo jointly develop the advanced product offering with these suppliers. Further, these suppliers need to be approved as launch vendors for the customer. They also need to meet the quality specification of the customer, but tolerances may be given if needed.

The Business manager of AdvanceCo stated (Contact no. 4-01):

“Price is also important. The mass market will not pay 100 dollars just because it is a technology product.”



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

This lead AdvanceCo to develop generation 1, generation 2 etc. products to refine the concept to meet the price and the needs of the mass market consumer.

Business manager (Contact no. 4-1) further added,

“There is a build-up process, early adaptorsguys with phones... is a very small portion of the market.”

Therefore even though order winner is a high technology-based product, the mass market consumer has a price for obtaining the product. Therefore the price of the product also matters in winning the order.

Accordingly, OW criteria for AdvanceCo will be technology product at low cost. Hence OW1 is considered as technology leadership while OW2 is considered as cost.

Table 8-3 Competitive priorities: AdvanceCo

Competitive priorities		Theory	Actual
OW/OQ Criteria	Cost		OW2
	Availability		
	Product leadership		
	Technology leadership	OW	OW1
	Quality		OQ
	Timely delivery		OQ
	Compliance		OQ

AdvanceCo offers a technology-based product where the competitive priority is an advanced product at low cost while the order qualifiers are quality, timely delivery and compliance. Once again, the order volume and variety are unknown until the sales reading has been completed based on the IST. See Table 8-4

Table 8-4 Hypothesis 1d: Offering and competitive priorities: AdvanceCo

Hypothesis	Supported/ Not supported	Key insights
Stage 4 provides special product (Future needs) with high-tech product as competitive priority.	Supported	<p>Although order volume is considered to be low, after the IST reading based on an initial order of 10,000 pcs, the volume may be low or high. In the same way, in the IST, the launch product will have low variety but after the initial reading if it is considered to be a fashion product the variety will be high. Although the lead time is considered as short, lead time is long and is about 12 weeks.</p> <p>Products also have a design and build process.</p> <p>OW criterion is advanced product at low cost.</p> <p>OQ are quality, timely delivery and compliance/ capability.</p>

8.3.3 Collaboration intensity

8.3.3.1 Customer relationship

The project manager in the central R&I team in ApparelCo mentioned that they work closely with ApparelCo’s customer base whose members are more innovation oriented. Therefore they conduct technology projects with TechCo which are related to lingerie. In these projects they usually sign a JDA (Joint Development

Agreement) with the customer. When TechCo places JDA to work with AdvanceCo they also guarantee the order placement.

He further said that AdvanceCo moves beyond the retailer, to have a relationship with the consumers in the market. This is done because AdvanceCo is focusing on the future needs of the consumer. However, when they come up with a product idea they do share it with these customers because of their relationship.

Business manager (Contact no. 4-01) said:

“We have developed something... You are the best person to sell it. Would you like to buy it?”

However when the details are provided, AdvanceCo need the NDA(Non-Disclosure Arrangement)s signed by the customer. An NDA confirms that the customer will not share the information with others.

Because of the relationship they have with TechCo, even when they want to sign an NDA with the customer, they have faced a very difficult situation. The business manager for AdvanceCo (Contact no. 4-01) stated:

“TechCo was very upset with us. When we talk about NDAs with them... it was very sensitive.”

She further added that the R&I team at ApparelCo have done a load of research on the product idea and that they share the information. TechCo wanted the supplier details and we provided everything because of our relationship with them. However, there was a risk that TechCo might provide the product idea to another vendor.

Contact no. 4-01 further states,

“Because of sensitivity of drawing the line we are not currently doing NDAs with TechCo....We can draw the line with the new customers.”

Therefore it is evident that the relationship with the customer is high and AdvanceCo extensively collaborates with its customers in developing the offering. There are

times when AdvancCo identifies very new customers for providing new products. Usually AdvanceCo form new strategic alliances with these new customers.

8.3.3.2 Supplier relationship

Business manager (Contact no. 4-1) mentioned that they are now working with new suppliers with whom the industry has not worked before. They work with electronic industry partners for projects related to the wearable technology and with health industry partners for wellness apparel.

Project manager (Contact no, 4-3a) added,

“We are working on future projects...On the open innovation platform there are new suppliers where industry did not work before.”

Furthermore they sign NDAs with these suppliers. An NDA confirms that the supply parties will not share the information with others. Further, they have JV partners with whom they may not sign JDAs, but when they work with external suppliers they do sign JDAs.

Therefore it can be concluded that relationships with customer and supplier are high as the offering needs to be jointly developed by customer/supplier and the vendor partner.

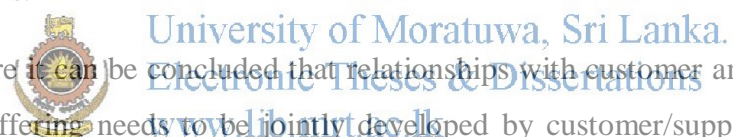


Table 8-5 Collaboration intensity: AdvanceCo

Collaboration intensity		Theory	Actual
Collaboration intensity	Customer	Extensive collaboration	Extensive collaboration (JDA & NDA)
	Supplier	External collaboration	Extensive collaboration Existing suppliers (JV partners) and also new suppliers through strategic alliances (JDA & NDA)

AdvanceCo supports the theory by confirming the fact that AdvanceCo has extensive collaboration with their suppliers and customers. When they work with suppliers or customer which they do not have any partnerships they tend to form strategic alliances. See - Table 8-6

Table 8-6 Hypothesis 2d: Collaboration intensity: AdvanceCo

Hypothesis	Supported/ Not supported	Key insights
Stage 4 has extensive collaborative relationship with network members	Supported	<p>Most of the suppliers are JV partners. Further they sign JDA with the new suppliers with whom they work.</p> <p>New partners may also absorb to the network. Strategic alliances are formed with the new technology partners. They may also form strategic alliances with the new customers.</p>

8.3.4 Level of demand supply integration

8.3.4.1 Demand planning

Demand planning occurs at both strategic and operational level.

In strategic level, AdvanceCo project manager integrates with the CEO's of the company that includes divisional heads i.e lingerie, active wear and fabric, to make decisions about the product concept, to understand the capabilities for investment.

In operational level, demand and supply planning of the relevant key customer plan the product details, price details and delivery details, through integrating with the supply team. The operational level integrators are available for integrative decision making.



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

8.3.4.2 Supply planning

The supply plan will be developed interactively with the demand plan. Once again supply planning also has two levels, such as strategic level and operational level. Strategic level Supply planning is concerned with selecting the appropriate supply channel to jointly develop the advance innovation, through developing strategic alliances if needed. Distribution channel also needed to be identified to sell the new product and to confirm the strategic alliances with the relevant suppliers. Usually AdvanceCo try to offer the product to the available customer channels through introducing or extending the new brands within the store; however, they may also consider new channels through the new brands. Furthermore they also need to find a particular manufacturing entity to manufacture the product. This is done according to the product concept developed in the demand planning personnel. At this stage IMT(Innovation Management Team) in each product divisions (Intimates and

activewear), that consists of business directors of the key customers, manufacturing directors and technical directors are involved.

Operational level supply planning involves making further decisions on the product details, price details and the delivery details, to provide the operational level supply plan to the RM supplier and the manufacturer, integrating with the relevant customer.

8.3.4.3 Integrative planning

8.3.4.3.1 Decision of product details

In the strategic level the product concept decision is made by the ILT, considering the relevant technologies that are applicable to the manufacturing base, customer base and the RM supply base.

Operational level decisions on the technology-based product are taken as an integrative decision making where the R&I team first understands the technologies that can be linked to the consumer's future needs. They communicate with the supplier in developing the specific product components and understand the retailer's requirements in developing the product further in order to match the brand requirements.



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

8.3.4.3.2 Decision of demand

In the strategic level decision on the demand for the product is mainly considered based on the statistical data of the consumer requirements.

TechCo has a minimum and maximum order quantity from the supplier. Accordingly in each year the minimum order quantity will be booked as the fixed capacity and the gap between maximum and minimum quantity will be kept as a flexible order quantity. After a product is approved TechCo obtains an IST order for 10,000 pcs tested over 2-3 seasons before bulk production. Accordingly the sales and marketing team provides the order quantity requirement details. First bulk after 2-3 seasons. If the product goes as a core product which is a continuous order the quantity will be 500,000 per year. There may be orders with 2 million-3 million per year also. If the product goes as a fashion product the quantity will be less and is from 200,000-

300,000. If the order requirement exceeds the capacity, AdvanceCo's demand planner needs to identify a subcontracting firm that is approved as a launch vendor.

Demand planning and supply planning are integrated in planning the advanced product, whereas volume is planned within the minimum and maximum order requirement of the customer.

8.3.4.3.3 Decision on price

The price needs to be planned within the target price of the consumer. Usually this is a technology-based, advanced product, so it will have a higher price. In the introductory stage the early adaptors will be attracted and when the market is growing 1st and 2nd generation products will be introduced to attract the mass market. Within this process the target price is matched in order to focus the product on mass market consumers.

Therefore it can be concluded that offering in terms of advanced technology is concerned with demand and supply integration at both levels, strategic as well as in operational level.



 University of Moratuwa, Sri Lanka.
 Electronic Theses & Dissertations
 www.lib.mrt.ac.lk

Table 8-7 Demand and supply integration: AdvanceCo

Demand supply integration			Theory	Actual
Type of integration	SC Integration	Internal	High	High
		Customer	High	High
		Supplier	High	High
	Demand chain and supply chain integration	Internal	High	High
		Customer	High	High
		Supplier	High	High

Hypothesis 4d was supported by the empirical evidence as the demand plan and supply plan are developed interactively with internal as well as external partners to decide on the innovative product requirements and target price requirements of the consumer. It provides key insight that negotiations can be done on volume and quality requirements pre-set by the customer, TechCo. (Table 8-8)

Table 8-8 Hypothesis 3d: Level of demand and supply integration: AdvanceCo

Hypothesis	Supported/ Not supported	Key insights
Stage 4 has external integration between demand and supply processes in decision making	Supported	Customer, supplier and firm work interactively in making decision on the high tech product requirements and low cost requirements of the consumer, TechCo. Negotiations can be done on the quality and delivery guidelines of the customer.

8.3.5 Level of integrative capabilities

8.3.5.1 Learning processes

8.3.5.1.1 Sensing process

The centralized team for future needs in ApparelCo identifies adjacent business opportunities in the market, e.g. they do a pre-scoping exercise. In the scoping study they understand market size/ potential/ unmet consumer needs, where they develop a consumer profile that describes future needs and technology related projects. Furthermore, the customer, TechCo also provides new projects related to consumers' future needs. In the discovery phase, a solution profile is developed, identifying the way in which a specific product can solve unmet needs.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

8.3.5.1.2 Shaping opportunities

Future needs team has a business entrepreneur, technology entrepreneur and a finance entrepreneur. In the discovery stage, the future needs team feeds the data about the consumer needs into the technical hub where technology entrepreneurs in the future needs team works with the technology entrepreneur in the technology hub to identify what way they can use the new technology in the material.

When identifying the relevant technology for a project, the team identifies related technologies that a specific industry has worked with before. Usually they do not start from scratch, in order to reduce the risk level of technology adaptation. Accordingly they identify how that particular technology could be imparted to textiles. Project manager came up with an example of wearable technology, where technology is used in the apparel. At this stage, since the particular technology is used in the electronic industry and therefore they will not start from scratch.

Therefore technology readiness level (TRL) is 5 where they confirm that a particular technology can be applied within specific industry parameters. Afterwards they search specific industry partners to work with in developing the project. They identify the ways to incorporate the conductive yarns to the raw material.

Accordingly, the project manager works as the receptors of the information from the market environment about the market needs, where they shape opportunities through identifying the available technologies in a different industry and applying that in the textile industry.

8.3.5.1.3 Shaping capabilities – Level 1

The hub will find a specific industry partner (technology partner) who will have the necessary technology, and a particular raw material supplier who will have the necessary capability, in applying the technology to the material used in the textile industry. Accordingly, the technology entrepreneur works together with the specific industry partner and the particular supplier in applying the specific technology to a material that can be used in lingerie. In this stage, they may need to partner with a new technology supplier through forming a new strategic alliance, where they develop the specific material with the new technology. Moreover, business entrepreneur identifies specific distribution channels to sell the product and sometimes they may need to approach new retailers in distributing the advanced technology based products.

If the project investment exceeds \$500,000 it will go to the innovation leadership team (ILT) for special board approval. The ILT team includes all the CEOs of the main company and of each division (lingerie, active and fabric), the Corporate Growth Officer (CGO) and Corporate Technology Officer (CTO). The technology, business and finance entrepreneurs act as visionary leaders, as they may need to shape the ILT to go ahead with the project. The team develops the new material which will be a prototype sample.

Once the product gains the necessary approvals, the product passes to the incubation team for commercialization. Incubation process has different stages, where the R&D team involves in shaping the opportunity and demand and supply capabilities.

8.3.5.1.4 Shaping capabilities – level 2

Head of incubation (Contact no. 4-3b) states,

“R&I team get a technology, we need to go on all processes to identify how the technology behaves with the material”

The head of the incubation team, the R&D engineer, mentioned that usually their objective is to increase the TRL(Technology Risk Level) from level 6 to 7 through shaping the capabilities to developing the product. First stage is technology risk assessment (TRA), where the incubation team understands the adaptation of technology to intimate products. Therefore they need to check everything in order to make the prototype sample material sellable and productionable. Therefore they have a team that consists of people with relevant knowledge to reduce the risk factors in each area. In this stage they will increase the TRL to 7 and the suitability of the technology for the material will be frozen. Mainly textile engineers are involved in this stage.

The Head of incubation (Contact no.4, 3b) added:

 *“There may be space for tolerances and the decisions come from the brand.”*

When it is decided that the concept is ready to sell to TechCo, they need to strike a balance between technology, cost and the consumers’ need for technology/comfort.

8.3.5.1.5 Shaping capabilities: Level 3

The new material will be presented to the TechCo R&D team, when R&D team visit AdvanceCo. AdvanceCo’s Launch team that includes R&D team, design team works together with the TechCo R&D team and designer in developing the material to a 3D product using the specific material according to the guidelines given at the TRA stage. Launch designers produces the 3D product sketch. Next, when the 3D sketch is received, a pilot sample is done by the R&D team in AdvanceCo. Testing is done against the garment form where the different constructions are also involved. Usually R&D team takes the product specification to test the properties against the standards. Textile engineers as well as the clothing engineers are mainly involved in this stage to identify the performance requirements. The design needs to meet TechCo’s

requirements for technology and comfort levels and also the cost. Therefore costing is also done in this stage.

AdvanceCo launch designer presents the proto sample to the sales and marketing team in TechCo. The sales and marketing team will buy the product, if they happy to launch the product to a specific season. They have floor set dates in TechCo where they launch new products to identify the demand.

8.3.5.1.6 Seizing

Decision making is done regarding the offering, where a demand plan and supply plan are developed to align with the consumer needs. This considers product, price, place and promotional strategies that determine the demand plan and sourcing, manufacturing and delivery processes that determine the supply plan.

Seizing process of the offering, in terms of high technology product need demand and supply integration at two levels. First level is when the strategic level integration within the top management determines the investment capabilities. In this stage, project manager presents the new product idea and influence the top management in making the investment. In the next level, the incubation team, which consists of the engineers and designers, works in identifying the suitability of the new product for commercialization as well as for bulk production, through shaping the operational capabilities. Once the product details are finalized, they provide the technical pack for both garment as well as the raw material components, which includes the product specification. Garment tech pack also includes the construction details to minimize the SMV. The details of the tech pack will be provided to the manufacturing base.


While the integrative processes for OW consider the learning processes that described above, there are processes to align the OQ criteria. When a new product is planned for a specific year, demand and supply planning person integrate with capacity planner to reserve capacity for a launch product. When the product is presented to the sales and marketing team at LaunchCo and when they are happy to proceed with the product, the season which the product will be sold will be determined. Demand and supply planning person once again integrate with the capacity planner to reserve capacity for the particular season. Since the capacity

planner use aggregated production planning, she will reserve the capacity with the manufacturing base. Once the IST is done and the quantity is given for the season, demand and supply planning person sends the delivery plan to procurement, manufacturing and the delivery personnel in the manufacturing base.

Once again the suppliers need to meet the compliance requirements which are predetermined by the customer, TechCo. Further the material and also the components used for the product needs to meet the product specification provided by TechCo. However if the new material introduced do not meet the quality specification, tolerances will be given by TechCo quality auditors.

Therefore, it can be concluded that there are learning processes to integrate the OW criteria, while there are also integrative processes align the OQ criteria. Table 8-9 shows the integrative processes.

Table 8-9 Integrative capabilities-Processes: AdvanceCo

Integrative capabilities		Theory	Actual
 Learning Processes	Cast Availability Product leadership	University of Moratuwa, Sri Lanka. Electronic Theses & Dissertations www.lib.mrt.ac.lk	Shape Seize
	Technology leadership	OW	Sense customer's requirements in the existing products Shape the opportunities in terms of supplier capabilities and decide the high tech product to meet the customer future needs.. New technology which is used in a different industry will be used on the textile material This helps to shape the opportunity within the limitation of supply capabilities where the capabilities do not need to be highly reconfigured to provide the new high tech product.
	Quality		OQ
	Timely delivery		OQ
	Compliance		OQ

8.3.5.2 Governance and decision making structure

Governance and decision making structures involve the people who make the decisions based on OW and OQ. The people who integrate the order qualifiers select the suppliers based on standards and guidelines.

While the manufacturer needs to approve the quality process and comply with the standard guidelines given in the ISO certifications, the customer, TechCo, also has its code of conduct to approve the vendor for labour compliance. TechCo audits the vendor for this. Furthermore in order to manufacture the advanced products, TechCo's auditor needs to approve the specific vendor as a launch vendor. Accordingly, TechCo has specific guidelines to assess the vendor capabilities to manufacture an innovative product. Therefore TechCo has auditors to integrate the OQ criteria.

OW criteria are integrated through the learning processes. Sensing structures include the roles involved in sensing the consumers' future needs, who are called project managers. These people look at different technologies that can be applied as future needs. Persons in the technology hub shapes the opportunities through identifying the textile related industries that adapt the relevant technology and shape the capabilities through identifying the relevant partners and influencing the top management in developing strategic alliances to develop new material with the technology. Hence Technology hub consists of engineers from different disciplines (electronics/ bio chemistry eta,) who shape the opportunities and capabilities.

When the product concept is taken by a particular cluster eg: lingerie, R&D team that consist of middle management people get involved in shaping the operational capabilities at TRA level. The team consists of textile engineers that are specifically focus on adapting the new technology and material to a lingerie product. In the DRA stage R&D engineers that consist of clothing engineers are involved in shaping the manufacturing capabilities as well as the opportunities. Accordingly, necessary training is provided to the operators to reduce the learning curve.

In order to integrate the cost, work study teams that consist of industrial engineers are involved in introducing methods to improve efficiency. They confirm the attachment requirements and appropriate methods for specific operations.

Table 8-10 shows the governance and decision making structures for AdvanceCo.

Table 8-10 Integrative Capabilities- Governance and decision making structure: AdvanceCo

Integrative capabilities		Theory	Actual
Governance and decision making structure	Cost		Industrial Engineers
	Availability		
	Product leadership		
	Technology leadership	Receptor	Project manager
		Boundary spanners	Shaping at strategic level Future business team (Business entrepreneur/ Technology entrepreneur/ Finance entrepreneur)
		Shaping at operational level Launch designer R&D team- Yarn and fabric engineer/clothing engineer/ mechanical engineer)	
	Quality	Auditor	Quality
	Timely delivery	Auditor	Capacity planner
	Compliance	Auditor	ISO 14001

8.3.5.3 Organization Design

Leadership is a main element in the organization design. The ILT acts as the leadership behind the advanced technology-based products. Roles related to leadership involve the personnel at the top management level as well as in the operational level. The strategic level leadership team consists of the ILT (Innovation Leadership team) which consists of relevant CEOs (Chief Executive Officer) of the main company which ApparelCo belongs to and the CEOs of the different clusters i.e lingerie(ApparelCo), active wear and raw material, including the Corporate Growth Officer (CGO) and Corporate Technology Officer (CTO) top

management people is involved in shaping the opportunity. The project manager of AdvanceCo (Contact 4-3a) stated:

“We have a good leadership team with a good vision.”

Accordingly the leadership in ApparelCo focused on advance innovation for future growth of the business. including innovation. However the project manager further explained that the company leadership is risk averse and does not like to go ahead with an innovation until they are very clear about the picture.

“We are risk averse in terms of big investments until the picture is very clear. We do not do things with a murky picture. This makes company a slow growth in terms of innovation.”

He further added that US companies with an innovation orientation take decisions with a less amount of visibility of the end result.

Describing the culture of the organization, he added that they work within the open innovation platform system where they share information with each other, which is a positive factor in innovation. (See- Table 8-11)

8.3.5.4 Key performance indicators

There is a specific rating system which TechCo uses in rating their suppliers in which they rate the material supplier for technology and the best suppliers who are very flexible in developing products. These are called as better suppliers, where TechCo use them in developing technology based products. TechCo tend to measure the performance of the manufacturer in terms of efficiency by identifying the quality output per hour and the learning curve. See- Table 8-12.

