

**GLOBAL VALUE CHAINS AND TECHNOLOGICAL
CAPABILITIES: ANALYSING THE DYNAMICS OF
INDONESIA'S GARMENTS AND ELECTRONICS
MANUFACTURERS**

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CONTENTS

Contents.....	2
Tables.....	10
Figures.....	12
Abstract.....	13
Declaration.....	14
Copyright.....	14
Acknowledgement.....	15
Chapter 1	
Introduction.....	17
1.1 Introduction.....	17
1.2 Recent trends in Indonesian manufacturing.....	19
1.3 A gap in the literature.....	21
1.4 Research question.....	26
1.5 Structure.....	28
Chapter 2	
Revisiting upgrading processes.....	32
2.1 Concept of upgrading	33
2.2 Technological capability: Intra-firm upgrading processes	35
2.3 Global value chains: Inter-firms upgrading processes	40
2.3.1 Global commodity chains/global value chains.....	42
2.3.2 The ‘flying geese’ model.....	49
2.3.3 Latecomer model.....	51
2.3.4 Global production network.....	52
2.3.5 Global value chains: Conceptual relevance to the research objective.....	55
2.4 Upgrading: Integrating the technological capability and the global value chains frameworks.....	57
2.4.