Table 8-11 Integrative capabilities- Organization Design: AdvanceCo

Integrative capabilities		Theory	Actual
Leadership And culture	Cost		Cost focus
	Availability		
	Product leadership		
	Technology leadership	√	Innovation focus-Top management and middle management
	Quality		OQ
	Timely delivery		OQ
	Compliance		OQ
Liaison devices	Cost	√	Work study at factory
	Availability		
	Product leadership		
	Technology leadership	√	Chief engineer
	Quality	√	Quality inspection team
	Timely delivery	√	Capacity Planner
	Compliance	√	Auditor

Table 8-12 Integrative capabilities-KPI: AdvanceCo

Integrative capabilities		Theory	Actual
KPI	Cost		OW1
	Availability		
	Product leadership		
	Technology leadership	OW	OW
	Quality		OQ
	Timely delivery		OQ
	Compliance		OQ

As suggested by theory, integrative capabilities are applicable both to OW criteria and OQ criteria. Furthermore it was noted that integration of order winning criteria involves top management level people as they need to shape the capabilities through the relevant investments. Boundary spanners are also available in the both levels. It was also noted that leadership team should also have risk taking behaviour. Liaison device is the chief engineer. See-Table 8-13

Table 8-13 Hypothesis 4d: Integrative capabilities: AdvanceCo

Hypothesis	Supported/ Not supported	Key insights
Stage 4 needs integrative capabilities to integrate advance technology product requirements	Supported	Stage 4 needs to integrate high tech product as well as the OQ requirements. Opportunities in terms of customer's future needs are shaped through applying new technology in the textile material.
		OW criteria are integrated in top management level in order to make sure that the investment will be provided for strategic alliances with the technology partners. OW criteria integrated in the middle management level through the boundary spanning roles that consist of the R&D team.
		Corporate level management (ILT) should have an innovation oriented flexible leadership style with risk taking behaviour. Chief Engineer acts as the liaison device to align OW criteria. Innovation sharing culture within the network partners.
		KPIs focus on the efficiency as well as the learning curve.

8.4 Summary of the chapter

This chapter provides the case study results of AdvanceCo which represents stage 4 in the industry upgrading continuum. Accordingly, a case result identifies how the offering in terms of advanced product innovation impacts on the competitive priorities, collaboration intensity and integrative capabilities of an apparel manufacturer's network. While the empirical evidence of AdvanceCo supports the relevant hypothesis suggested by theory, it also provides key insights.

While theory suggests that the competitive priority will be technology innovation, empirical evidence for AdvanceCo suggests that order winning criteria include technology innovation at low cost. Further it also suggest that competitive priorities include order qualifying criteria which includes timely delivery, quality and compliance and moreover the capability to manufacture the complex products. Theory suggests that collaboration intensity for network members is high. This is supported and it was also noted that AdvanceCo develops strategic alliances with new suppliers in developing advanced products. Further, the relationship extends to the consumer through the design and builds process in order to develop the advanced products. While theory suggests that the demand and supply planning process

includes customer and supplier in developing the demand and supply plan, this fact was confirmed by the empirical evidence collected from AdvanceCo. While theory suggests that integrative capabilities should be available to align the order winning criteria, empirical evidence suggests that integrative capabilities are also needed to align the order qualifying criteria. While boundary spanning structures are available to influence the decision making related to the demand and supply plan, in deciding the offering in terms of shaping the opportunities and shaping the capabilities, there are two levels of boundary spanning roles. Strategic/top management level personnel are involved in making the decisions and to provide the necessary investments, and middle management level makes decisions related to the offering, considering the operational capabilities.

The summary of the empirical evidence which was tested against the relevant hypothesis developed against the conceptual framework in Chapter 3 is provided in Table 8-14.

Competitive priorities identify the integrative capabilities of the network where the network members are aligned with the competitive priorities. The potential network members that could provide the offering are identified using the order qualifying criteria. Order winning criteria help in selecting the relevant members for the offering from the potential members. Usually AdvanceCo gets a new supplier involved in the network through a strategic alliance to develop the new technology-based product.

AdvanceCo disseminates the introduction of new technology to its component suppliers to share the learning with each other. Integrative processes related to shaping the opportunities and capabilities in order to develop the offering, require collaboration between the network partners with the use of boundary spanning structures that span between demand and supply functions internally as well as externally between customer and supplier. This is done at two levels. First, in the future business team, the project manager identifies the market trends for technology-based products, whereas business entrepreneur and technology

entrepreneur identifies sales and marketing channels and the application of technology in related industries.

Table 8-14 Test of hypotheses against the empirical evidence: AdvanceCo

No.	Hypothesis	Supported/ Not supported	Key insights
1d.	Stage 4 provides special product (future needs) with technology leadership as a competitive priority.	Supported	<p>Although order volume is considered to be low, after the IST reading based on initial order of 10,000 pcs, volume may be low or high. In the same way, in the IST the launch product will be with low variety but after the initial reading if it is considered as a fashion product the variety will be high.</p> <p>Product also has a design and build process</p> <p>Order winning criterion is advanced product at low cost.</p> <p>Order qualifiers are quality, timely delivery and compliance/capability</p>
2d.	Stage 4 needs extensive collaboration between network partners.	Supported	<p>Most of the suppliers are JV partners. Further they sign a JDA with the new suppliers with whom they work. (Strategic alliance)</p> <p>They also work collaboratively with new customers</p>
3d.	Stage 4 has external integration between demand and supply processes in decision making.	Supported	<p>Demand supply integration is at both strategic and operational level.</p>
4d.	Stage 4 needs integrative capabilities to integrate advanced technology product requirements	Supported	<p>Stage 4 needs to integrate high tech product as well as the OQ requirements.</p> <p>Opportunities in terms of customer's future needs are shaped through applying new technology in the textile material.</p> <p>OW criteria are integrated in top management level in order to make sure that the investment will be provided for strategic alliances with the technology partners.</p> <p>OW criteria integrated in the middle management level through the boundary spanning roles that consist of the R&D team.</p> <p>Corporate level management (ILT) should have an innovation oriented flexible leadership style with risk taking behaviour.</p> <p>Chief Engineer acts as the liaison device to align OW criteria. Innovation sharing culture within the network partners.</p> <p>KPIs focus on the efficiency as well as the learning curve.</p>

Technology hub identifies the application of the technology in the textile industry. Business entrepreneur presents the new business concept to AdvanceCo's ILT that consists of CEOs. This leads to extensive integration among the network partners

where they share their goals and set the future agenda together for investments. Accordingly, extensive collaboration among network members is evident at the top management level.

In the second level, the R&D Engineer (garment technologist) and R&D engineer (textile and yarn technologist) are boundaries spanning personnel who influence decision of the offering through shaping the operation level capabilities. The former has complementary knowledge in internal supply capabilities, the latter in external supply capabilities within the raw material suppliers. They act as the main communicators between the market oriented view (market trends) and the supply oriented view (internal and external supply base), since they also have knowledge on the relevant marketing channel. The launch designer in LaunchCo also works as a boundary spanner, as they have complementary knowledge in sales and marketing capabilities, and market trends. Hence in order to influence the network members to learn collaboratively, the integrative processes and structures related to the order winning criteria ensure a collaborative relationship between network members.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

9 CROSS-CASE COMPARISON

9.1 Introduction to the chapter

This chapter brings the four cases together, comparing them against the conceptual framework in Chapter 3. Accordingly, it analyzes the empirical evidence collected from all embedded units of analysis against the conceptual framework.

As illustrated in Figure 9-1 there are four additional parts to this chapter following the introduction. The case context is presented in section 9.2. Section 9.3 presents the cross-case analysis of the results and further analyzes the results against the hypotheses developed against the conceptual framework. This section discusses the results of the study based on the cross-case analysis template developed against the conceptual framework. Section 9.4 discusses the linkage between competitive priorities, collaboration intensity and integrative capabilities. Section 9.5 refines the conceptual framework presented in Chapter 3 based on the empirical evidence collected from the embedded units of analysis. Section 9.6 presents the summary of the chapter which brings the chapter to a close.

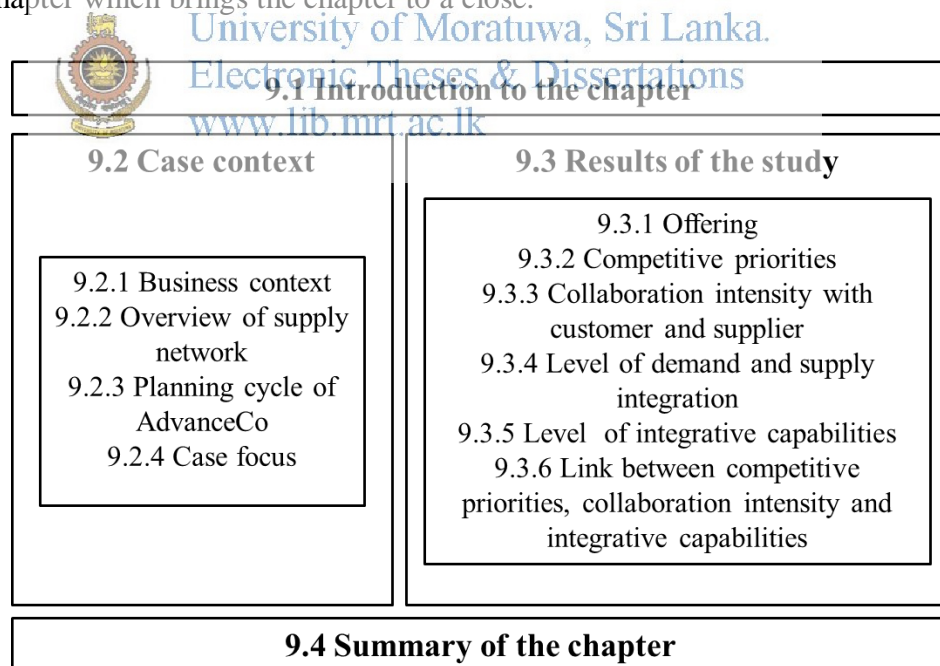


Figure 9-1 Breakdown of Chapter 9

9.2 Case context

The case context discusses the business context of all four embedded units of analysis.

9.2.1 Business context

Emphasizing their motto “*Change is courage*”, ApparelCo upgraded itself for the evolving consumer needs. Four embedded units of analysis represent the different SBUs they have opened up at different stages of the upgrading process.

Table 9-1 presents the four embedded units of analysis which are named under the specific SBUs: ProdCo, VarietyCo, LaunchCo and AdvanceCo. Furthermore it discusses the strategic objectives in terms of starting up the specific division, the main drivers behind the specific division, and the specific product categories sold in each division. Accordingly, ProdCo and VarietyCo focus on providing briefs, whereas LaunchCo and AdvanceCo provide bras. All the SBUs focus on the USA and EU markets. The strategic objectives for ProdCo are to grow the volume of affordable fashion in order to obtain the benefit of factory long run performance and to mitigate the risk of concentrating on service oriented market segments. In order to overcome the cost competition, in 2005 they introduced VarietyCo to cater for the upmarket segments where the consumer has a desire for fast fashion. LaunchCo was started in order to attract/retain customers through providing new ideas to meet the needs of the innovation driven knowledgeable consumer, whereas AdvanceCo was opened up in 2013 to sustain the long-term business through re-positioning the business by introducing new technologies.

Table 9-1 Business context: Cross case analysis

	ProdCo	VarietyCo	LaunchCo	AdvanceCo
Strategic objectives	To grow the volume of affordable fashion i.e. mid to low price products	To overcome the cost competition and to cater to service oriented upmarket segments	To attract/retain customers through providing new ideas	To sustain the business in the long term through positioning the business into new positions
Drivers behind the strategy	Mitigate the risk of concentrating on service oriented market segments Obtaining the benefit of factory long-run performance	Consumer needs for fast fashion	Innovation driven and knowledgeable consumer	Technology driven market environment which creates new business opportunities
Product category	Briefs	Briefs	Bras	Bras
Main Markets	USA and EU	USA and EU	USA and EU	USA and EU

9.2.2 Overview of the supply network

An overview of the supply network for each embedded unit of analysis is given in Table 9-2. The supply network represents the customer, supplier and manufacturing base. ProdCo has a customer base which is very cost conscious and a low cost supply base which is nominated by the customer for its global requirements. VarietyCo has a different customer base that focuses on value-added offerings in terms of fashionable products aligned with fashion trends. The supply base of VarietyCo includes suppliers with design and development ability. LaunchCo has a customer base that focuses on product innovation which has strategic alliances in joint product development and a supply base that also focuses on providing innovative raw materials. AdvanceCo has a customer base that considers advanced technologies in developing its businesses in order to enter into new markets and a supply base that is concerned with new technologies that create new business propositions.

When consider the manufacturing base for ProdCo, apparel entities are mostly subcontracted locally or from overseas to meet the low cost requirement. VarietyCo selects manufacturers that can provide stable as well as unpredictable deliveries. LaunchCo has a manufacturing base that is approved as a launch vendor by the customer based on skill level and resource availability. AdvanceCo may use the key

manufacturing entities that have been approved as launch vendors or open up a new manufacturing entity to cater for the new market using advanced technology.

Table 9-2 Overview of the supply network: Cross case analysis

	ProdCo	VarietyCo	LaunchCo	AdvanceCo
Customer base	Low cost focus brands	Brands focusing on value-added offerings	Brands focusing on innovation- Strategic brands with joint product development (JDA)	Brands focusing on advanced technology- Strategic brands with JDA. New strategic alliances with new brands/customers
Supplier base	Low cost suppliers nominated by the customer based on global requirements	Suppliers with design development ability	Strategic supply base focusing on JDA	Strategic suppliers focusing on JDA New strategic alliances with new suppliers from other industries
Manufacturing base	Subcontracting firms in Sri Lanka as well as in other countries	Companies within ApparelCo's manufacturing base Manufacturing base for stable deliveries and volatile deliveries (continuous replenishment)	Key manufacturing entities approved as launch vendors	Key manufacturing entities approved as launch vendors Hope to open a new plant for new products – mini pilot for design and build process



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

9.2.3 Planning cycle

ProdCo plans twice a year for two main seasons, Spring/Summer and Autumn/Winter whereas VarietyCo plans the products five times a year for five predefined seasons. Usually a new product is introduced once per 1 year while an advanced product, in terms of new business, will be introduced once per 4-5 years as shown in Table 9-3.

Table 9-3 Planning cycle: Cross case analysis

	ProdCo	VarietyCo	LaunchCo	AdvanceCo
Planning cycle	2 seasons 2 times a year	5 seasons 5 times a year	Once a year	4-5 years

9.2.4 Case focus

Four embedded units of analysis focus on the four stages in the industry upgrade process. Accordingly, the cases focus on the demand and planning process of each

offering at each stage. The focuses of the four embedded units of analysis are given in Figure 9-2.

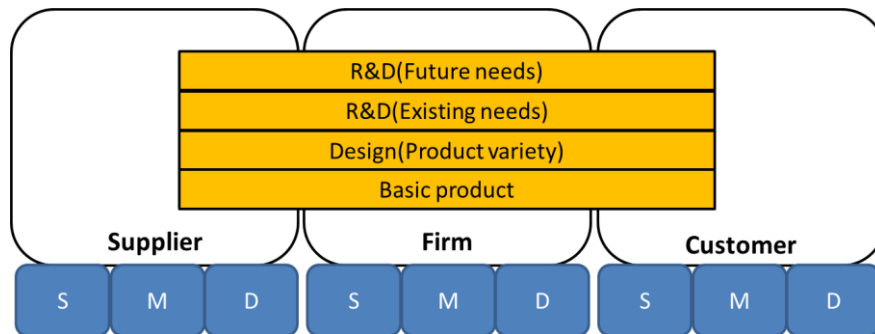


Figure 9-2 Focus of the four embedded units of analysis

9.3 Results of the study

9.3.1 Evolution of the offering

In stage 1, when the industry upgraded to provide the evolving consumer needs in the existing market, the offering was identified as a basic product with predictable demand. In stage 2, the offering is a fashion product that satisfies the consumer need for trendy fashion but with an unpredictable demand. In stage 3, the offering is an innovative product that acts as a solution for the consumer requirement with a very unpredictable demand. In stage 4 the offering becomes an advanced product with high technology but again with a highly unpredictable demand as shown in Table 9-4.

While the empirical data supported the hypotheses for all cases, in theory both LaunchCo and AdvanceCo, volume and variety were considered to be low. Empirical evidence suggests that volume and variety is not known until the IST is done. While theory suggests that LaunchCo and AdvanceCo has lower lead times, empirical data suggests that order placement to delivery has a long lead time.

Table 9-4 Offering: Cross-case

Offering		Stage 1 ProdCo	Stage 2 VarietyCo	Stage 3 LaunchCo	Stage 4 AdvanceCo	
Offering	Product	Standard /Special	Std.	Std. Core material/ Core styles	Special (Existing needs)	Special (Future needs)
		PLC	2-3 year	L -Top ups 3 months	Not known	Not known
		Phase in PLC	Maturity	Maturity	Introduction	Introduction
	Demand	Volume	H	H	Unpredictable IST-10,000 pcs	Not known IST-10,000 pcs
		Variety	L	H	Not known	Not known
		Variability	Low	High	High	High
	Service	Lead time	12 weeks	Base- 12 weeks Surge-2 weeks	Long 12 weeks	Long 12 weeks
		Delivery reliability	H	H	High	H
		Delivery frequency	L	H	Not known	Not known

9.3.2 Evolution of the competitive priorities


In stage 1 of the upgrading process, the competitive priority of ProdCo is cost while in stage 2 it becomes the ability to provide a fashion product at low cost. While theory says fashion product, the empirical evidence says fashion product at low cost. Similarly, in stages 3 and 4 the empirical evidence suggests that competitive priorities are innovative product at low cost and high technology product at low cost respectively. Furthermore theory suggests that different market requirements can be explained using both order winning criteria and order qualifying criteria; however, theory does not suggest how these order qualifying criteria would be for different stages, but empirical evidence provides data to support that quality, timely delivery and compliance all act as order qualifiers for all stages as shown in Table 9-5.

Table 9-5 Competitive priorities: Cross-case

Competitive priorities		Stage 1 ProdCo	Stage 2 VarietyCo	Stage 3 LaunchCo	Stage 4 AdvanceCo
OW/OQ Criteria	Cost	OW1	OW2	OW2	OW2
	Availability		OW1		
	Product leadership			OW1	
	Technology leadership				OW1
	Quality	OQ	OQ	OQ	OQ
	Timely delivery	OQ	OQ	OQ	OQ
	compliance	OQ	OQ	OQ	OQ

Therefore it can be concluded that hypothesis 1 which is displayed in Table 9-6 is supported by all four embedded units of analysis, with insights.

Table 9-6 Hypothesis 1: Offerings and competitive priorities: Cross case

Research Question		Hypothesis	
RQ1	 What are the different types of offerings provided by the manufacturer and what competitive priorities do they need? University of Moratuwa, Sri Lanka Electronic Theses & Dissertations www.lib.mrt.ac.lk	H1a	Stage 1 provides the basic product with low cost as competitive priority
		H1b	Stage 2 provides product variety with availability as competitive priority
		H1c	Stage 3 provides special product with innovative product as competitive priority.
		H1d	Stage 4 provides special product with high tech product as competitive priority.

Empirical evidence suggested key insights for the theory related to LaunchCo and AdvanceCo. Whereas theory suggests special products have low volume and high variety, empirical evidence suggested that these details are not known till IST is done. The volume can be high or low and variety can be high or low. While theory suggests that lead time is short, empirical evidence suggest the lead time for both offerings remains long. Furthermore empirical data provide key insights into theory for order winning and order qualifying criteria. Empirical evidence suggests that cost is always an OW criteria. However, as the industry upgrade takes place, cost remains as OW criteria (OW2) in addition to the competitive priorities which vary from case to case (OW1).

Table 9-7 provides the key insights for hypothesis 1, in all four embedded units of analysis.

Table 9-7 Hypothesis 1: Key insights

No.	Hypothesis	Supported/ Not supported	Key insights
H1a	Stage 1 provides the basic product with low cost as competitive priority	Supported	OQ- Quality, Timely delivery and compliance
H1b	Stage 2 provides product variety with availability as competitive priority	Supported	Order winning criteria identified as product availability at low cost. Order qualifying criteria as quality/ time delivery and compliance.
H1c	Stage 3 provides special product (existing needs) with innovative product as competitive priority.	Supported	Although order volume is considered to be low, after the IST reading based on initial order of 10000pcs, volume may be low or high. In the same way, in the IST the launch product will be with low variety but after the initial reading if it is considered as a fashion product the variety will be high. Order winning criterion is innovative product at low cost. Order qualifiers are quality, timely delivery and compliance/ capability
H1d	Stage 4 provides special product (future needs) with technology leadership as a competitive priority.	Supported	Although order volume is considered to be low, after the IST reading based on initial order of 10000pcs, volume may be low or high. In the same way, in the IST the launch product will be with low variety but after the initial reading if it is considered as a fashion product the variety will be high. Product also has a design and build process Order winning criterion is advanced product at low cost. Order qualifiers are quality, timely delivery and compliance/ capability
H1	Competitive priority becomes the order winning criteria and order qualifying criteria that describe the market requirements.		Order qualifying criteria remains the same while competitive priority of the network members changes with the order winning criteria. Cost also remains as an order winning criteria.

It can be concluded that competitive priority becomes order winning criteria and order qualifying criteria that describes the market requirements.

9.3.3 Evolution of the collaboration intensity

In stage 1 (ProdCo) which provides the existing market with a basic product at low cost, the relationship between customer and supplier is very transactional. When the industry upgrade takes place to provide an enhanced value-added offering at low cost the relationship is high. In the second stage, when industry offers product variety at

low cost (VarietyCo) the relationship between network partners are high and at coordination level. In the third (LaunchCo) and fourth (AdvanceCo) stages, when the offering becomes an special and innovative product, the relationship becomes extensive collaboration as shown in Table 9-8.

Table 9-8 Collaboration intensity: Cross-case

Collaboration intensity		Stage 1 ProdCo	Stage 2 VarietyCo	Stage 3 LaunchCo	Stage 4 AdvanceCo
Level of Collaboration	Customer	Transactional	Coordination	Extensive collaboration through JDAs	Extensive collaboration (JDA & NDA)
	Supplier	Transactional	Coordination	Extensive collaboration JV partners or sign JDAs	Extensive collaboration Existing suppliers (JV partners) and also new suppliers through strategic alliances (JDA & NDA)

Therefore it can be concluded that hypothesis 2, which is displayed in Table 9-9 is supported by the embedded units of analysis.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations

Table 9-9 Hypothesis 2: Collaboration intensity: Cross case

Research Question	Research question	Hypothesis	
RQ2	What level of collaboration intensity between network partners is required to deliver the different types of offerings?	H2a	Stage 1 has transactional relationship with network members
		H2b	Stage 2 has collaborative relationship with network members
		H2c	Stage 3 has extensive collaborative relationship with network members
		H2d	Stage 4 has extensive collaborative relationship with network members

Furthermore it provides key insights to theory. In stages 3 and 4, extensive relationships between the partners are needed to provide the offering. Accordingly in stage 3, the suppliers are JV partners who share the goal and profits and may also develop JDAs when they work with the new suppliers. In stage 4, when AdvanceCo works with new suppliers in other industries to develop new products, AdvanceCo forms strategic alliances with these technology partners to make sure both the goal

and the profits are shared. Moreover in this stage they may also work with new customers and will also form strategic alliances with these customers. These details are given in Table 9-10.

Table 9-10 Hypothesis 2: Key insights

No.	Hypothesis	Supported/ Not supported	Key insights
H2a	Stage 1 has transactional relationship with network members.	Supported	-
H2b	Stage 2 has collaborative relationship with network members	Supported	-
H2c	Stage 3 has extensive collaboration between customers and suppliers	Supported	In order to share the new product ideas, they work with JV partners who develop the components. Sometimes they sign JDAs with the new partners. They work not only with channel partners but also with consumers in identifying their needs.
H2d	Stage 4 needs extensive collaboration between network partners.	Supported	Most of the suppliers are JV partners. Further they sign JDA with the new suppliers with whom they work. New partners may also absorb to the network. Strategic alliances are formed with the new technology partners. They may also form strategic alliances with the new customers.
H2	When the industry upgrades in the existing market, the relationships among network members are transactional; when the industry upgrades to a new market, the relationship is collaborative.		When the industry provides the requirements in the existing market, since the offering is a continuous product, relationship it is transactional. When industry upgrades to a new market, in order to decide the offering, collaboration among customer and supplier is needed. In the 3rd and 4th stages collaboration is very extensive where they share the goals and profits through JDAs. New suppliers and customers are also absorbed to the network forming strategic alliances.

9.3.4 Evolution of the Level of Demand supply integration

In stage 1 (ProdCo), which provides basic product at low cost, the supply chain operational processes are integrated to provide the customer requirements according to the demand plan provided by BasicCo. ProdCo internally integrates with demand

and supply in order to ensure their supply plan aligns with the demand plan of BasicCo. In stages 2, 3 and 4, the demand plan and supply plan are developed interactively with internal functions and external partners in developing the respective offering. Demand and supply integration across all embedded units of analysis is provided in Table 9-11.

Table 9-11 Demand and supply integration: Cross-case

Level of demand and supply integration			Stage 1 ProdCo	Stage 2 VarietyCo	Stage 3 LaunchCo	Stage 4 AdvanceCo
Type of integration	SC Integration (Physical conversion process)	Internal	High	High	High	High
		Customer	High	High	High	High
		Supplier	High	High	High	High
	Demand and supply integration- (Decision making process)	Internal	High	High	High	High
		Customer	Low	High	High	High
		Supplier	Low	High	High	High

Therefore it can be concluded that hypothesis 3 is supported by the embedded units of analysis as shown in Table 9-12.

Table 9-12 Hypothesis 3: Level of demand and supply integration: Cross case

Research Question	Research question	Hypothesis	
RQ3	What level of demand-supply integration is required to deliver the different types of offerings?	H3a	Stage 1 has internal to external integration of supply processes to align demand requirements.
		H3b	Stage 2 has external integration between demand and supply processes in decision making
		H3c	Stage 3 has external integration between demand and supply processes in decision making
		H3d	Stage 4 has external integration between demand and supply processes in decision making

Furthermore empirical evidence provides insights when compared with theory. In stage 1 when the industry provides the requirements in the existing market, the demand plan is determined by the customer and the supply plan is integrated and aligned with the demand plan. Internally decisions are taken to confirm whether the demand plan decisions can be provided through the supply processes. Other cases

confirm that both the demand and supply plans are developed interactively within the functions and also within the network members as shown in Table 9-13.

Table 9-13 Hypothesis 3: Key insights

No.	Hypothesis	Supported/ Not supported	Key insights
H3a	Stage 1 has internal to external integration of supply processes for decision making	Supported	Though demand and supply processes are not integrated externally, they are integrated internally within each member in the network node to ensure the demand plan is aligned with the supply plan.
H3b	Stage 2 has external integration between demand and supply processes in decision making	Supported	Offering is developed interactively by customer, supplier and firm aligning to the product design requirements and target price requirements of the consumer. Quality and volume are aligned to the guidelines set by the customer, FashionCo
H3c	Stage 3 has external integration between demand and supply processes in decision making	Supported	Offering is developed interactively by customer, supplier and firm aligning to the innovative product requirements and target price requirements of the consumer. Quality and volume are aligned to the guidelines set by the customer, InnoCo. Negotiations can be done by the supplier when needed.
H3d	Stage 4 has external integration between demand and supply processes in decision making	Supported	Offering is developed interactively by customer, supplier and firm aligning to the high tech product requirements and target price requirements of the consumer. Quality and volume are aligned to the guidelines set by customer, TechCo. Negotiations can by the supplier when needed.
H3	industry upgrade in the existing market requires supply chain integration only while industry upgrading to a new market requires demand and supply integration.		When industry provides the requirements of the existing market, supply processes are integrated internally as well as externally. However the demand and supply process is integrated internally to confirm that the demand plan developed by the customer is aligned throughout the supply partners. When industry upgrades to a new market, demand and supply processes are integrated internally as well as externally to make decisions on the demand and supply plan to meet the consumer requirement, under the guidelines provided by the customer (retailer) in terms of the OQ criteria.

9.3.5 Evolution of the integrative capabilities

All four embedded units of analysis confirmed that integrative capabilities align the OW and OQ criteria. In particular, integrative processes and structures were available to align both the OQ and OW criteria.

9.3.5.1 Integrative processes and governance and decision making structures

In each stage the integrative capabilities related to the OQ criteria remain the same, whereas the integrative capabilities related to OW criteria change. The order OQ remain as specific rules and regulations that help in prior decision making, while OW criteria determine the actual decision making related to the offering. These act as learning processes and structures which are described below.

In stage 1, learning processes are available for incremental learning, where ProdCo shapes the supply capabilities aligning the opportunities for low cost. Integrative structures related to OW that act as influencers in decision making, only influence the internal supply planning. Therefore the roles of the technical manager and work study personnel are not boundary spanners. These are people with a good knowledge of manufacturing. Therefore they provide support in shaping supply capabilities but not demand capabilities.

In stage 2, opportunities are identified through sensing the fashion trends and shape the opportunities and capabilities through applying the fashion trends in terms of colours, prints and textures to the product components. In this stage, integrative structures are needed to act as influencers in decision making, where the designer acts as a receptor of new knowledge in terms of product variety, i.e. the person who identifies the opportunity in the market. The fabric technologist acts in a boundary spanning role that shapes the supply capabilities as well as the opportunities identifying appropriate design developments among raw material suppliers; the garment technologist also acts in a boundary spanning role that shapes internal supply capabilities as well as opportunities identifying appropriate 3D product designs. Designer also acts as a boundary spanning person who shapes the demand related capabilities to meet the opportunities in terms of product variety.


In stage 3, opportunities are identified through sensing the existing needs of the consumer for new products and shape the opportunities and capabilities through applying the textile properties that improve the product performance in to the product components. In this stage, decision making happens in two levels. Strategic level decision making to shape the investment capabilities and operational level decision

making to shape the operational level capabilities. Therefore two levels of integrative structures are needed to act as influencers in decision making, where R&I designer act as the receptors of new knowledge for a gap in the market, and the R&I entrepreneurs acts in boundary spanning roles in influencing decision making related to investment capabilities. Technology entrepreneurs shape opportunities and supply related capabilities, whereas business entrepreneurs shape opportunities and demand related capabilities. These boundary spanning roles influence the decision making of the top management to identify a suitable distribution channel to offer the product and to make the necessary investment for joint product development. When it is decided to offer a particular offering to a particular brand, once again the boundary spanning team is available for the second level decision making, in order to further shape the opportunities through shaping the operational level capabilities. This team shapes supply capabilities and opportunities with the help of R&D engineers and shapes demand capabilities through the Launch designers.


In stage 4, opportunities are identified through sensing the future needs of the consumers and shape opportunities and capabilities through applying the new technology on the apparel categories provided by the company. In this level also decision making happens at two levels. The future needs are determined by the future business team which is a centralized team for the main company. The team consists of a business entrepreneur, technology entrepreneur and a finance entrepreneur, who acts as boundary spanning roles that influence strategic level decision making of the main company. The business entrepreneur senses the future consumer needs and identifies a market gap. The technology entrepreneur works with the technology hub in determining a related industry with the specific technology needs and technology entrepreneur finds a relevant supplier to develop the technology oriented product. The business entrepreneur identifies the relevant market channels to sell the new technology based product. These boundary spanning personnel influence the top management of the company to make the necessary investment decisions and to form strategic alliances with the new technology partners and new customers. Afterwards, this will move down a level to where specific technology is adapted to a specific apparel division, e.g. intimates. The decision making then moves to the operational

level that consists of the incubation process (commercialization) which is comprised of R&D engineers, designers who span the boundaries of the operational functions of AdvanceCo. The integrative processes for each unit of analysis are summarized in Table 9-14 and the decision making structures in Table 9 -15

Table 9-14 Integrative capabilities: Process: Cross case

Competitive priorities		Stage 1 ProdCo	Stage 2 VarietyCo	Stage 3 LaunchCo	Stage 4 AdvanceCo
OW/OQ Criteria	Cost	Sense opportunities Shape Capabilities Seize Supply plan	Shape Seize	Shape Seize	Shape Seize
	Product variety		Sense Opportunities Shape capabilities Seize Demand plan and supply plan		
	 Product Leadership			Sense Opportunities Shape capabilities Seize Demand plan and supply plan	
	Technology leadership				Sense Opportunities Shape capabilities Seize Demand and supply plan
	Timely Delivery	OQ	OQ	OQ	OQ
	Quality	OQ	OQ	OQ	OQ
	Compliance	OQ	OQ	OQ	OQ

**Table 9-15 Integrative capabilities-Governance and decision making structures:
Cross case**

Competitive priorities		Stage 1 ProdCo	Stage 2 VarietyCo	Stage 3 LaunchCo	Stage 4 AdvanceCo
OW/O Q criteria	Cost	Industrial 1 Engineer	Industrial Engineer	Industrial Engineer	Industrial Engineer
	Fashion product		Designer Technical(Fa b tech/ garment tech/ mechanical Engineer)		
	Product leadership			Strategic level R&I team (Designer/Business entrepreneur/Technology Entrepreneur) Operational level R&D team (LaunchCo designer/R&D Engineers-Yarn and fabric/Clothing/mechanical	
		University of Moratuwa, Sri Lanka. Electronic Theses & Dissertations www.lib.mrt.ac.lk			
	Technology leadership				Strategic level Future business team (Project mgr/Business Entrepreneur/ Technology Entrepreneur/ Finance Entrepreneur) Operational level R&D team (AdvanceCo designer/ R&D Engineers- yarn and fabric/clothing/mechanical)
	Quality	OQ	OQ	OQ	OQ
	Timely delivery	OQ	OQ	OQ	OQ
	Compliance	OQ	OQ	OQ	OQ

9.3.5.2 Organization design

All embedded units of analysis confirmed that organization design, which includes leadership style, organization culture and liaison devices (monitoring systems/ documents etc.) also acts as an integrative capability.

In the first stage, leadership style is concerned with command and control, and drives to meet the efficiency. In the later three stages, leadership is flexible and learning oriented to impart the skills and resources needed in manufacturing the product. In the third and fourth stages, the leadership style is concerned not only with the middle management that deals with the operational level, but also with the top management who deals with the strategic level decision making processes to make the major investments. Accordingly, in stage 3 when the decision on the innovation is taken, the top management should focus on innovation and need to have a risk taking behaviour to make the necessary investments to expand the business to new products and new markets. ILT, which consists of the team of CEOs of the main company and in each division act as main leaders, who involve in decision making related to future/advanced innovation. Also in stage 3, IIMT that consists of business directors, manufacturing directors also have an innovation oriented focus.



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

In the first stage, the organization culture should focus on efficiency and incremental learning; in the next stages it should focus on learning from outside and sharing that learning with the partners. While it was noted that in stage 2, 3, 4 all have a learning sharing culture within the organization, it was also evident that learning sharing culture is also extended towards the network partners, where they all share the new information and learn together.

Liaison devices are available in the organization at each stage to monitor the OQ criteria and OW criteria as shown in Table 9-16.

Table 9-16 Integrative capabilities: Organization Design: Cross case

Competitive priorities		Stage 1 ProdCo	Stage 2 VarietyCo	Stage 3 LaunchCo	Stage 4 AdvanceCo
Leadership style	Cost	Efficiency focus Command and control			
	Fashion product		Variety focus Flexible		
	Product leadership			Innovation focus Flexible	
	Technology leadership				Innovation focus Risk taking
	Quality	OQ	OQ	OQ	OQ
	Timely delivery	OQ	OQ	OQ	OQ
	Compliance	OQ	OQ	OQ	OQ
Culture	Cost	Cost focus Incremental learning			
	Fashion product		Variety focus Learning sharing		
	Technology leadership			Innovation focus Learning sharing	
	Technology leadership				Innovation focus Learning sharing
	Quality				
	Timely delivery				
	Compliance				
Liaison devices	Cost	Work study/ Industrial Engineer	Work study/ Industrial Engineer	Work study/ Industrial Engineer	Work study/ Industrial Engineer
	Fashion product		Product integrator		
	Product leadership			Chief Engineer	
	Technology leadership				Chief Engineer
	Quality	Quality auditor	Quality auditor	Quality auditor	Quality auditor
	Timely delivery	Capacity planner	Capacity planner	Capacity planner	Capacity planner
	Compliance	auditor	auditor	auditor	auditor

9.3.5.3 Key Performance Indicators

In all the stages KPIs are aligned to the efficiency and order qualifying criteria as shown in Table 9-17. In the first stage the KPI measure efficiency in terms of the quality output per hour which is a measurement of all the OQ criteria. Stage 2, 3 and 4 also use the same KPI and also they measure the learning curve performance of the plant. This KPI measures the flexibility of the plant in absorbing new learning.

Table 9-17 Integrative capabilities – KPI - Cross-case

Competitive priorities		Stage 1 ProdCo	Stage 2 VarietyCo	Stage 3 LaunchCo	Stage 4 AdvanceCo
OW/OQ Criteria	Cost	Efficiency	Efficiency	Efficiency	Efficiency
	Fashion product		Flexibility (Learning curve)		
	Product leadership			Flexibility (Learning curve)	
	Technology leadership				Flexibility (Learning curve)
	Quality	OQ	OQ	OQ	OQ
	Timely delivery	OQ	OQ	OQ	OQ
Compliance	OQ	OQ	OQ	OQ	

All stages agreed that integrative capabilities need to align with the order qualifying criteria and order winning criteria. Therefore all embedded units of analysis support hypothesis 4 through empirical data as shown in Table 9-18.

Table 9-18 Hypothesis 4: Level of Integrative capabilities: Cross case

	Research question	Hypothesis	
RQ4	What levels of integrative capabilities are needed to provide the required offering?	H4a	Stage 1 needs integrative capabilities to integrate cost requirements.
		H4b	Stage 2 needs integrative capabilities to integrate product variety requirements.
		H4c	Stage 3 needs integrative capabilities to integrate innovative product requirements.
		H4d	Stage 4 needs integrative capabilities to integrate advanced technology product requirements.

Furthermore empirical evidence provides insights when compared with theory. In stage 1 when the industry provides the requirements in the existing market,

integrative processes and structures are available to meet the cost. In stage 2 when the industry upgrades to provide the requirements in terms of product variety, processes and structures are needed to sense and shape the market requirements in terms of product variety. In stage 3 when the industry upgrades to provide the new and innovative product requirements, processes and structures are needed to sense and shape the market requirements, whereas in stage 4, processes and structures are needed to sense and shape the advanced product requirements. Both these last two stages require strategic level (top management) decision making where the opportunities and capabilities are shaped according to the investment requirements, and also operational level (middle management) decision making where the opportunities and capabilities are shaped according to the operational capabilities. Furthermore it was suggested that processes and structures are available to confirm the order qualifying criteria for each stage, namely quality, timely delivery and compliance. While leadership was also considered as an integrative capability, empirical evidence suggested that stage 3 and stage 4 needs the innovation oriented and risk taking leadership behaviour from corporate level management (CEOs) as shown in Table 9-19.



Table 9-19 Hypothesis 4: Key insights

No	Hypothesis	Supported/ Not supported	Key insights
H4 a	Stage 1 needs integrative capabilities to integrate cost requirements.	Supported	Integrate cost & OQ criteria. Integrative processes related to OW criteria only shape supply processes. Integrative structures related to OW shape internal supply planning is shaped not the opportunities. Therefore the technical manager is not a boundary spanner.
			Leader concerns with both OW and OQ criteria. Efficiency driven cost focus culture. Liaison devices are available.
			KPIs also focus on OW and OQ criteria. No. of quality outputs per hour.
H4 b	Stage 2 needs integrative capabilities to integrate product variety	Supported	Integrate product variety and OQ requirements. Opportunities in terms of product variety are shaped where Boundary spanning structures influence in decision.
			Socialization through team based working culture. Product integrator acts as the liaison device. Leader should be flexible.
			KPIs measure efficiency and learning curve.
H4 c	Stage 3 needs integrative capabilities to integrate innovative product requirements.	Supported	Integrate Innovative product as well as the OQ requirements. Opportunities in terms of customer's existing needs are shaped.
			OW criteria are integrated in top management level in order to make sure that the investment will be provided for the JPD. OW criteria integrated in the middle management level through the boundary spanning roles that consist of the R&D team.
			Top management (IMT) should have an innovation oriented flexible leadership style with risk taking behaviour. Chief Engineer acts as the liaison device to align OW criteria. Innovation sharing culture within the network partners. KPIs focus on the efficiency as well as the learning curve.
H4 d	Stage 4 needs integrative capabilities to integrate advanced technology product requirements.	Supported	Integrate high tech product as well as the OQ requirements. Opportunities in terms of customer's future needs are shaped.
			OW criteria are integrated in top management level in order to make sure that the investment will be provided for strategic alliances with the technology partners. OW criteria integrated in the middle management level through the boundary spanning roles that consist of the R&D team.
			Corporate level management (ILT) should have an innovation oriented flexible leadership style with risk taking behaviour. Chief Engineer acts as the liaison device to align OW criteria. Innovation sharing culture within the network partners.
			KPIs focus on the efficiency as well as the learning curve.
H4	Integrative capabilities integrate the order qualifying criteria and order winning criteria.		In each stage, integrative processes and structures are available to integrate OW/OQ criteria. In stages 3 and 4 shaping processes includes processes that shape opportunities and shape investment capabilities that involve not only middle management but also the top management.
			In stage 1, leadership style is cost and efficiency focused whereas when the industry upgrades the leadership style should be more flexible and learning orientated.
			Stage 1 culture is efficiency focused whereas when the industry upgrades a learning sharing culture is need internally as well as within the network partners. Liaison officers are also available to make sure that the OW/OQ criteria are met.
			In stage 1 KPIs measure the efficiency and OQ, while in the other three stages KPIs measure the flexibility

9.3.6 Link between competitive priorities, collaboration intensity and integrative capabilities

In stage 1, competitive priority is explained using order qualifying criteria namely, quality, compliance and timely delivery, and order winning criteria as cost. With the use of order qualifying criteria, potential network members for the offering will be chosen whereas in each and every season, specific network members are chosen based on lowest cost.

Since the network needs to provide the cost requirements in the existing market, single loop learning will be appropriate. Each member in the network needs to develop incremental learning capabilities to meet the cost requirements. This is done at the internal level by each node in the network. Since each node in the network does internal level incremental learning to meet the cost requirements, the network partners do not learn from each other. Hence there is no need to have a relationship between customer and supplier. Therefore collaboration intensity among customer and supplier is transactional.

Integrative processes and structures are needed for prior decision making to select the potential members for the network. According to the rules and guidelines provided by the customer, BasicCo, these structures select the potential members for the offering who meet the order qualifying criteria. In the actual decision making process, the decision on price is quoted through shaping the capabilities, using a method study/work study in the supply chain process; the influencers are the industrial engineers. The culture of the organization is also cost focused and does not consider building relationships. KPIs are also focused on efficiency, on hence incremental learning.

In stage 2, competitive priorities are described using order qualifying criteria related to quality, timely delivery and compliance. Once again the competitive priority of the new market is mainly explained using order winning criteria, which is the product variety at low cost. With the use of order qualifying criteria, potential network members for the offering will be chosen whereas in each and every season, specific network members are chosen based on product variety. However, the empirical

evidence suggested that order winning criteria will be product variety at lowest cost. Therefore, with the use of order qualifying criteria, potential network members for the offering will be chosen whereas in each and every season, specific network members are chosen based on product variety at low cost.

Since the network needs to upgrade to provide the product variety requirements at low cost in a new market, open loop learning will be appropriate. Each member in the network needs to develop open loop learning capabilities to meet the product variety at low cost. Therefore they have sensing processes to understand the consumer requirements for product variety (new learning) and processes to combine that new learning with existing learning, thereby shaping the opportunities and capabilities. This process needs organizational structures which act as boundary spanning roles. Accordingly these learning structures are available in each node of the supply network. Not only the firm but also the customer and supplier have designers, fabric technologists and garment technologists in shaping the capabilities. These roles act as learning partners, where they get together in decision making. This eventually makes for collaboration among the network members in developing the offering. Furthermore, the culture of the organization is very relational where the internal learning partners that represent the cross functions work together and also are seated together sharing each other's learning. Moreover, the network partners also have relationships and a learning sharing culture.

In stage 3, competitive priorities can once again be described as order qualifying and order winning criteria – the latter being innovative product at low cost. In this stage network members will be a potential group of members that will be selected based on their ability to produce innovative product development at low cost.

Once again, as in stage 3, the network needs to upgrade to provide the innovative product needs at low cost. Accordingly, open loop learning is appropriate. Therefore members need to have sensing processes to understand the consumer requirements for innovative product (new learning) and processes to disseminate the new knowledge to their network partners. Further there should be processes to combine the new learning with existing learning, and thereby shape the opportunities and

capabilities. This process needs organizational structures which act as boundary spanning roles. Accordingly these learning structures are available in each node in the supply network. Not only the firm but also the customer and supplier have a market research unit to identify consumer needs for the new product. Business entrepreneur and technology entrepreneur act in boundary spanning roles shaping the opportunities and capabilities related to the supply and demand channel. In order to confirm the investment needed for the offering, strategic level top management people who also act as boundary spanning personnel are involved in decision making related to the offering. They ensure that the new product is aligned within the investment capabilities both of customer and supplier. Particularly, the business director will buy the product idea and confirm the investment needed to develop the new product requirements. In this stage, there is an incubation process to confirm the commercial viability of the new product. At the next level with the involvement of R&D engineers, development merchant and designer the operational level capabilities are shaped. This eventually makes the collaboration among the network members at the strategic level (top management) as well as at the operational level (middle management) in developing the offering. Furthermore, the culture of the organization is very relational, where the internal learning partners that represent the cross functions work together and are also seated together sharing each other's learning. Moreover, the network partners also have a relationship oriented, learning culture.

In stage 4, competitive priorities can be described as order qualifying and order winning criteria, the latter being advanced innovative product at low cost. In this stage network members will be a potential group of members that will be selected based on their ability to produce advanced innovative product at low cost.

Once again, as in stage 3, the network needs to upgrade to provide the advanced product needs at low cost. Accordingly open loop learning is appropriate. Therefore members need to have sensing processes to understand the future needs of consumers (new learning) and processes to disseminate the new knowledge to network partners. Further, there should be processes to combine the new learning with existing learning, and thereby shape the opportunities and capabilities. This process needs

organizational structures which act as boundary spanning roles. Accordingly these learning structures are available in each node in the supply network. Not only the firm but also the customer and supplier have a market research unit to identify consumer needs for the new product. The business entrepreneur and technology entrepreneur act in boundary spanning roles shaping the opportunities and capabilities related to supply and demand channel capabilities. In order to confirm the strategic level capabilities for the industry upgrade, strategic level top management people who act as boundary spanning personnel involved in decision making related to the investment needs of the offering should ensure that the new product is aligned with the strategic capabilities of customer and supplier. In this stage also the incubation process is completed to confirm the commercial viability of the new product. At the next level with the involvement of the R&D engineers, development merchant and designer the operational level capabilities are shaped. This eventually makes for collaboration among the network members at a strategic level as well as at the operational level in developing the offering. Furthermore, the culture of the organization is very relational where the internal learning partners that represent the cross functions work together and are also seated together sharing each other's learning. Moreover, the network partners also have relationships. When considering the leadership skills, leaders in the top management, i.e. of manufacturing components suppliers and customers, should be risk taking people with an innovation driven vision. Moreover it was also noted that new strategic alliances are made with new technology partners as shown in Table 9-20.



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Table 9-20 Hypothesis 5: Linkage between competitive priorities, collaboration intensity and integrative capabilities

RQ		Stage 1 ProdCo		Stage 2 VarietyCo		Stage 3 LaunchCo		Stage 4 AdvanceCo	
Competitive priorities		Cost		Product variety at low cost		Innovative product at low cost		Advanced product at low cost	
Collaboration intensity		Transactional		Relational		Extensive collaboration		Extensive collaboration	
Level of demand and supply integration		Internal integration External integration of supply processes		External integration		External integration		External integration	
Integrative capabilities	Processes and structures	Sense price	Development merchant	Sense product variety	Designer	Sense new product	R&I designer	Sense advanced product	Project manager
		Shape	Industrial Engineer	Shape	Development team	Shape	Strategic level- R&I team Operational level- R&D team	Shape	Strategic level- Future business team Operational level- R&D team
		Seize	Manufacturer Industrial Engineer Development merchant	Seize	Manufacturer Development team Development merchant	Seize	Strategic level-IMT R&I team Operational level- R&D team & manufacturer/ Development merchant	Seize	Strategic level-ILT Future business team Operational level- R&D team & manufacturer/ Development merchant
	Org. Design	Leader	Efficiency focus	Leader	Variety focus	Leader	Innovation focus	Leader	Future innovation focus
		Culture	Cost focus	Culture	Learning sharing Variety focus	Culture	Learning sharing Innovation focus	Culture	Learning sharing Advance Innovation focus
		Liaison device	Industrial Engineer	Liaison device	Product Integrator	Liaison device	Chief Engineer	Liaison device	
	KPI	Efficiency		Flexibility and efficiency		Flexibility and efficiency		Flexibility and efficiency	

9.4 Summary of the chapter

This chapter provides the comparison of the four embedded units of analysis where the industry upgrades to provide the required offering to the consumer.

Accordingly, empirical evidence collected under the four key research questions was compared. OQ criteria remain the same for all four cases while the competitive priority of the network members changes with the OW criteria. Cost also remains as an OW criteria throughout all four stages.

When the industry provides the requirements in the existing market, since the offering is continuous, the relationship among customer and supplier is transactional. When the industry upgrades to a new market, in order to decide the offering collaboration between customer and supplier is needed. In the 3rd and 4th stages collaboration is particularly extensive where the goals and profits are shared through JDAs.

When the industry provides the requirements in the existing market, the supply processes are integrated internally as well as externally. However, the demand and supply process is integrated internally to confirm the cost requirements. When the industry upgrades to a new market, the demand and supply processes are integrated internally as well as externally in order to make decisions on the demand and supply plan.


Integrative processes and structures are the same for each stage that aligns the OQ criteria, namely quality, timely delivery and compliance. Each stage has integrative processes related to the OW criteria as learning processes. Accordingly, in stage 1 the incremental/single loop learning process includes shaping capabilities and seizing processes where the key influencing person becomes the technical manager. In stage 2, open loop learning processes include the sensing process, shaping processes that incorporate shaping opportunities, as well as shaping capabilities and seizing process. In each stage since the OW criteria differ, processes and structures also differ. The processes to sense the OW criteria have structures with expertise in sensing the information while the processes in shaping the opportunities and capabilities have structures with technical expertise both in the existing capabilities and the capability

requirements for the offering. Moreover it was also emphasized through empirical evidence that in stages 3 and 4 the shaping processes are not only middle management structures for shaping the opportunities and capabilities, but also the top management in decision making, in order to shape opportunities through the investment capabilities available. In stage 1, leadership style is cost and efficiency focused whereas when the industry upgrades to provide the new requirements, the leadership style should be more flexible and learning orientated. In stage 1 culture is efficiency focused whereas when the industry upgrades a learning sharing culture is needed internally as well as within the network partners. Liaison officers are also available to make sure that the OW/OQ criteria are met. In stage 1 KPIs measure the efficiency and OQ, while in the other three stages the KPIs measure the flexibility as shown in Table 9-21.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Table 9-21 Test of hypotheses against the empirical evidence: Key insights

No.	Hypothesis	Supported	Key insights
H1	Competitive priority becomes the OW and OQ that describe the market requirements.	Supported	OQ criteria remain the same for all four cases while the competitive priority of the network members changes with the OW.
H2	When the industry provides the requirements in the existing market, the collaboration intensity is transactional, when it upgrades to a new market the relationship is collaborative.	Supported	<p>When the industry provides the requirements in the existing market, since the offering is continuous the relationship is transactional.</p> <p>When the industry upgrades to a new market, in order to decide the offering collaboration between customer and supplier is needed.</p> <p>In the 3rd and 4th stages collaboration is particularly extensive where the goals and profits are shared through JDAs.</p>
H3	The industry upgrade in the existing market requires supply chain integration only while industry upgrading to a new market requires DSI	Supported	<p>When the industry provides the requirements in the existing market, the supply processes are integrated internally as well as externally.</p> <p>When the industry upgrades to a new market the DSI expands to external level.</p>
H4	 <p>Integrative capabilities integrate the order qualifying and order winning criteria.</p>	Supported	In each stage, integrative processes are available to meet the OQ and OW criteria. Stage 1, learning processes are available to enable internal learning whereas in other stages, integrative processes are available to combine the new learning with the existing learning.
			In each stage, structures are available to integrate OW /OQ criteria.
			In stage 1, shaping structures are available to shape internal supply capabilities while in latter stages shaping structures are available to shape opportunities as well as the capabilities.
			In stages 3 and 4 the shaping processes include processes that both shape opportunities and investment capabilities that involve not only the middle management but also the top management in decision making.
			In stage 1, leadership style is cost and efficiency focused, whereas when the industry upgrades leadership style should be more flexible and learning orientated. In stage 1 the culture is efficiency focused, whereas when the industry upgrades a learning sharing culture is need internally as well as within the network partners. Liaison officers are also available to make sure that the OW/OQ criteria are met.
			In stage 1 KPIs measure the efficiency. In other three stages KPIs measure the flexibility.

10 CONCLUSION

10.1 Introduction to the chapter

This chapter endeavours to summarize the conclusions that were drawn from this thesis. The chapter commences with a review of the research aim and questions. It provides a review of each research question to show how each of them was answered. At the end of this section, how the overall aim of the study was met is discussed in section 10.2.

This is followed by the theoretical and managerial contributions sections whereby the implications of the study are documented both in terms of academia and practice in section 10.3. The theoretical contribution is discussed relating to the contributions to underpinning theory and applied theory. It provides revised theoretical frameworks both for the industry upgrade and the more detailed conceptual framework, which are informed by the empirical work (Section 10.3.1). The contribution to practice discusses how the thesis provides a practical insight into ApparelCo and how that insight can be used, but then more specifically to the Sri Lankan apparel industry and what the researcher can do to share the frameworks with that industry.

Subsequently, the limitations of the study are detailed. Finally, a number of research avenues are identified for future studies. (Section 10.4)

10.1 Introduction to the chapter
10.2 Review of aims and questions
10.3 Contribution to theory and practice 10.3.1 Contribution to Underpinning theory 10.3.2 Contribution to Applied theory 10.3.3 Contribution to practice
10.4 Limitations and further research
10.5 Summary of the chapter

Figure 10-1 Topic breakdown of chapter 10

10.2 Review of aims and questions

This research aims to develop an empirically tested conceptual framework that enables the business upgrade for creating customer value. More specifically, it identifies an appropriate network design that enables the business upgrade. Accordingly, overarching research question was to identify how servitization impacts on the competitive priorities, collaboration intensity and integrative capabilities of a manufacturing network. In so doing, it identifies the link between competitive priorities, collaboration intensity and integrative capabilities, when a manufacturer moves along the industry upgrade continuum for servitization.

In this thesis, fresh empirical evidence is provided regarding a manufacturing firm which is positioned in a network during the process of servitization. In particular, four main areas of inquiry are investigated which provide the foundations for a rich and detailed explanation of the phenomena. The research objective and questions are detailed below:

The aim of the thesis is to explore how different offerings impact on the competitive priorities, collaborative intensity and integrative capabilities of an apparel manufacturer's network.



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

RQ1: What are the different types of offerings provided by the manufacturer and what competitive priorities do they need?

RQ2: What level of collaboration intensity between network partners is required to deliver the different types of offerings?

RQ3: What level of demand-supply integration is required to deliver the different types of offerings?

RQ4: What types of integrative capabilities are required to deliver the different types of offerings?

RQ5: What are the linkages between the offerings, competitive priorities, collaboration intensity and integrative capabilities?

In line with the literature, the empirical evidence suggested the offerings for each stage from stage 1 to stage 4 are a basic product with stable demand, product variety with variable demand, innovative product with unpredictable demand and advanced technology with unpredictable demand, while competitive priorities for stage 1 are cost, stage 2 is product variety, stage 3 is product innovation and stage 4 is advanced technology. Moreover, empirical evidence provided insights for competitive priorities stating that in each stage of the industry upgrade the relevant service is provided at low cost. Hence the order winning criteria was considered to be product variety at low cost in stage 2, product innovation at low cost in stage 3, and advanced product at low cost in stage 4. Furthermore the empirical evidence suggested order qualifying criteria, namely quality, timely delivery and compliance for each stage.

In line with the literature, empirical evidence suggested that when industry provides the requirements in the existing market the collaboration intensity within the network partners remains transactional whereas when the industry upgrades to a new market, in order to decide the offering in terms of capabilities, collaboration among customer and supplier is needed. Moreover the empirical evidence proposed that extensive collaboration between supply partners is needed in the 3rd and 4th stages in order to share the goals and profits. It was suggested that the company makes JDAs/strategic alliances with the relevant supply partners.

Also in line with the literature, the empirical evidence suggested that when the industry provides the requirements in the existing market, the supply processes are integrated both internally and externally. Furthermore it was also evident that the demand and supply process is integrated internally within each supply partner to confirm the cost requirements and develop the supply plan aligned to the demand plan provided by the customer. In contrast, when the industry upgrades to a new market, the demand and supply processes are integrated both internally and externally to make integrative decisions on the demand plan and supply plan.

Again in line with the literature, in each stage, integrative processes and structures are available to meet both the OW and OQ criteria.

Integrative processes and structures are the same for each stage that aligns the OQ criteria, namely quality, timely delivery and compliance. Each stage has integrative processes related to the OW criteria as learning processes. Accordingly, in stage 1 the incremental/single loop learning process includes shaping capabilities and seizing processes where the key influencing person becomes the technical manager. In stage 2, the open loop learning processes include the sensing process, shaping processes that incorporate shaping opportunities as well as shaping capabilities and the seizing process. In each stage since the OW criteria differ, processes and structures also differ. The processes to sense the OW criteria have structures with expertise in sensing the information while the processes for shaping the opportunities and capabilities have structures with technical expertise in the existing capabilities and capability requirements for the offering. Moreover it was also emphasized through the empirical evidence that in the stage 3 and 4, shaping processes not only includes the processes to shape the operational capabilities but also include the processes to shape the strategic level investment capabilities.

While the literature suggested that leadership style should be aligned with the market requirements, the empirical evidence suggested that in stage 1 the leadership style is cost and efficiency focused whereas when the industry upgrades to provide the new requirements, the leadership style should be more flexible and learning orientated.

While the literature also suggested that the culture needs to be aligned to the market requirements, the empirical evidence suggested that the stage 1 culture is efficiency focused whereas, when the industry upgrades, a learning sharing culture is needed internally as well as within the network partners. Specifically, the organization culture needs to be focused on the product variety in stage 2, innovation in stage 3 and advanced technology in stage 4. In each stage liaison officers are also available to make sure that the OW/OQ criteria are met.

The literature also highlighted that culture is driven through KPIs. According to the empirical evidence, in stage 1 the KPIs measure the efficiency, while in the other three stages KPIs measure the flexibility.

Currently, the literature does not discuss the link between competitive priorities, collaboration intensity and integrative capabilities. This thesis further provides empirical evidence to understand the impact of servitization on competitive priorities, collaboration intensity and integrative capabilities.

10.3 Contribution to theory and practice

10.3.1 Contribution to underpinning theory

According to strategic management theory, the VRIN resources provide the competitive advantage in static environments. Hence the supply chain framework that represents Porter's value chain framework provides the capabilities to compete in the static environment. The focus of this thesis is to understand how the specific value chain/supply chain configuration upgrades to provide the requirements within evolving market conditions.

According to strategic management theory, VRIN resources provide the competitive advantage in the static environments. Hence the supply chain framework that represents the Porter's value chain framework provides the capabilities to compete in the static environment. The focus of the thesis is to understand how the specific value chain/ supply chain configuration upgrade to provide the requirements in the evolving market requirements.

According to the underpinning theory, dynamic capabilities discuss how the firm evolves to provide the requirements of one market to the other. Accordingly, the empirical data identifies how incremental dynamic capabilities incrementally change the resource base to meet the needs of the stable environment as well as how renewing dynamic capabilities helps organization to upgrade the resource base in to a new direction to provide the new market needs. In stage 1 when incremental dynamic capabilities act on the resource base it changes the resource base to VRIN1 resources that provide core capability 1 to offer low cost as the order winner, while in stage 2, when renewing dynamic capabilities are applied the VRIN1 resource base upgrade to VRIN 2 resource to provide core capability 2 to offer product variety at low cost as the order winner.

More specifically, the thesis understands the competitive priorities of different markets and identifies the specific learning capabilities that enable the dynamic capabilities which upgrade the industry from one stage to another.

According to the empirical evidence, competitive priorities of the existing market which is represented as competitive priorities 1 in the conceptual framework is cost (OW) while quality, timely delivery and compliance are the OQ criteria. Value chain capability 1 represents the processes associated in delivering the market requirement in terms of OW and OQ criteria. VRIN1 resources are concerned with the core capability 1, which are embedded in the processes that focus on providing the low cost requirements. Non VRIN1 resources are concerned with providing the order qualifying criteria in the existing market. In the stable environments, as proposed by Ambrosini et al. (2009), incremental dynamic capabilities incrementally change the firm resource base to provide the needs of the existing market. In line with this thought, literature discussed how incremental dynamic capabilities are enabled through single closed loop learning. Accordingly, empirical evidence identifies that closed loop learning capabilities are embedded in the method study process that shape existing capabilities to increase efficiency in order to reduce the cost, learning structures that include i.e. industrial engineers, organization design that includes an efficiency focus leadership style and incremental learning oriented efficiency focused culture and work/method study officers that work as liaison offices in side the organization and the KPIs which focus on cost.

In dynamic environments, Bowman (2009) proposed the need of renewing dynamic capabilities to modify or extend the resource base to provide the new market requirements. The literature suggests how resource base is upgraded to provide the new requirements through open loop learning in oppose to the closed loop learning. Accordingly, open loop learning combines existing internal learning with the new learning from the new market environment. Therefore literature identifies learning capabilities under the sensing shaping and seizing capabilities.

According to the empirical evidence, competitive priorities of the new market in stage 2, which is represented as competitive priorities 2 in the conceptual framework

is Product variety at low cost (OW) and quality, timely delivery and compliance are the OQ criteria. Value chain capability 2 represents the processes associated in delivering the market requirement in terms of OW and OQ criteria, whereas core capability 2 is concerned with the processes related to providing the product variety at low cost. VRIN 2 resources and VRIN 1 resources enables the core capability 2 to deliver the product variety at low cost. Non VRIN resources are concerned in providing the order qualifying criteria. Renewing dynamic capabilities are concerned with reconfiguring the resource base from stage 1 to stage 2, to provide the required VRIN 2 resources. According to the literature, renewing dynamic capabilities are enabled through double loop learning which combine the existing learning with the new learning in the environment for product variety needs. Empirical evidence suggested that, double loop learning capabilities that enable the renewing dynamic capabilities to upgrade resourcebase to VRIN2 resource/ core capability are embedded in the learning processes which sense market requirement in terms of product variety, shape capabilities and seize offering. The structures associated with the learning process which are known as the boundary spanning personnel are the designers, textile technologists and the garment technologists. Organization design includes a flexibility and product variety focus leadership style, learning sharing culture, product integrators that work as liaison offices in side the organization. KPIs are linked with flexibility and efficiency.

According to the empirical evidence, competitive priorities of the new market in stage 3, can once again represented as competitive priorities 3 in the conceptual framework is Product innovation at low cost (OW) and quality, timely delivery and compliance are the OQ criteria. Value chain capability 3 represents the processes associated in delivering the market requirement in terms of OW and OQ criteria, whereas core capability 3 is concerned with the processes related to providing the product innovation at low cost. VRIN 3 resources and VRIN 1 resources enables the core capability 3 to deliver the product variety at low cost whereas Non VRIN resources are concerned in providing the order qualifying criteria. Renewing dynamic capabilities are concerned with reconfiguring the resource base from stage 1 to stage 3, to provide the required VRIN 3 resources. According to the literature,

renewing dynamic capabilities are enabled through double loop learning which combine the existing learning with the new learning in the environment for product innovation needs. Empirical evidence suggested that, double loop learning capabilities that enable the renewing dynamic capabilities to provide the core capability 3 are embedded in the learning processes which sense market requirement in terms of product innovation, shape capabilities and seize offering. The structures associated with the learning process which are known as the boundary spanning personnel are the R&I personnel that shape investment capabilities, and R&D team that involves raw material engineers, clothing engineers, machinery engineers in shaping the operational capabilities. Organization design includes flexibility and product innovation focus leadership style, learning sharing culture, chief engineers that work as liaison devices inside the organization. KPIs are linked with flexibility and efficiency.

According to the empirical evidence, competitive priorities of the new market in stage 4, that can be once again represented as competitive priorities 4 in the conceptual framework, is advance product at low cost (OW) and quality, timely delivery and compliance are the OQ criteria. Value chain capability 2 represents the processes associated in delivering the market requirement in terms of OW and OQ criteria, whereas core capability 4 is concerned with the processes related to providing the product innovation at low cost. VRIN 4 resources and VRIN 1 resources enables the core capability 2 to deliver the product variety at low cost whereas Non VRIN resources are concerned in providing the order qualifying criteria. Renewing dynamic capabilities are concerned with reconfiguring the resource base from stage 1 to stage 4, to provide the required VRIN 4 resources. According to the literature, renewing dynamic capabilities are enabled through double loop learning which combine the existing learning with the new learning in the environment for product innovation needs. Empirical evidence suggested that, double loop learning capabilities that enable the renewing dynamic capabilities to provide the core capability 4 are embedded in the learning processes which sense market requirement in terms of future innovation, shape capabilities and seize offering. The structures associated with the learning process which are known as

the boundary spanning personnel are the business entrepreneurs and technology entrepreneurs, Innovation management team in different divisions that involves top management and R&D team that involves raw material engineers, clothing engineers, machinery engineers. Organization design includes flexibility and product innovation focus leadership style, learning sharing culture, product engineers that work as liaison devices inside the organization. KPIs are linked with flexibility and efficiency.

Accordingly, when the industry upgrade to provide the required offering in the different stages, renewing dynamic capabilities which upgrade the resource base is enabled by the open loop learning capabilities that are embedded in the processes, structures, culture and KPIs. In each stage it was identified that the relevant learning capabilities are aligned with the competitive priorities of the specific market. Hence it was concluded that in order to enable the industry upgrade with the evolution of the market requirements, industry should accommodate the appropriate learning capabilities that align the competitive priorities in the market with the use of processes, structures, culture and KPIs.

Thereby contribution to the underpinning theory will be identifying the enablers for dynamic capabilities which support industry to upgrade from one stage to the other.

Accordingly, the conceptual framework developed in the chapter 2, based on the underpinning theory (Figure 2-9) is refined to represent the contribution to the underpinning theory. Figure 10-2 shows the refined conceptual framework for the thesis based on the empirical evidence of stage 1 and 2. The contribution of the thesis for underpinning theory is highlighted as in Figure 10-2. When industry upgrade I stage 3 for product innovation needs, the conceptual framework can be similarly upgraded as in product variety, presented in the Figure 10-2.

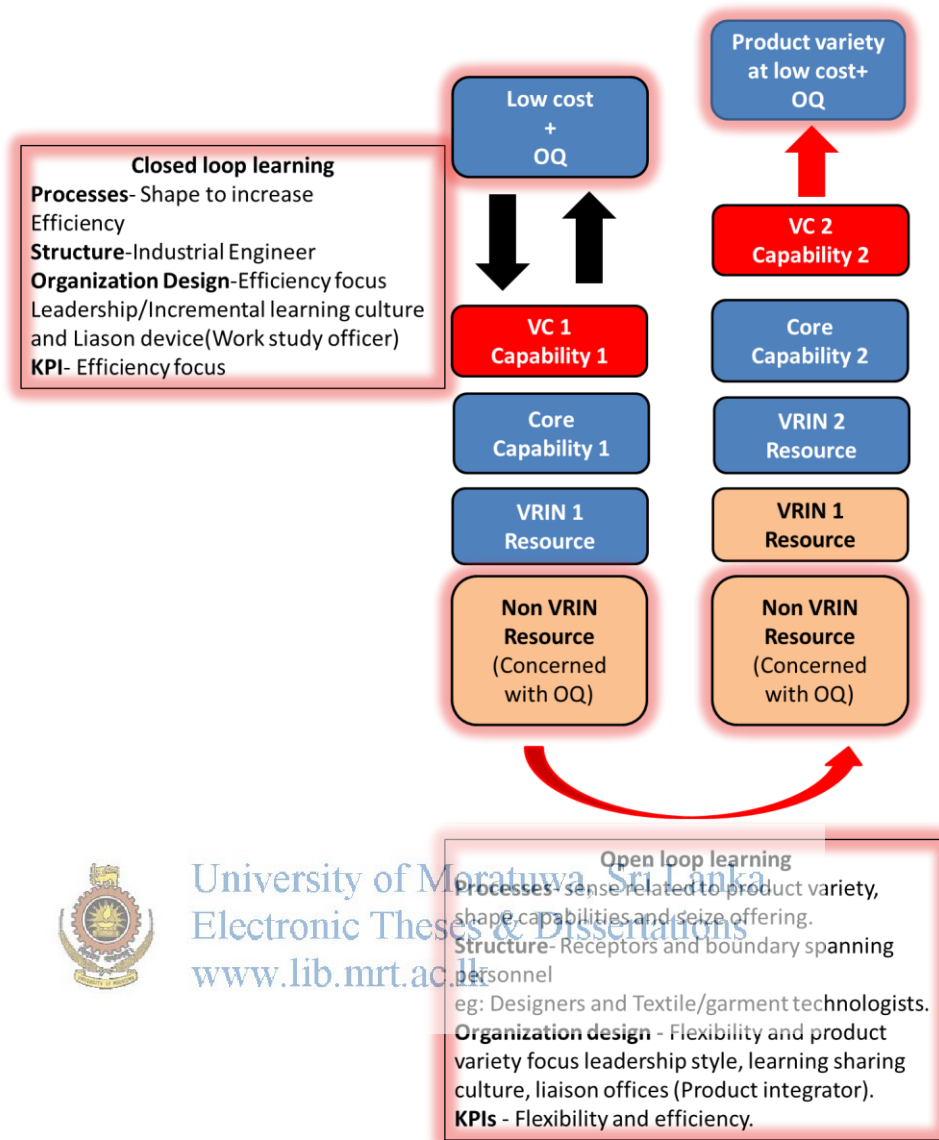


Figure 10-2 Refined conceptual framework: Underpinning theory

Augier & Teece (2009) considers learning as a dynamic capability while Ambrosini et al. (2009) mention learning is an enabler for dynamic capabilities. Easterby-Smith & Prieto (2008) also highlighted the conceptual distinction between learning and dynamic capabilities. Proposed thesis provides the distinction between learning capabilities and dynamic capability. Hence proposed thesis supports Ambrosini et al. (2009) view, considering dynamic capabilities as the reconfiguring process and sensing, shaping and seizing as the learning processes that enable the reconfiguration capability providing the empirical evidence.

10.3.2 Contribution to applied theory

The supply chain management literature discusses how different offerings affect the competitive priorities of the supply chain and also the collaboration intensity among network partners. Furthermore this stream of literature also discusses the need for supply integration in providing cost requirements and the need for demand and supply integration in providing customer value in terms of service. The literature also discusses the importance of integrative capabilities, i.e. processes, structure, organization design and KPIs. This thesis provides empirical evidence for competitive priorities, collaboration intensity, level of demand and supply integration and integrative capabilities.

By recalling the conceptual framework developed in chapter 3, contribution to applied theory can be represented as in Figure 10-3, based on the results of the empirical work which was discussed in section 10.2.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

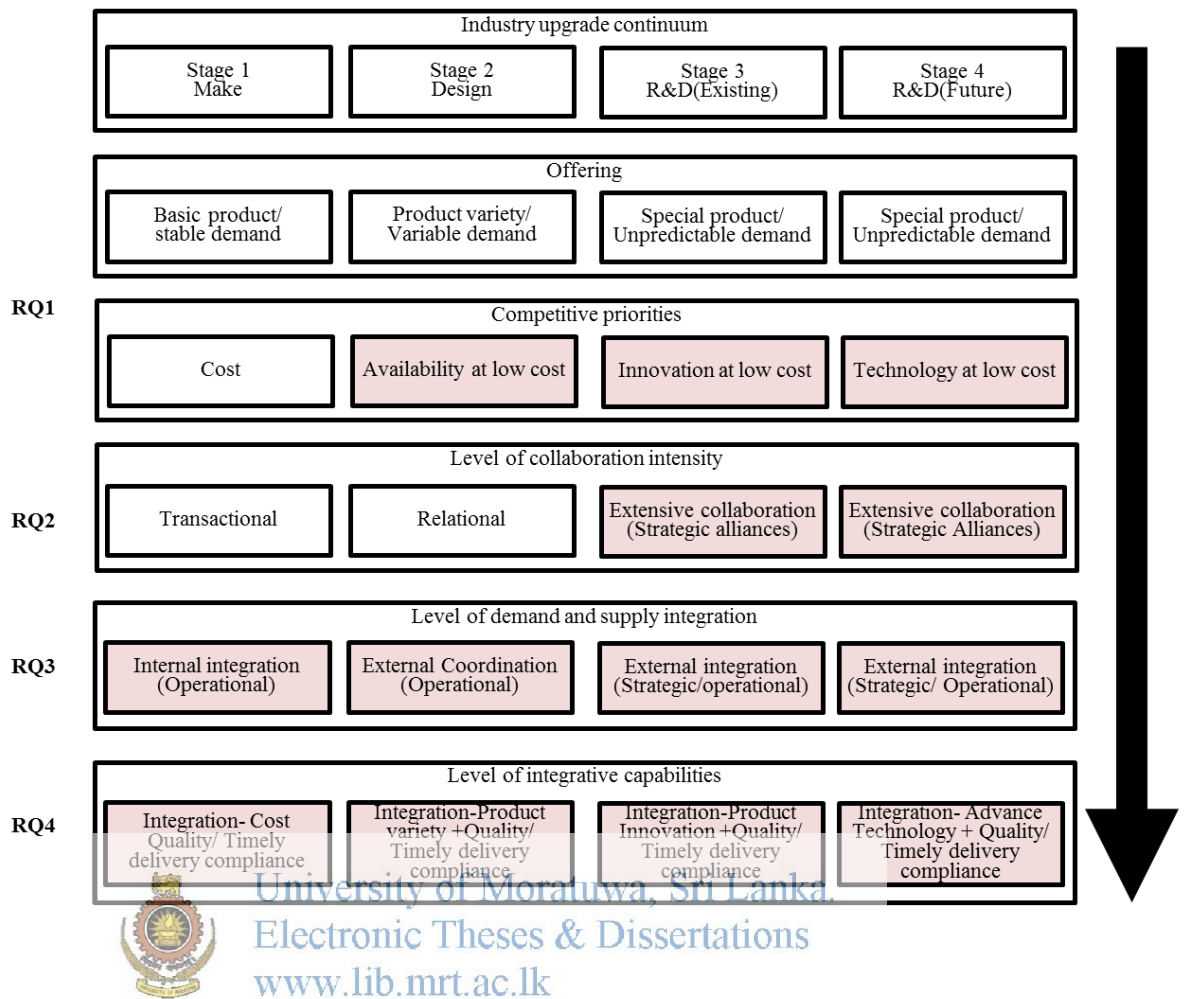


Figure 10-3 Refined conceptual framework: Applied theory-1

More specifically, the thesis identifies an empirically refined conceptual framework for the industry upgrade within the evolving consumer needs. The research provides an appropriate supply network design that upgrades with the evolving consumer needs underpinned by the learning theories. In essence different bodies of literature related to the servitization and supply chain management were brought together into the conceptual framework and empirically explored in order to describe the relationships between the industry upgrade within the competitive priorities, collaboration intensity and integrative capabilities.

As discussed in Chapter 3, the supply chain management literature and servitization literature domains that elaborate on the need for developing supply chains for creating customer value identify the importance of demand and supply integration

theory to provide customer value. While this stream of literature emphasizes the need for integrating market related and supply related knowledge in creating customer value, it does not identify the link between the competitive priorities, collaboration intensity and integrative capabilities.

Hence this study develops an appropriate supply network design for the industry upgrade, which conceptualizes demand and supply integration by linking it to the competitive priorities, collaboration intensity and integrative capabilities. The thesis identifies an appropriate supply chain model, which discusses the level of demand supply integration, for the industry upgrade. It also develops a conceptual framework for demand and supply integration which is empirically explored.

While the literature suggests that market requirements, in terms of low cost, require only supply chain integration, empirical evidence from the thesis supports this argument. In stage 1, competitive priority is explained using OQ criteria namely, quality, compliance and timely delivery, and OW criteria as cost. With the use of OQ criteria, potential network members for the offering will be chosen whereas in each and every season, specific network members are chosen based on lowest cost. Since the network needs to provide the cost requirements in the existing market, closed loop learning will be appropriate. Each member in the network needs to develop incremental learning capabilities to meet the cost requirements. This is done at an internal level by each node in the network. Since each node in the network does internal level incremental learning to meet the cost requirements, the network partners do not learn from each other. Hence there is no need to have a relationship between customer and supplier. Therefore collaboration intensity among customer and supplier is transactional.

Integrative processes and structures are needed for prior decision making to select the potential members in the network. According to the rules and guidelines provided by the customer, BasicCo, these structures select those potential members for the offering who meet the OQ criteria. In the actual decision making process, decision on price is quoted through shaping the internal capabilities, using method study/work study in the supply chain process. The influencers are the industrial engineers. The

culture of the organization is also cost focused and does not consider building relationships. KPIs are also focused on efficiency, hence incremental learning. In order to align the demand requirements with the supply process, demand and supply is integrated at the internal level using the integrative capabilities that focus on closed loop learning.

In stage 2, competitive priorities are described using OQ criteria related to quality, timely delivery and compliance. Once again, the competitive priority of the new market is mainly explained using OW criteria, which is the product variety at low cost. With the use of OQ criteria, potential network members for the offering will be chosen, whereas in each and every season, specific network members are chosen based on product variety. However, the empirical evidence suggested that order winning criteria will be product variety at lowest cost. Therefore, with the use of order qualifying criteria, potential network members for the offering will be chosen whereas in each and every season, specific network members are chosen based on product variety at low cost.

Since the network needs to upgrade to provide the product variety requirements at low cost in a new market, open loop learning will be appropriate. Each member in the network needs to develop open loop learning capabilities to meet the product variety at low cost. Therefore they have sensing processes to understand the consumer requirements for product variety (new learning) and processes to combine the new learning with existing learning, and thereby shape the opportunities and capabilities. This process needs organizational structures which act as boundary spanning roles. Accordingly, these learning structures are available in each node in the supply network. Not only the firm but also the customer and supplier have designers, fabric technologists and garment technologists in shaping the capabilities. These roles act as learning partners, where they get together in decision making. This eventually makes for collaboration among the network members in developing the offering. Furthermore, the culture of the organization is very relational where the internal learning partners that represent the cross functions work together and are also seated together, sharing each other's learning. Moreover, the network partners also have a relationship and learning sharing culture. In order to make the decision



about the offering, i.e. demand plan and supply plan through considering the internal as well as external capabilities, the demand and supply processes are integrated using the integrative capabilities that focus on open loop learning.

In stage 3, competitive priorities can once again be described as OQ and OW criteria. Order winning criteria will be innovative product at low cost. Also in this stage the network members will be a potential group of members that will be selected based on their ability to produce innovative product development at low cost.

Once again, as in stage 3, the network needs to upgrade to be able to provide the innovative product needs at low cost. Accordingly open loop learning is appropriate. Therefore members need to have sensing processes to understand the consumer requirements for innovative product (new learning) and processes to disseminate the new knowledge to network partners. Further, there should be processes to combine the new learning with existing learning, and thereby shape the opportunities and capabilities. This process needs organizational structures which act as boundary spanning roles. Accordingly, these learning structures are available in each node of the supply network. Not only the firm but also the customer and supplier have a market research unit to identify consumer needs for new products. The business and technology entrepreneurs act as boundary spanning roles shaping the opportunities and capabilities related to the supply and demand channel. In order to confirm the investment needed for the offering, strategic level top management people who act innovation management team is involved in the decision making related to the offering. They ensure that the new product is aligned within the investment capabilities of both customer and supplier. In particular, the business director will buy the product idea and confirm the investment needed in developing the new product requirements. In this stage, there is an incubation process to confirm the commercial viability of the new product. At the next level, with the involvement of R&D engineers, development merchant and designer, the operational level capabilities are shaped. This eventually makes for collaboration between the network members at the strategic level (top management) as well as at the operational level (middle management) in developing the offering. Furthermore, the culture of the organization is very relational where the internal learning partners that represent the

cross functions work together and are also seated together, sharing each other's learning. Moreover, the network partners also have a relationship oriented learning culture. In order to make the decision on the offering through considering the internal as well as external capabilities, demand and supply processes are integrated using the integrative capabilities. Furthermore, it was noted that demand and supply processes are integrated both at the strategic level (top management) for investment capabilities as well as at the operational level to shape the operational capabilities.

In stage 4, the competitive priorities can be described as order qualifying and order winning criteria. Order winning criteria will be advanced innovative product at low cost. In this stage the network members will also be a potential group of members that will be selected based on their ability to produce advanced innovative product at low cost.

Once again, as in stage 3, the network needs to upgrade to provide the advanced product needs at low cost. Accordingly open loop learning is appropriate. Therefore members need to have sensing processes to understand the future needs of consumers (new learning) and processes to disseminate the new knowledge to network partners. Further, there should be processes to combine the new learning with existing learning, and thereby shape the opportunities and capabilities. This process needs organizational structures which act as boundary spanning roles. Accordingly, these learning structures are available in each node in the supply network. Not only the firm but also the customer and supplier have a market research unit to identify consumer future needs for the advanced product, where project team involves in identifying the future needs of the consumers. The business entrepreneur and technology entrepreneur act as boundary spanning roles shaping the opportunities and capabilities related to the supply and demand channel capabilities. In order to confirm the strategic level capabilities for industry upgrade, strategic level top management people who acts Innovation leadership team involves in decision making related to the investment need of the offering. They ensure that new product is aligned with the strategic capabilities of the firm. Particular CEOs confirms the relevant investment decisions to form new strategic alliances with the new technology suppliers and also with the new retailers. At the next level launch

designer, R&D engineers act as boundary spanners in shaping the operational capabilities. This eventually makes for collaboration between the network members at the strategic level as well as at the operational level in developing the offering. Furthermore, the culture of the organization is very relational where the internal learning partners that represent the cross functions work together and are also seated together, sharing each other's learning. Moreover, the network partners also have relationships. When considering the leadership skills, leaders in the top management, i.e. manufacturing, components suppliers and customers, should be risk taking people with innovation driven vision. In order to make the decision on the offering through considering the internal and external capabilities, the demand and supply processes are integrated using the integrative capabilities. Furthermore, it was noted that the demand and supply processes are integrated both at a strategic level (top management) for investment capabilities as well as at the operational level to shape the operational capabilities.

By recalling the conceptual framework presented in Figure 3-14 which was based on Chapters 2 and 3, the level of demand and supply integration was conceptualized using learning capabilities that link competitive priorities, collaboration intensity and integrative capabilities. Therefore, the study provide empirically refined conceptual framework for demand and supply integration (DSI). Hence the study positions supply chain management within the underpinning theory as it develops a supply chain design combined with the learning theories, which enable the supply chain reconfiguration with the evolving needs. This becomes another theoretical contribution of the study as shown in Figure 10-4.

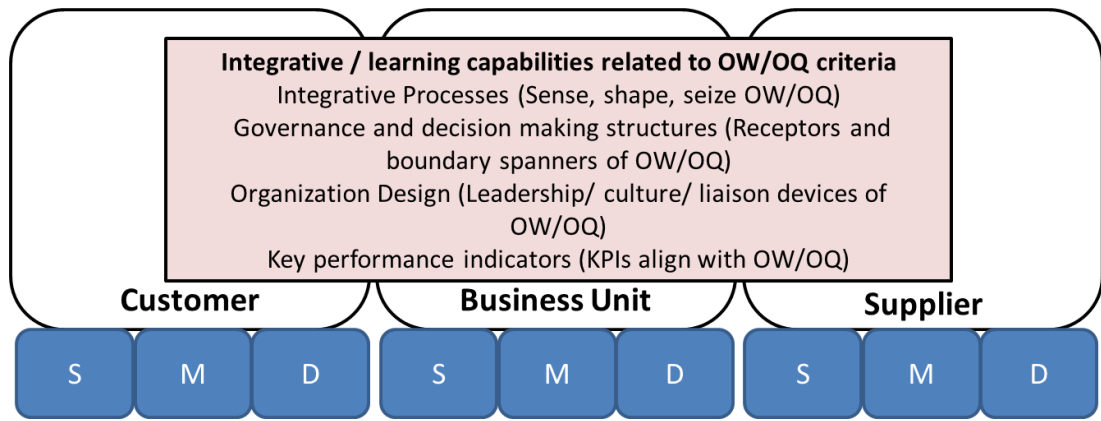


Figure 10-4 Refined conceptual framework- Applied theory 2

10.3.3 Contribution to practice

As a practical contribution of the thesis, the framework helps industrialists to understand the competitive priorities, collaboration intensity among network partners and integrative capabilities they need to possess in order to upgrade themselves with the evolving consumer needs. When an industry needs to upgrade to provide the required offering, they need to consider the competitive priorities, collaboration intensity among the network partners and the integrative capabilities that are further described as processes, structures, organization design and KPIs. In particular, in order to upgrade the industry from one stage to another, industry should first align the competitive priorities with the market requirements and then it needs to develop the appropriate processes, structures, organization design and KPIs which align with the market requirements.

In terms of ApparelCo, throughout the industry upgrade continuum, they have implemented the appropriate learning capabilities to combine the market oriented (outside-in) learning and supply oriented (Inside out) learning. Therefore they have implemented learning processes, learning structures, learning culture and KPIs that are aligned with the competitive priorities of the new market.

Accordingly, in each stage of the industry upgrade continuum, ApparelCo have introduced a new department under the company that is responsible for the particular learning process i.e demand process. Hence in stage 2 they have introduced a new

unit called design and development department, in stage 3 a new department under each cluster called R&I and in stage 4 a new department called future business needs.

Furthermore they have recruited new learning structures appropriate for the particular learning process that act as receptors and boundary spanning personnel in shaping the opportunities and capabilities. The receptors are responsible for the sensing process. Accordingly, it was noted that in stage 2, fashion designers act as receptors while in stages 3 and 4, R&I designers and project managers act as receptors. In stage 2, textile and garment technologists, together with machinery engineers work in boundary spanning roles while in stage 3, textile engineers who work as technology entrepreneurs work as boundary spanning personnel in shaping the supply channel capabilities with the component suppliers and business entrepreneurs in shaping the demand channel capabilities. In stage 3 they also have a R&D team which consist of launch designer and R&D engineers. In stage 4, engineers in different disciplines related to other industries which link with the textile industry work as technology entrepreneurs and act in boundary spanning roles. Moreover, they have implemented relevant top management teams in decision making related to the offering in terms of investment capabilities such as the IMT and ILT.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Moreover, in terms of organization culture, ApparelCo has identified ways of improving the learning sharing culture within the cross functional groups as well as across organizations. They have introduced new internal seating arrangements within the cross functions which really helps them to enhance the learning culture and also the visits of the boundary spanning personnel in customer and suppliers organizations are helpful in creating the learning sharing culture within the supply network members. The liaison officers in the manufacturing base, known as product integrators and in latter 2 stage the concept of chief engineer as the liaison officer are also helpful. Furthermore, they have identified ways of improving the leadership style within the manufacturing base within the industry upgrade. Above all, having a vision of “Change is courage” really helps them to ensure there is a flexibility/change oriented culture in the organization.

Also ApparelCo has recently developed their KPIs aligning them with the specific business unit objectives, in order to drive the organization culture towards learning.

The study can support ApparelCo by providing suggestions to further enhance their processes, structures, organization design and KPIs. More specifically the study will be helpful in developing the learning structures through necessary knowledge and skill development. A skill development manual can be produced in order to share the knowledge with ApparelCo. Moreover ApparelCo can use the framework as a framework in their future industry upgrade stages.

The above learning can be shared within the Sri Lankan apparel industry which hopes to upgrade the industry to provide offerings to value-added market segments, i.e. which do not compete in terms of low cost being the primary advantage. Since the Sri Lankan industry is currently losing its competitive advantage in terms of low cost, the framework will be really helpful for industrialists to use as a tool for the industry upgrade. Hence, as an academic attached to the Department of Textile and Clothing Technology, I wish to conduct workshops to share the knowledge with the Sri Lankan clothing industry. Moreover also I wish to share the knowledge not only with the Sri Lankan industry but with apparel industries in other countries.



University of Moratuwa, Sri Lanka
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Moreover the thesis identifies the role of the learning structures that act as boundary spanning personnel and receptors to the environment. This helps to develop a curriculum that draws professional engineers and designers to the industry. Being an academic who is assigned to teach BSc(Eng) and B(Design) undergraduates I wish to use the research data within the curriculum development.

10.4 Limitations and further research

The research identifies an appropriate supply chain design which enables the industry upgrade within the evolving consumer needs.

Empirical evidence was provided using one large apparel company which has undergone the industry upgrade process. Although cross-case analysis provides the cross-case comparison within each of the embedded unit of analysis, the study does not use a multiple case study approach in research design. This is due to the fact that

ApparelCo is the only apparel company that has undergone several stages in the industry upgrade continuum. This is a limitation of the study. A further study can address this issue by identifying different companies that has upgraded to provide different offerings.

As a further research, empirical evidence can be collected from a large number of apparel industries in Sri Lanka as well as in other countries to generalize the theory.

Furthermore the study can be extended to other industries, more specifically to labour-intensive industries that have entered the export oriented industry using low labour cost as their primary advantage.

Moreover, separate quantitative studies can be undertaken to identify the link between the offerings and competitive priorities, offerings and collaboration intensity between the supply partners, the link between offerings and integrative capabilities.

The thesis identifies the enablers for industry upgrade which contribute to the knowledge of dynamic capability view, where the dynamic capabilities are enabled through learning. Accordingly, learning processes, structures, organization design and KPIs upgrade the resource base to develop a new resource base that will create the set of new core capabilities to compete in the new market environment. Even though the study find out the enablers for industry upgrade it does not provide empirical evidence for core capabilities as well as the VRIN resources for each stage. A further study can address this issue by identifying the core capabilities and the VRIN resources for each stage in the industry upgrade continuum. Helfalt & Winter (2011) mention that boundary between the dynamic capabilities and core capabilities are blurred and therefore difficult to understand what dynamic capabilities and operational capabilities. Even though proposed thesis does not identify what these operational capabilities are it provides the distinction of the two.

Supply chain management literature identifies the importance of 4PL in the new economy and also elaborated that integration and coordination becomes the core competitive advantage. The proposed thesis identified the integrative capabilities in

the supply network. Further research can identify the role of 4PL using the integrative capabilities identified from this research.

While this thesis identified how opportunities and capabilities are shaped through standardization, further research can investigate appropriate tools that support the apparel industry to shape opportunities and shape capabilities, through identifying the extent that they could provide products to meet the market requirements within the available capabilities.

Proposed research provides insight to power of the network members in the supply chain. Further research can identify how power of the manufacturer within the supply network changes with the industry upgrade.

Servitization literature domain discusses the need of value co-creation networks in creating customer value. Based on the findings from the study, it will be interesting to identify how value co-creation is achieved in the networks.

10.5 Summary of the chapter

The chapter provides a review of the aims and research questions in terms of the empirical evidence collected.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Then it identifies the contribution of the study both to the underpinning theory and the applied theory. The study contributes to the strategic management literature through understanding the enablers required to develop the dynamic capabilities to reconfigure the resource base. The study further contributes both to the supply chain management literature as well as to the servitization literature through identifying an appropriate supply chain design that delivers the required customer value. Moreover, it discovers how supply chains are becoming value networks in creating customer value. Furthermore, the study positions supply chain management within the underpinning theory as it develops a supply chain design positioned within learning theories.

As a practical contribution, the chapter addresses how the study contributes to the Sri Lankan apparel industry and to the apparel industry as a whole.

Also the limitations of the study are stated and the directions for further research identified.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

REFERENCES

- Abernathy, F. H., Volpe, A., & Weil, D. (2004). *The Apparel and Textile Industries after 2005 : Prospects and Choices The. October* (pp. 1–46).
- Aitken, J., Childerhouse, P., Christopher, M., & Towill, D. (2005). Designing and Managing Multiple Pipelines. *Journal of Business Logistics*, 26(2), 73–96. doi:10.1002/j.2158-1592.2005.tb00206.x
- Aken, J. E. van. (1978). *On te control of complex industrial organizations* (p. 221). H.E Stenfert Kroese.
- Ambrosini, V., & Bowman, C. (2009). What are dynamic capabilities and are they a useful construct in strategic management? *International Journal of Management Reviews*, 11(1), 29–49. doi:10.1111/j.1468-2370.2008.00251.x
- Ambrosini, V., Bowman, C., & Collier, N. (2009). Dynamic Capabilities: An Exploration of How Firms Renew their Resource Base. *British Journal of Management*, 20, S9–S24. doi:10.1111/j.1467-8551.2008.00610.x
- Amlt, R., & Shoemaker, P. (1993). Strategic assets and organizational rent. *Strategic Management Journal*, 14(August), 33–46.
- Andrew Sayer. (2000) *Introducing Critical Realism, Sri Realism and Social Science* (1st ed., pp. 7). London: Sage.
- Argyris, C. (1977). Harvard University. *Accounting, Organizations and Society*, 2(2), 113–123.
- Argyris, C., & Schoen, D. . (1978). *Organizational Learning: a theory of Action perspective* (p. 344P). Addison-Wesley: Reading.
- Augier, M., & Teece, D. J. (2009). Dynamic Capabilities and the Role of Managers in Business Strategy and Economic Performance. *Organization Science*, 20(2), 410–421. doi:10.1287/orsc.1090.0424
- Barnes, L., & Lea-Greenwood, G. (2010). Fast fashion in the retail store environment. *International Journal of Retail & Distribution Management*, 38(10), 760–772. doi:10.1108/09590551011076533
- Barney, J. (1991). Firm resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 99-120 Retrieved from <http://www3.uma.pt/filipejmsousa/ge/Barney,%201991.pdf>
- Barney, J. (2001). The resource-based view of the firm: Ten years after 1991. *Journal of Management*, 27(6), 625–641. doi:10.1177/014920630102700601

- Barratt, M. Choi, T.Y. and Li, M. (2011) Qualitative case studies in operations management: Trends, research outcomes, and future research implications. *Journal of Operations Management*, 29, 329-342. doi:10.1016/j.jom.2010.06.002
- Bhattacharjya, J. & Walters, D. (2009). *The emergence of interactions as strategic entities in value chain networks*. Retrieved from http://sydney.edu.au/business/__data/assets/pdf_file/0010/28882/itls_wp_09_11.pdf
- Bhaskar. (1978). *A realist theory of science* (4th ed., p. 219). London: Sage.
- Bititci, U. S., Martinez, V., Albores, P., & Parung, J. (2004). Creating and managing value in collaborative networks. *International Journal of Physical Distribution & Logistics Management*, 34(3/4), 251–268. Retrieved from <http://www.som.cranfield.ac.uk/som/dinamic-content/research/cbp/Valueincollaborativenetworks.pdf>
- Blaikie, N. (2000). *Approaches to social inquiry* (2nd ed., p. 234). Manchester: Polity press.
- Bruce, M., & Daly, L. (2006). Buyer behaviour for fast fashion. *Journal of Fashion Marketing and Management*, 10(3), 329–344. doi:10.1108/13612020610679303
- Bruce, M., & Daly, L. (2011). Adding value; challenges for UK apparel supply chain management – a review. *Production Planning & Control*, 22(3), 210–220. doi:10.1080/09537287.2010.498574
- Chia, R. (2002). *The Production of Management Knowledge: Philosophical Underpinnings of Research Design*. In *Essential Skills for Management Research* (p. 282). London: Sage.
- Childerhouse, P., Aitken, J., & Towill, D. R. (2002). Analysis and design of focused demand chains. *Journal of Operations Management*, 20, 675–689. Retrieved from Science Direct.
- Christopher, M. (1992). *Logistics and Supply chain Management*. (4th ed.). Prentice Hall: Pearson Ltd.
- Christopher, M., & Holweg, M. (2011). “Supply Chain 2.0”: managing supply chains in the era of turbulence. *International Journal of Physical Distribution & Logistics Management*, 41(1), 63–82. doi:10.1108/09600031111101439
- Christopher, M., Peck, H., & Towill, D. (2006). A taxonomy for selecting global supply chain strategies. *International Journal of Logistics Management*, 17(2), 277–287. doi:10.1108/09574090610689998

- Christopher, M., & Towill, D. (2001). An integrated model for the design of agile supply chains. *International Journal of Physical Distribution and Logistics Management*, 31 (4), 235-246 Retrieved from <https://dspace.lib.cranfield.ac.uk/bitstream/1826/2670/1/Integrated%20model-design%20of%20agile%20supply%20chains-2001.pdf>
- Christopher, M., & Towill, D. R. (2000). Supply chain migration from lean and functional to agile and customised. *Supply Chain Management: An International Journal*, 5 (4), 206 - 213 Retrieved from Emerald
- Christopher, M., & Towill, D. R. (2002). Developing Market Specific Supply Chain Strategies. *International Journal of Logistics*, 13(1), 1–14. Retrieved from <https://dspace.lib.cranfield.ac.uk/bitstream/1826/2654/1/developing%20market%20specific%20supply%20chain%20strategies-2002.pdf>
- Cooper, M., Ellram, L. L., Gardner, J. ., & Hanks, A. . . (1997). Meshing multiple alliances. *Journal of Business Logistics*, 18(1), 67–89.
- Davies, A., Brady, T., & Hobday, M. (2007). Organizing for solutions: Systems seller vs. systems integrator. *Industrial Marketing Management*, 36(2), 183–193. doi:10.1016/j.indmarman.2006.04.009
- Day, G. S. (1994a). The capabilities of Market-Drive Organizations. *Journal of Marketing*, 58(4), 37–52. doi: 10.2307/1251915
- Dyer, W.G., Wilkins, A.L., 1991. Better stories, not better constructs, to generate better theory: a rejoinder to Eisenhardt. *Academy of Management Review*, 16(3), 613–619. Retrieved from <http://voynnetf.free.fr/mrq/02dyerwilkinsstories.pdf>
- Easterby-Smith, M., & Prieto, I. M. (2008). Dynamic Capabilities and Knowledge Management: an Integrative Role for Learning? *British Journal of Management*, 19(3), 235–249. doi:10.1111/j.1467-8551.2007.00543.x
- Easterby-Smith, M., Thrope, R., & Lowe, A. (2000). *Qualitative methods in Management Research: An introduction* (2nd ed., pp. 71–115). London: Sage.
- Eisenhardt, K.M., Graebner, M.E., 2007. Theory building from cases: opportunities and challenges. *Academy of Management Journal*, 50 (1), 25–32. Retrieved from <http://www.buseco.monash.edu.au/mgt/research/acrew/eisenhardt.pdf>
- Eisenhardt, K. M., & Martin, J. a. (2000). Dynamic capabilities: what are they? *Strategic Management Journal*, 21(10-11), 1105–1121. doi:10.1002/1097-0266(200010/11)21:10/11<1105::AID-SMJ133>3.0.CO;2-E
- Esper, T. L., Ellinger, A. E., Stank, T. P., Flint, D. J., & Moon, M. (2009). Demand and supply integration: a conceptual framework of value creation through

knowledge management. *Journal of the Academy of Marketing Science*, 38(1), 5–18. doi:10.1007/s11747-009-0135-3

Fernandez-stark, K., Fredrick, S., & Gary, G. (2011). *The Apparel Global Value Chain: Economic Upgrading and Workforce Development*. (pp. 1–66).

Fonseka, A. ., & Fonseka, D. (1998). Garment industry of Sri Lanka: Callenges and responses. *Sri Lanka Journal of Management*, 3(2), 249–291.

Gattorna, J. (1998). *Strategic Supply chain Alignment: Next practices in supply chain management* (p. 671). Hampshire: Gower publishing Ltd.

Gereffi, G. (2003). *The Global Apparel Value Chain : What Prospects for Upgrading by Developing Countries?: Prepared for the united nations industrial development organization*. Retrieved from https://www.unido.org/fileadmin/user_media/Publications/Pub_free/Global_apparel_value_chain.pdf

Gereffi, G., & Frederick, S. (2010). *The Global Apparel Value Chain , Trade and the Crisis Challenges and Opportunities for Developing Countries: Prepared for the World bank*. Retrieved from (<https://openknowledge.worldbank.org/bitstream/handle/10986/3769/WPS5281.pdf?sequence=1>)

Godsell, J. (2008). *Customer Responsive supply chain strategy*. (Doctoral dissertation) Retrieved from <https://dspace.lib.cranfield.ac.uk/handle/1826/3488>



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Godsell, J., Birtwistle, A., & van Hoek, R. (2010). Building the supply chain to enable business alignment: lessons from British American Tobacco (BAT). *Supply Chain Management: An International Journal*, 15(1), 10–15. doi:10.1108/13598541011018085

Godsell, J., Harrison, A., Emberson, C., & Storey, J. (2006). Customer responsive supply chain strategy: An unnatural act? *International Journal of Logistics*, 9(1), 47–56. doi:10.1080/13675560500534664

Grant, R. M. (1996a). Prospering in Dynamically-competitive Environments : Organizational Capability as Knowledge Integration. *Organization Science*, 7(4), 375–387. Retrieved from JStore

Grant, R. M. (1996b). Towards a knowledge based theory of the firm. *Strategic Management Journal*, 17(Winter), 109–122. Retrieved from http://gul.gu.se/public/pp/public_courses/course40530/published/1298469899850/resourceId/15964758/content/Grant%20-%20SMJ%201996%20-%20Theme%203.pdf

- Gupta, D. (2011). Design and engineering of functional clothing, 36(December), 327–335. Retrieved from [http://nopr.niscair.res.in/bitstream/123456789/13226/1/IJFTR%2036\(4\)%20327-335.pdf](http://nopr.niscair.res.in/bitstream/123456789/13226/1/IJFTR%2036(4)%20327-335.pdf)
- Handfield, R. B., & Nichols, E. L. (2002). *Supply Chain Redesign: Transforming Supply Chains into Integrated Value Systems*. Upper Saddle River, NJ: Fiantial Times prentice Hall.
- Helfat, C. E., & Finkelstein, S. (2007). *Dynamic capabilities: Understanding strategic change in organizations* (1st ed.). Malden: Blackwell Publishing.
- Helfat, C. E., & Peteraf, M. a. (2009). Understanding dynamic capabilities: progress along a developmental path. *Strategic Organization*, 7(1), 91–102. doi:10.1177/1476127008100133
- Hill, A., & Hill, T. (2000). Operation strategy: How firms compete. In *Manufacturing Operation Strategy* (3rd ed., pp. 27–48). Palgrave Macmillan.
- Hussey, J., & Hussey, R. (1997). *Business research :A practical guide for undergraduate and post graduate students"* (p. 357). Hampshire: Palgrave.
- Jayawickrama, A., & Thangavelu, S. M. (2011). ASEAN+FTAs and Globalvalue chains in East Asia. In C. Findlay (Ed.), (pp. 232–274). Jakarta.
- Jüttner, U., Christopher, M., & Baker, S. (2007). Demand chain management-integrating marketing and supply chain management. *Industrial Marketing Management*, 36(3), 377–392. doi:10.1016/j.indmarman.2005.10.003
- Jüttner, U., Christopher, M., & Godsell, J. (2010). A strategic framework for integrating marketing and supply chain strategies. *The International Journal of Logistics Management*, 21(1), 104–126. doi:10.1108/09574091011042205
- Jüttner, U., Godsell, J., & Christopher, M. G. (2006). Demand chain alignment competence — delivering value through product life cycle management. *Industrial Marketing Management*, 35(8), 989–1001. doi:10.1016/j.indmarman.2006.03.003
- Jüttner, U., & Wehrli, H. P. (2005). Competitive Advatage: Merging Marketing and the Competence-based Perspective. *Journal of Business & Industrial Marketing*, 9(4), 42–53. Retrived from Emerald
- Kampstra, R. . P. ., Ashayeri, J. ., & Gattorna, J. (2006). *Realities of supply chain collaboration* (pp. 1–23). Retrieved from <http://johngattorna.com/wp-content/uploads/2013/02/The-International-Journal-of-Logistics-Management-Realities-of-supply-chain-collaboration.pdf>

- Kelegama, S. (2004). *Ready made garment industry in Sri Lanka: Facing the future challenges* (1st ed.). Colombo: Institute of policy studies.
- Kelegama, S. (2005). Ready-Made Garment Industry in Sri Lanka : Preparing to Face the Global Challenges. *Asia -Pacific Trade and Investment Review*, 1(1), 51–67.
- Kelegama, S. (2009). Ready-made Garment Exports from Sri Lanka. *Journal of Contemporary Asia*, 39(4), 579–596. doi:10.1080/00472330903076875
- Levinthal, D. a., & March, J. G. (1993). The myopia of learning. *Strategic Management Journal*, 14(S2), 95–112. doi:10.1002/smj.4250141009
- Lockett, H., Johnson, M., Evans, S., & Bastl, M. (2011). Product Service Systems and supply network relationships: an exploratory case study. *Journal of Manufacturing Technology Management*, 22(3), 293–313. doi:10.1108/17410381111112684
- Lusch, R. F. (2011). Reframing supply chain management : a service-dominant logic perspective. *Journal of Supply Chain Management*, 47(1), 14–18. Retrieved from http://www.sdlogic.net/uploads/2/7/3/5/2735531/reframing_jscm_lusch_2011.pdf
- Lyles, F. and. (1985). Organizational Learning. *The Academy of Management Review*, 10(4), 803–813. Retrieved from Istor
- Magretta, J. (2002). Why Business Models Matter. *Harvard Business Review*, 1–8.
- Makadok, R. (2001). Toward a synthesis of the resource-based and dynamic-capability views of rent creation. *Strategic Management Journal*, 22(5), 387–401. Retrieved from Wiley online library
- Matararachchi, R., & Heenkenda, N. (2012). The competitiveness of the Sri Lankan apparel industry. In *International conference on management, behavioral sciences and economic issues*. Penang.
- Miles, M. ., & Hubberman, Micheal, A. (2004). *Qualitative Data Analysis* (2nd ed., p. 317). London: Sage.
- Möller, K., & Rajala, A. (2007). Rise of strategic nets — New modes of value creation. *Industrial Marketing Management*, 36(7), 895–908. doi:10.1016/j.indmarman.2007.05.016
- Mudambi, R. (2008). Location, control and innovation in knowledge-intensive industries. *Journal of Economic Geography*, 8(5), 699–725. doi:10.1093/jeg/lbn024

- Penrose. (1959). Introduction. In *The theory of growth of the firm* (pp. 1–7). Newyork: Oxford university press.
- Pine, J. B., & Gilmore, J. H. (1998). *Welcome to the Experience Economy*. *Harvard Business Review*. Retrieved from <https://hbr.org/1998/07/welcome-to-the-experience-economy>
- Porter, M. E. (1985). *The competitive advantage: Creating and susaining superior performance* (pp. 1–164). Newyork: Free press.
- Porter, M. E. (1991). Towards a dynamic theory of strategy. *Strategic Management Journal*, 12, 95–117. Retrieved from [http://ecaths1.s3.amazonaws.com/fernandoserra/Porter%20\(1991\).pdf](http://ecaths1.s3.amazonaws.com/fernandoserra/Porter%20(1991).pdf)
- Porter, M. E. (1996). What is Strategy? *Harvard Business Review*, (November-December 1996), 61–78. Retrieved from <https://hbr.org/1996/11/what-is-strategy>
- Rainbird, M. (2004a). A framework for operations management: the value chain. *International Journal of Physical Distribution & Logistics Management*, 34(3/4), 337–345. doi:10.1108/09600030410533628
- Rainbird, M. (2004b). Demand and supply chains:the value catalyst. *International Journal of Physical Distribution & Logistics Management*, 34(3/4), 230–250. doi:10.1108/09600030410533565
- Ray, G., Barney, J. B., & Muhanna, W. A. (2004). Capabilities, business processes, and competitive advantage: choosing the dependent variable in empirical tests of the resource-based view. *Strategic Management Journal*, 25(1), 23–37. Retrived from Wiley online library
- Şen, A. (2008). The US fashion industry: A supply chain review. *International Journal of Production Economics*, 114(2), 571–593. doi:10.1016/j.ijpe.2007.05.022
- Senge, P. M. (1990). *The Fifth Discipline*, 1(3), 46–48.
- Singhal, A., Sood, S., & Singh, V. (2004). Creating and Preserving Value in the Textile and Apparel Supply Chain : From Fibre to Retail. *Textile Outlook International*, (February), 1–22. Retrieved from http://www.smallb.in/sites/default/files/knowledge_base/best_practices/Creating andPreservingValue.pdf
- Slack, N. and Lewis M (2005). *Operations strategy*. Harlow: Pearson ed.

- Slater, S. F., & Narver, J. C. (1994). Market orientation, customer value, and superior performance. *Business Horizons*, 37(2), 22–28. doi:10.1016/0007-6813(94)90029-9
- Slepniov, D., Wöhrens, B. V., & Johansen, J. (2014). Servitisation in Danish Manufacturing Firms: A Strategy for Survival? In *Global Operations Networks: Exploring new perspectives and agendas* (1st ed., pp. 183–202). Aalborg: Aalborg University.
- Slywotzky, A. . (1996). Introduction. In *Value Migration: How to think a several moves a head of competition* (pp. 1–20).
- Sri Lanka. Central Bank (2013). Economics and statistics report: Retrieved from http://www.cbsl.gov.lk/pics_n_docs/10_pub/_docs/statistics/other/econ_&_ss_2013_e.pdf
- Sri Lanka. Export development board (2012). Industry capability report: Retrieved from http://www.srilankabusiness.com/pdf/industry_capability_report_apparel.pdf
- Sri Lanka. Ministry of Technology and Research (2014). Research and Development Investment Framework (RDIF) Thrust Area : Textile & Apparel (pp. 1–40).
- Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 1350(August), 1319–1350. doi:10.1002/smj
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and Strategic Management. *Strategic Management Journal*, 18(7), 509–533. Retrieved from [http://www.business.illinois.edu/josephm/BA545_Fall%202013/Teece,%20Pisano%20and%20Shuen%20\(1997\).pdf](http://www.business.illinois.edu/josephm/BA545_Fall%202013/Teece,%20Pisano%20and%20Shuen%20(1997).pdf)
- Teece, D., & Pisano, G. (1994). *The Dynamic Capabilities of Firms: An Introduction. Analysis* (pp. 1–28). Retrieved from http://secure.com.sg/courses/ICI/Grab/Reading_Articles/L03_A02_Teece.pdf
- Tokman, M., & Beitelspacher, L. S. (2011). Supply chain networks and service-dominant logic: suggestions for future research, 41(7), 717–726. doi:10.1108/09600031111154152
- Van den Bosch, F. a. J., Volberda, H. W., & de Boer, M. (1999). Coevolution of Firm Absorptive Capacity and Knowledge Environment: Organizational Forms and Combinative Capabilities. *Organization Science*, 10(5), 551–568. doi:10.1287/orsc.10.5.551

- Vargo, S. L., & Lusch, R. F. (2011). It's all B2B...and beyond: Toward a systems perspective of the market. *Industrial Marketing Management*, 40(2), 181–187. doi:10.1016/j.indmarman.2010.06.026
- Voss, C. A., & Winch, G. M. (1996). Including engineering in operations strategy. *Production and Operations Management* 5 (1), 78–90.
- VICS. (2004). *Collaborative Planning, Forecasting and Replenishment (CPFR ®)* (pp. 1–24).
- Walters, D. (2004). New economy – new business models – new approaches. *International Journal of Physical Distribution & Logistics Management*, 34(3/4), 219–229. doi:10.1108/09600030410533556
- Walters, D. (2008a). The value chain approach imposes increased expectations on logistics management (pp. 1–32). Retrieved from <http://ws.econ.usyd.edu.au/itls/wp-archive/itls-wp-08-08.pdf>
- Walters, D. (2008b). Demand chain management+response management=increased customer satisfaction. *International Journal of Physical Distribution & Logistics Management*, 38(9), 699–725. doi:10.1108/09600030810925980
- Walters, D. & Bhattacharjya, J. (2012a). *A modified product life cycle becomes a useful basis for a new product-service strategy model* (pp. 1–10). Retrieved from http://sydney.edu.au/business/_data/assets/pdf_file/0005/134816/ITLS-WP-12.pdf
- Walters, D., & Lancaster, G. (1999). Value-based marketing and its usefulness to customers Value-based marketing and its usefulness to customers. *Management Decision* Retrieved from Emerald Article
- Walters, D. & Newton, J. (2010). *The logistics implications of the emerging business model* (pp. 1–21). Retrieved from http://sydney.edu.au/business/_data/assets/pdf_file/0006/68712/ITLS-WP-10-09.pdf
- Walters, D., & Rainbird, M. (2004a). The demand chain as an integral component of the value chain. *Journal of Consumer Marketing*, 21(7), 465–475. doi:10.1108/07363760410568680
- Walters, D., & Rainbird, M. (2004b). The demand chain as an integral component of the value chain. *Journal of Consumer Marketing*, 21(7), 465–475. doi:10.1108/07363760410568680
- Walters, D., & Rainbird, M. (2007a). *Beyond the supply chain: An operations response system as an efficient means of implementing a 'customercentric'*

market response. Retrieved from <http://ws.econ.usyd.edu.au/itls/wp-archive/itls-wp-07-19.pdf>

- Walters, D., & Rainbird, M. (2007b). Cooperative innovation: a value chain approach. *Journal of Enterprise Information Management*, 20(5), 595–607. doi:10.1108/17410390710823725
- Walters, D., & Rainbird, M. (2008). *The demand chain and response management : New directions for operations* By (pp. 1–15). Retrieved from <http://ws.econ.usyd.edu.au/itls/wp-archive/itls-wp-08-17.pdf>
- Wang, C. L., & Ahmed, P. K. (2007). Dynamic capabilities: A review and research agenda. *International Journal of Management Reviews*, 9(1), 31–51. doi:10.1111/j.1468-2370.2007.00201.x
- Wickramasinghe, D., & Wickramasinghe, V. (2011). Differences in Organizational Factors by Lean Duration. *Operations Management Research*, 4(3-4), 111–126. doi:10.1007/s12063-011-0055-5
- Wijayasiri, J., & Dissanayake, J. (2008). *The ending of the multi-fibre agreement and innovation in sri lankan textile and cloting industry*. Prepared for the Organization of economic cooperation ad development. Retrived from http://www.oecd-ilibrary.org/trade/case-study-no-3-the-ending-of-the-multi-fibre-agreement-and-innovation-in-sri-lankan-textile-and-clothing-industry_240487016735?crawler=true
- Winter, S. G. (2003a). Understanding dynamic capabilities. *Strategic Management Journal*, 24, 991–995. doi:10.1002/smj.318
- Yin, R. . (2009). *Case study research* (4th ed., p. 202). India: Sage.
- Zahra, S. a., & George, G. (2002). Absorptive Capacity: A Review. Reconceptualization, and Extension. *Acadamy of Management Review*, 27(2), 185–203. Retrieved from http://frontiers.commerce.ubc.ca/Zahra_George_AMR_2002.pdf
- Zahra, S. A., Sapienza, H. J., & Davidsson, P. (2006). Entrepreneurship and Dynamic Capabilities: A Review , Model and Research Agenda. *Journal of Management Studies*, 43(4), 917–952. Retrieved from Wiley Online Library

APPENDICES


Appendix A Definition and co constructs of dynamic capabilities

Author	Definition	Core constructs						
		Systematic process	Change current resource base	Change current	Change current competencies	Change Current capabilities	Change Current core capabilities	Change current Knowledge base
Teece, Pisano, and Shuen, (1997) p516	“Ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments”				√			
Eisenhardt and Martin (2000) p 1107	“The firm's processes that use resources – specifically the processes to integrate, reconfigure, gain and release resources to match or even create market change. Dynamic capabilities thus are the organizational and strategic routines by which firms achieve new resources configurations as markets emerge, collide, split, evolve and die”	√	√			√		
Zollo and Winter (2002) P340	a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness”							√
Winter (2003) p991	“Dynamic capabilities ‘are those that operate to extend, modify or create ordinary capabilities”					√		√
Zahra et al. (2006) p 918	“the abilities to reconfigure a firm's resources and routines in the manner envisioned and deemed appropriate by its principal decision-maker”		√	√				√
Wang and Ahmed (2007) p35	a firm's behavioural orientation constantly to integrate, reconfigure, renew and recreate its resources and capabilities and, most importantly, upgrade and reconstruct its core capabilities in response to the changing environment to attain and sustain competitive advantage		√			√	√	
Hefalt (2007) p1	A dynamic capability is the capacity of an organization to purposefully create, extend, or modify its resource base		√					

Augier and Teece (2009) p 415	“The ability to sense and then seize new opportunities, and to reconfigure and protect knowledge assets, competencies, and complementary assets with the aim of achieving a sustained competitive advantage.”	√						
-------------------------------	---	---	--	--	--	--	--	--

Appendix B Interview protocol

B.1 Scoping study 1- Overview of the case company

Name of the interviewee Designation Background Amount of the time with the ApparelCo Current role	
Points to address	Questions
Company overview	Introduction to the company History of the company
 Strategy Mission Vision	Cooperate strategy Mission of the company Vision of the company
Evolution of the company	Stages of the industry upgrade process
Value Chain involvement	VC involvement of the company at the different stages in the industry upgrade continuum.

B.2 Scoping study 2- Overview of the business unit

<p>Name of the interviewee</p> <p>Designation</p> <p>Background</p> <p>Amount of the time with the ApparelCo</p> <p>Current role</p>	
Overview of the business unit	
Business strategy for specific SBU	<p>Strategic objectives in terms of providing services (e.g. Design service)</p> <p>Drivers behind this mandate</p> <p>How has the business chosen to compete?</p>
Industry structure	<p>Product/market sectors and where they operate</p> <p>Growing, stable or declining</p>
Marketing environment analysis	<p>Political/ Economical/ Social/ Demographic/ Legal/ Technological</p>
Competitors	<p>Major competitors</p> <p>SWOT (Strengths Weaknesses Opportunities and Threats) for SBU</p>
Conduct a Porter 5 force analysis to understand the competitive position of the company	<ul style="list-style-type: none"> • Supplier Power: how easy is it for suppliers to drive up prices? • Buyer Power: how easy is it for buyers to drive prices down? • Competitive Rivalry: number and capability of your competitors • Threat of Substitution: ability of your customers to find a different way of doing what you do • Threat of New Entry: ability of people to enter your market.
Overview of network	
Overview of network	<p>% of Revenue</p> <p>Location of the customer</p> <p>Key customer</p>

	<p>Total number of suppliers for specific SBU</p> <p>Commodity groups</p> <p>Do they have any form of supplier segmentation, e.g. do they use Kraljic?</p> <p>Key Supplier for the customer</p> <p>Why is this supplier chosen as the key supplier? Revenue</p> <p>Location of the key supplier</p>
	<p>Does the company have a key manufacturing unit for the customer?</p> <p>Why is this manufacturer chosen as the key manufacturer?</p> <p>Location of the key manufacturer.</p>
Planning cycle	<p>Drumbeat (Number of seasons)</p> <p>Products (Top ups/continuous styles/new products etc.)</p> <p>Volume</p> <p>Stage in PLC- Duration of the PLC</p>
Overview of the value chain	<p>Key value chain activities undertaken by the company related to a given stage</p>
	<p>Key people heading the key value chain activities</p>



University of Moratuwa, Sri Lanka.
 Electronic Theses & Dissertations
www.lib.mrt.ac.lk

B.3 Main study- Research questions

Points to address	Role	Questions
	Name of the interviewee Designation Background Amount of the time with the ApparelCo Current role	
Offering & Competitive priorities Section 2.2	Demand related	1. What offering do you provide to the customer? (Understanding customer offering in terms of product/demand and service) 2. Why is this offering provided to the customer?
	Supply related	1. What capabilities are needed to provide the required service provision? (Understanding capabilities in terms of order winning/qualifying criteria) 2. Why are these capabilities needed from the supply base?
Collaboration intensity Section 2.3	Demand related	1. Length of relationship with customer? 2. What type of relationship do you have with the customer? (Understanding collaboration intensity from coordination to partnership) 3. Why is this relationship needed?
	Supply related	1. Length of relationship with supplier? 2. What type of relationship do you have with the supplier? (Understanding collaboration intensity from coordination to partnership) 3. Why is this relationship needed?
Demand supply integration Section 2.4	Demand related	Demand planning (customer facing processes) 1. What type of demand planning process do you use? 2. What type of decisions do you make in demand planning? 3. What internal/external people are involved in demand planning? 4. What level of people is involved in decision making? 5. Why is this type of demand planning used?

	Supply related	<p>Supply planning (supplier facing processes)</p> <ol style="list-style-type: none"> 1. What type of supply planning process do you use? 2. What type of decisions do you make in supply planning? 3. What internal/external people are involved in supply planning? 4. What level of people is involved in decision making? 5. Why this type of supply planning process is used?
	Demand related and supply related	<p>Demand supply integration (integrative planning)</p> <ol style="list-style-type: none"> 1. What type of integrative planning process do you use? 2. What type of decisions do you make using integrators when developing the service provision? 3. What internal/external people are involved in integrative planning? 4. What level of people is involved in integrative planning? (internal-external) 5. Why do you integrate demand supply planning in this level for making decisions on the demand/supply plan?
<p>Integrative capabilities</p> <p>Section 2.5</p>	<p>Market research</p> <p>Integrators</p>	<p>Sensing</p> <ol style="list-style-type: none"> 1. What information do you collect from the consumer/market? 2. Why it is important to collect information from customer/market? 3. How you obtain information about consumer/market needs? <ol style="list-style-type: none"> 3a. Do you have a market research unit to collect information related to consumer needs? 3b. Does your market research unit work with customer's/supplier's market research unit in getting information regarding the consumer needs? 4. What enables/inhibits the market understanding process?
	<p>Supplier research</p> <p>Integrators</p>	<p>Sensing</p> <ol style="list-style-type: none"> 1. What information do you collect about the suppliers? 2. Why it is important to collect information about the suppliers? 3. How you obtain information about supplier



		<p>capabilities?</p> <p>3a. Do you have a supplier research unit to collect information related to supplier capabilities?</p> <p>3b. Does your supplier research unit work with customer's/supplier's supplier research unit in obtaining information regarding supplier capabilities?</p> <p>4. What enables/inhibits the supplier capability to understanding the process?</p>
	Integrators	<p>Shaping-demand related capabilities</p> <p>1. What type of ability have you developed to change the internal/external demand processes according to the demand plan to deliver the service provision?</p> <p>2. Why it is important to develop the ability to change internal/external demand?</p> <p>3. How do you change the internal/external demand operations?</p> <p>4. Main issues in changing demand processes?</p> <p>5. Initiatives launched to combat issues and level of success?</p>
	Integrators	<p>Shaping-supply related capabilities</p> <p>1. What type of ability have you developed to change the internal/external supply processes according to the supply plan to deliver the service provision?</p> <p>2. Why it is important to develop the ability to change the internal/external supply?</p> <p>3. How do you change the internal/external supply operations?</p> <p>4. Main issues in changing internal/external supply processes?</p> <p>5. Initiatives launched to combat issues and level of success?</p>
	Integrators	<p>Seizing</p> <p>1. What information do you integrate when making decisions related to the demand plan and supply plan?</p> <p>2. Why it is important to integrate this information in decision making on the demand plan and supply plan?</p> <p>3. How you integrate the market oriented view with the supply oriented view in decision making?</p> <p>3a. Do you integrate capacity forecast with</p>



		<p>demand forecast internally?</p> <p>3b. Do you integrate capacity forecast with demand forecast externally with customers and suppliers?</p> <p>4. Main issues in integrating information for decision making on the offering?</p> <p>5. Initiatives launched to combat issues and level of success?</p>
Customer		
Supplier		



University of Moratuwa, Sri Lanka.
 Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Appendix C Chain of evidence

C.1 Contact summary sheet

Contact no.1-02- Demand and supply planner (ProdCo)

Interviewee	AAAA(Confidential)	No.	1-02
Job title	Senior Merchandiser- Development (Demand planning and supply planning)	Date	02/01/14
Contact details	AAAA@xxxxxxx.com	Location	Board room at ApparelCo head office

1.1 Interviewee background

Role- Working as a development merchandiser. In the proposed research work is a person related to demand and supply planning.

Responsible for confirming the sales order from the customer through local buying office. Therefore need to guarantee the price, quality/fit of the product will be up to the level required by the customer while delivery will be up to the schedule given by the customer. Responsibility finishes when the pre-production planning meeting is done at the production plant, where the supply plan which includes tech pack, delivery dates etc. is handed over to the production plant.

1.2 Main themes or issues arising

Order qualifiers- Compliance, Quality and Delivery

OQ Integrators- Compliance auditor/ Quality auditor/ Capacity planner

OW Integrator- Technical team includes industrial engineering and garment technologist

1.3 Summary of the information gathered

1.3.1 Offering

Basic or standard product, which is a repeat/continuous style from the last season. The silhouette (shape), fabric type, colour of the products are considered as basic and standardized. They do not invest in the development of new fabrics and materials, as this would add an additional cost. The fabric types used for these products are predominantly standardized cottons and micro fabrics which have to meet a standard BasicCo specification. Basic briefs are typically made from a 95% Cotton and 5% elastine 160gsm fabric which is used for all seasons. In terms of colours these products use standard/core colours available from the raw material suppliers for the season. Black, nude (skin) and white colours are used across both seasons. They are usually supplemented by 2-3 season specific colours. Furthermore, the styling (or silhouette) of the products is developed using basic styling, which can be developed using the standard block patterns. In the BasicCo brief product range, they only have three style; briefs, hot pants and string.

As the basic/core product ranges are mainly repeats from the previous season, the demand of this offering is very predictable and the sales team are able to statistically forecast the sales quantity for the next season. Volumes of these products are high and may be produced by two or more apparel manufacturers. Duration of the product life cycle is also long and continues throughout the different seasons of the year. Some styles have been produced for over three consecutive years by ProdCo.

The standard product offering with limited variety and high volumes makes ProdCo able to develop the offering at low cost as the continuous styles with high volumes affect the factory long run performance.

1.3.2 Competitive Priorities

The order winner for the offering is cost. The company is driven by low cost.

However, cost is not the only factor in becoming a supplier of choice for BasicCo. BasicCo also values the quality of the offering as well as compliance. BasicCo does not just go for the lowest price quotation when selecting their supplier, but also

considers the ability of the supplier to meet specific quality requirements. As a pre requirement, suppliers need to pass BasicCo's audit for quality and compliance. Furthermore, BasicCo also values the timely delivery of the product.

1.3.3 Collaboration intensity with supply partners

1.3.3.1 Collaboration intensity- Customer

The customer will switch to the lowest cost supplier who meets the quality, compliance and delivery criteria (min and max order quantity). As the product is a standard product of low complexity, it is relatively easy for BasicCo to change supplier. Even when the style is made by ProdCo for one season, supply will switch to a competitor for the next season if they can produce it at a lower cost. Accordingly,

"...when the same product which ProdCo got the order in last season is quoted for a reduced price by another competitor this season, they go for that company. If in a next season, if ProdCo quote for a better price, the style will come again."

BasicCo also do not want ProdCo to make relationships with them. To quote,

"...They asked us not to send them cards or flowers as they considered them as a cost. Even when they come to ProdCo for a visit they advised us to provide them with a basic lunch. When they are invited for a dinner the dinner bill has to be split between the customer and the company...."

BasicCo want ProdCo to share the saving of unnecessary expenditure on relationship building with the consumer.

1.3.3.2 Collaboration intensity- Supplier

The customer, BasicCo, identifies and selects the raw material suppliers. This has led BasicCo to obtain cost advantage as they order for the global requirements of the specific raw material, where the garments are manufactured in different countries. Further, as the volumes of the core products are high and the products are manufactured in different countries, BasicCo needs to maintain consistency of colour of the raw material.

ProdCo can also suggest raw material suppliers. ProdCo has a strong supply base that it has developed over a number of years. Whilst this RM base can provide significant benefits for more premium products, for basic fabrics where cost is the main differentiator, they are less competitive. It is unusual for BasicCo to favour a ProdCo supplier with whom a relationship has been developed. BasicCo opt for a more transactional approach to raw material supplier selection based on cost. They do not wish ProdCo to develop a relationship with the suppliers they select. Therefore even if ProdCo has joint venture partnerships with these suppliers they do not order material from them.

ProdCo has its own manufacturing base where they have their own factories for producing briefs, even though they go for subcontracting firms because of the low cost of production.

1.3.4 Demand supply integration

1.3.4.1 Demand planning

ProdCo decides its sales volume using the capacity availability of their subcontracting plants, which is usually about 900,000 pcs per month. This is an internal decision making, with the integration between the demand planning person (development merchant) and the internal capacity planning person (operations manager). Since BasicCo gets in contact with the raw material supplier for booking the capacity, deciding the sales volume of ProdCo does not involve the raw material supplier.

ProdCo also needs to decide the price of the offering. After the sales volume is confirmed, ProdCo receives artwork for specific styles with a target price. The demand and supply planning person comes up with a price quotation for a continuous style after a discussion with the consumption team on raw material consumption and the operations manager on the SMV of the product. In this stage, the sub plant is also involved to understand the cut-and-make price. As the price of raw material is pre confirmed by BasicCo, ProdCo does not contact the RM supplier. After several

rounds of price negotiations, BasicCo's Hong Kong office decides on the styles that are suitable for ProdCo.

Further, in the demand planning stage, the development merchant also needs to confirm their capability to develop the product to the required quality specified by BasicCo. Since most of the styles are continuous styles or styles with minor changes, BasicCo does not usually have problems in meeting the specification. Generally, the demand related person hands over the product artwork and measurement list to the technical team to confirm the capability of meeting the specification. The details of styling and measurement lists are provided to the garment technical team while the details of colour and quality specifications are provided to the fabric technical team (colour team). The process is mainly to confirm the quality, but not to make changes to the garment/fabric specification.

1.3.4.2 Supply planning

Internal suppliers, i.e. manufacturing plants, are chosen by the operations manager. He has a four stage process where he identifies a sub plant for a specific style. First the sub plants are assessed to check if they meet the minimum requirements for compliance and quality. The compliance auditor in ProdCo audits the sub plant against the standards and guidelines provided by BasicCo. Secondly, the quality process auditor needs to confirm that a particular sub plant meets the capability requirement criteria to meet the expected quality level required by BasicCo. Thirdly, the sub plant needs to meet the minimum capacity requirements. ProdCo requires their sub plants to have a capacity of 1 million pieces per month.

In the actual decision making process, the sub plant will assess whether they can meet the cut-and-make price of the garment to meet the target price of the buyer and also whether the sub plant can develop the capability sample against the product specification provided.

1.3.4.3 Integrative planning

Actual decision making is done based on cost, where ProdCo selects the specific sub-contracting firm with which to place the order. The operations manager is involved

in confirming the SMV of the product with the sub plant. The technical and quality manager, who is an expert in identifying the methods for reducing SMV, is also involved in the decision making on price; this is also an internal decision making to confirm the target price of ProdCo.

Prior decision making on forecasted sales volume from ProdCo is also done based on the capacity availability, also by integrating with the operations manager to identify the capacity with the sub plant for a season, which is about 900,000 pieces.

Prior decision making is also done on the internal sub plant, based on compliance and quality guidelines provided.

1.4 Interesting or important aspects

The demand and supply planning person has worked for FashionCo before and he makes a comparative comment about FashionCo and ProdCo.

“If FashionCo develops a style with us they will give the style to us throughout another four years, but when BasicCo develops a product with us and even if we make it for years when the same product is quoted for a reduced price by another competitor, they go for that company. If in the next season ApparelCo quote for a better price the style will come again.”

Further he added,

“When FashionCo representatives visit us we take them for dinner and outings and when we travel to US they also treat us in a very friendly way.”

Planning cycle- BasicCo has two seasons per year and plans the product styles over six months. In the first three months it is order development and in the next three months manufacturing.

0123456789 season - odd numbers-Autumn/Winter and even Spring/Summer. Planning happens twice a year.

1.5 Questions for next visit

Technical person as the integrator

1.6 Documents collected

Organization Structure (BasicCo)

Purchase order- projection sheet



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

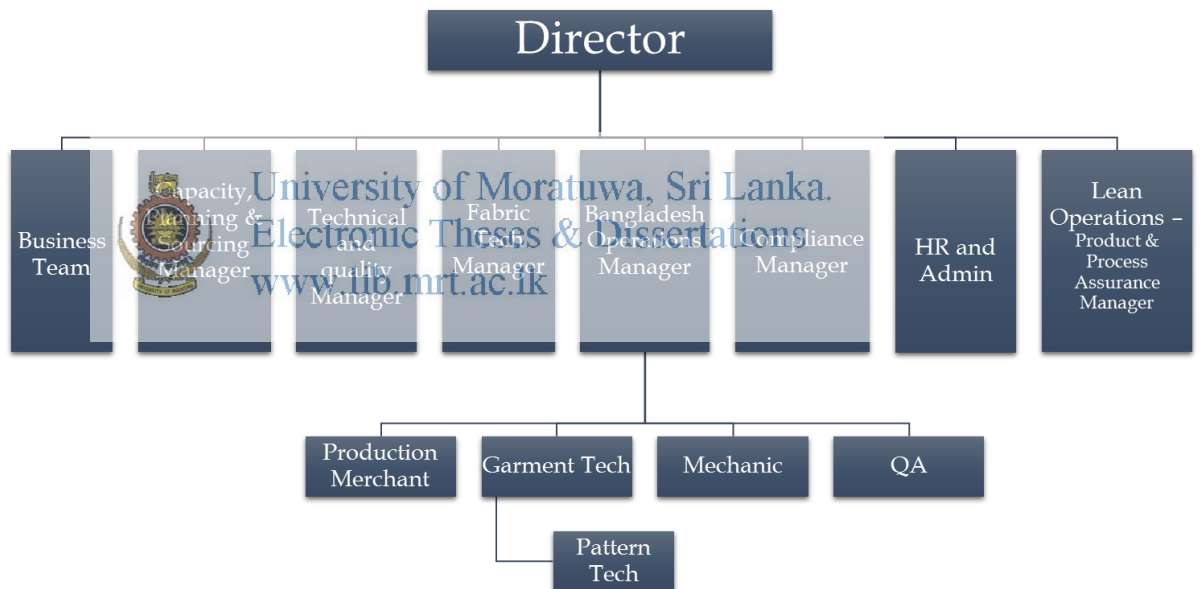
C.2 Secondary sources

C.2.1 Purchase order details from BasicCo

Section	Dept	Product Type	Style Description	Colour	Order Type	Period	ISW	Total Qty Pcs
Divided	3937	Bottom Knitted (Non Program)	Fred Elas colour	solid	Store (Base)	P-3	201409	212550
Divided	3937	Bottom Knitted (Non Program)	Fred Elas colour	solid	Store (Trail)	P-4	201413	32700
Divided	3937	Bottom Knitted (Non Program)	Tessan Stripe/ Print	Prt	Store (Trail)	P-4	201413	124260
Divided	3937	Bottom Knitted (Non Program)	Tessan Stripe/ Print	Prt	Store (Trail)	P-5	201417	35970
Divided	3937	Bottom Knitted (Non Program)	Tessan Basic	solid	Store (Base)	P-K	201349	147150
Divided	3937	Bottom Knitted (Non Program)	Tessan Basic	solid	Store (Trail)	P-1	201401	42510
Divided	3937	Bottom Knitted (Non Program)	Tessan Basic	solid	Store (Trail)	P-2	201405	49050
Divided	3937	Bottom Knitted (Non Program)	Tessan Basic	solid	Store (Trail)	P-3	201409	49050
Divided	3937	Bottom Knitted (Non Program)	Tessan Basic	solid	Store (Trail)	P-4	201413	29430
Divided	3937	Bottom Knitted (Non Program)	Tessan Basic	solid	Store (Trail)	P-5	201417	19620
Divided	3937	Bottom Knitted (Non Program)	Tessan Colour	solid	Store (Base)	P-3	201409	196200
Divided	3937	Bottom Woven (Non Program)	Tessan Colour	solid	Store (Trail)	P-4	201413	65400
Divided	3937	Bottom Knitted (Non Program)	Tessan Colour	solid	Store (Trail)	P-5	201417	65400
Divided	3937	Bottom Knitted (Non Program)	Capacity reserve for repeat		Store (Trail)	P-K	201349	50000
Divided	3937	Bottom Knitted (Non Program)	Capacity reserve for		Store (Trail)	P-1	201401	50000


Divided	3937	Program) Bottom Knitted (Non Program)	repeat Capacity reserve for repeat		Store (Trail)	P-2	201405	50000
Divided	3937	Program) Bottom Knitted (Non Program)	repeat Capacity reserve for repeat		Store (Trail)	P-3	201409	50000
Divided	3937	Program) Bottom Knitted (Non Program)	repeat Capacity reserve for repeat		Store (Trail)	P-4	201413	50000
Divided	3937	Program) Bottom Knitted (Non Program)	repeat Capacity reserve for repeat		Store (Trail)	P-5	201417	50000

C.2.2 Organization Chart of ProdCo planning division



Appendix D : Case study database

D.1 Database for stage 1: ProdCo

Key Role of the interviewee	Key area to be interviewed	Contact Sheet details Stage 1(ProdCo)					
		Interviewee	Date and location	Contact sheet No.	Record no.	Field note no.	Documentary evidence
Business Manager	Scoping study	Business Manager Mr. AP	07/01/14 ProdCo conference room	1-01	R1-01	F1-01	Marketing environment analysis
Demand planning Supply planning	Offerings Competitive priorities Network relationships Level of demand and supply integration	Development merchant (Mr. KH)	02/01/14 Board room @ Head office of ApparelCo	1-02	R1-02	F1-02	Order details of offering Organization chart of planning division
Integrator W	Integrative capabilities 	Technical and quality manager Mr. UC Work Study officer (Mr. DG)	22/01/14 ProdCo manager's room	1-03a 1-03b	R1-03a R1-03b	F1-03a F1-03b	Process maps Description of Role of integrators Performance measurement systems
Customer	Offerings Competitive priorities Network relationships Level of demand and supply integration Integrative capabilities	Asst. Technical Manager (Mr. DP)	25/01/14 Residency	1-04	R1-04	F1-04	
Supplier	Offerings Competitive priorities Network relationships Level of demand and supply integration Integrative capabilities	Marketing Manager Ms. SH	30/01/14 By phone	1-05	R1-05	F1-05	

Key Role of the interviewee	Key area to be interviewed	Contact Sheet details Stage 2 (VarietyCo)					
		Interviewee	Date and location	Contact sheet No.	Record no.	Field note no.	Documentary evidence
Business Manager	Scoping study	Business Manager Mr. UK	17/04/14	2-01	R2-01	F2-01	Marketing environment analysis
Demand planning Supply planning	Offerings Competitive priorities Network relationships Level of demand and supply integration	Development merchant (Ms. AD)	24/04/14 Board room @ Head office	2-02	R2-02	F2-02	Order details of offering Organization chart of planning division
Integrator OW	Integrative capabilities	Designer (Ms. AS)	25/04/14 Board room @ Head office	2-03a	R2-03a	F3-03a	Process maps Description of Role of integrators
		Technical team (Garment tech- Mr. DG)	Board room 2 27/04/14	2-04b	R2-04b	F2-04b	
		Technical team Fabric tech- Ms. UR	Board room 2 27/04/14	2-04c	R2-04c	F2-04c	
Customer	Offerings Competitive priorities Network relationships Level of demand and supply integration	Designer Ms. SD	05/05/14 Through Skype	2-04	R2-04	F2-04	

	Integrative capabilities						
Supplier	Offerings Competitive priorities Network relationships Level of demand and supply integration Integrative capabilities	Designer MS. HD	12//05/14 By phone	2-05	R2-05	F2-05	
Key Role of the interviewee	Key area to be interviewed	Contact Sheet details Stage 3 (LaunchCo)					
		Interviewee	Date and location	Contact sheet No.	Record no.	Field note no.	Documentary evidence
Business Manager	Scoping study	Business Manager Ms. SP	19/05/14 Board room	3-01	R3-01	F3-01	Marketing environment analysis
Demand planning Supply planning	Offerings Competitive priorities Network relationships Level of demand and supply integration	Development merchant (Ms. MR)	26/05/14 Board room	3-02	R3-02	F3-02	Order details of offering Organization chart of planning division
Integrator OW	Integrative capabilities	R&I Designer (Ms. NR) Business entrepreneur Technology Entrepreneur	26/05/14 R&I center Office room	3-03a	R3-03a	F3-03a	
		Launch Designer Ms. NK	2/06/14 R&I center Board room	3-03b	R3-03b	F3-03b	Process maps Description of Role of integrators

		R&D team (Yarn and fabric technologist - Mr. DP)	04/06/14 Residency	3-03c	R3-03c	F3-03c	
		R&D team (Garment tech) -Ms. SL	09/06/14 R&I center Board room	3-03d	R3-03d	F3-03d	
Customer	Offerings Competitive priorities Network relationships Level of demand and supply integration Integrative capabilities	Designer Ms..SM	10/06/14 By Skype	3-04	R2-04	F2-04	
Supplier	Offerings Competitive priorities Network relationships Level of demand and supply integration Integrative capabilities	Head of innovation Mr. MP	12//06/14	3-05	R3-05	F3-05	
Key Role of the interviewee	Key area to be interviewed	Contact Sheet details Stage 4 (AdvancecoCo)					
		Interviewee	Date and location	Contact sheet No.	Record no.	Field note no.	Documentary evidence
Business Manager	Scoping study	Business Manager Ms. GT	16/06/14 Board room	4-01	R4-01	F4-01	Marketing environment analysis
Demand planning Supply planning	Offerings Competitive priorities Network relationships Level of demand and supply integration	Development merchant Ms. LK	18/06/14 Board room	4-02	R4-02	F4-02	Order details of offering Organization chart of planning division



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Integrator OW	Integrative capabilities	Head of future business team- Project manager Mr.NP (Technology Entrepreneur Business entrepreneur Finance Entrepreneur)and technology hub	01/07/14 Board room	4-03a	R4-03a	F4-03a	
		R&I Designer (Ms. NR) Business entrepreneur Technology Entrepreneur	07/07/14 R&I center Office room	4-03b	R4-03b	F4-03b	
		Launch DesignerMs NK	07/07/14 R&I center Board room	4-03c	R4-03c	F4-03c	Process maps Description of Role of integrators
		R&D team (Yarn and fabric technologist - Mr. DP)	07/07/14 R&I centre board room	4-03d	R4-03d	F4-03d	
		R&D team (Garment tech) -Ms. SM	07/07/14 R&I center Board room	4-03e	R4-03e	F4-03e	
Customer	Offerings Competitive priorities Network relationships Level of demand and supply integration Integrative capabilities	Designer Ms..SP	08/07/14 By Skype	4-04	R4-04	F4-04	



Supplier	Offerings Competitive priorities Network relationships Level of demand and supply integration Integrative capabilities	Head of innovation Mr. LM	10//07/14	4-05	R4-05	F4-05	
----------	--	------------------------------	-----------	------	-------	-------	--




University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Appendix E – Analysis Template

E.1 Analysis template for Individual Case

Offering			Stage 1	
			Theory	Actual
Offering	Product	Standard /Special		
		PLC		
		Phase in PLC		
	Demand	Volume		
		Variety		
		Variability		
	Service	Lead time		
		Delivery reliability		
		Delivery frequency		

Competitive priorities		Stage 1	
		Theory	Actual
 OW/OQ Criteria	Cost		
	Availability		
	Product leadership		
	Technology leadership		
	Quality		
	Timely delivery		
	Quality process		
	Compliance		

Collaboration intensity		Stage 1	
		Theory	Actual
Collaboration intensity	Customer		
	Supplier		

Demand supply integration			Stage 1	
			Theory	Actual
Type of integration	Supply chain integration	Internal		
		Customer		
		Supplier		
	Demand chain and supply chain integration	Internal		
		Customer		
		Supplier		

Integrative capabilities		Stage 1	
		Theory	Actual
Integrative Processes	Cost		
	Availability		
	Product leadership		
	Technology leadership		
	Quality		
	Timely delivery		
	Compliance		



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Integrative capabilities		Stage 1	
		Theory	Actual
Governance and decision making structure	Cost		
	Availability		
	Product leadership		
	Technology leadership		
	Quality product		
	Timely delivery		
	Quality process		
	Compliance		

Integrative capabilities		Theory	Actual
Leadership and culture	Cost		
	Availability		
	Product leadership		
	Technology leadership		
	Quality product		
	Timely delivery		
	Quality process		
	Compliance		
Liaison devices	Cost		
	Availability		
	Product leadership		
	Technology leadership		
	Quality product		
	Timely delivery		
	Quality process		
	Compliance		




University of Moratuwa, Sri Lanka.
 Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Integrative capabilities		Theory	Actual
Key Performance Indicators	Cost		
	Availability		
	Product leadership		
	Technology leadership		
	Quality product		
	Timely delivery		
	Quality process		
	Compliance		

E.2 Analysis Template for cross-case analysis

Offering			ProdCo	VarietyCo	LaunchCo	AdvanceCo
Offering	Product	Standard /Special				
		PLC				
		Phase in PLC				
	Demand	Volume				
		Variety				
		Variability				
	Service	Lead time				
		Delivery reliability				
		Delivery frequency				

Competitive priorities		ProdCo	VarietyCo	LaunchCo	AdvanceCo
 OW/OQ Criteria	Cost				
	Availability				
	Product leadership				
	Technology leadership				
	Quality				
	Timely delivery				
	Quality process				
	Compliance				

Collaboration intensity		ProdCo	VarietyCo	LaunchCo	AdvanceCo
Collaboration intensity	Customer				
	Supplier				

Demand supply integration			ProdCo	VarietyCo	LaunchCo	AdvanceCo
Type of integration	Supply chain Integration	Internal				
		Customer				
		Supplier				
	Demand chain and supply chain integration	Internal				
		Customer				
		Supplier				

Integrative capabilities		ProdCo	VarietyCo	LaunchCo	AdvanceCo
Integrative Processes	Cost				
	Availability				
	Product leadership				
	Technology leadership				
	Quality				
	Timely delivery				
	Quality process				
	Compliance				



University of Moratuwa, Sri Lanka.
 Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Integrative capabilities		ProdCo	VarietyCo	LaunchCo	AdvanceCo
Governance and decision making structure	Cost				
	Availability				
	Product leadership				
	Technology leadership				
	Quality product				
	Timely delivery				
	Quality process				
	Compliance				

Integrative capabilities		ProdCo	VarietyCo	LaunchCo	AdvanceCo
Leadership and culture	Cost				
	Availability				
	Product leadership				
	Technology leadership				
	Quality product				
	Timely delivery				
	Quality process				
	Compliance				
Liaison devices	Cost				
	Availability				
	Product leadership				
	Technology leadership				
	Quality product				
	Timely delivery				
	Quality process				
	Compliance				



University of Moratuwa, Sri Lanka.
 Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Integrative capabilities		ProdCo	VarietyCo	LaunchCo	AdvanceCo
Key Performance Indicators	Cost				
	Availability				
	Product leadership				
	Technology leadership				
	Quality product				
	Timely delivery				
	Quality process				
	Compliance				

Appendix F Coding structures

F.1 An example of coding structure for individual case analysis (ProdCo) for competitive priorities

Competitive priorities		Stage 1	
		Theory	Actual
OW/OQ Criteria	Cost	OW	OW
	Availability		
	Product leadership		
	Technology leadership		
	Quality		OQ
	Timely delivery		OQ
	Compliance		OQ

F.2 An example of coding structure for cross case analysis for competitive priorities

Competitive priorities		Stage 1 ProdCo	Stage 2 VarietyCo	Stage 3 LaunchCo	Stage 4 AdvanceCo
OW/OQ Criteria	Cost	OW1	OW2	OW2	OW2
	Availability		OW1		
	Product leadership			OW1	
	Technology leadership				OW1
	Quality	OQ	OQ	OQ	OQ
	Timely delivery	OQ	OQ	OQ	OQ
	compliance	OQ	OQ	OQ	OQ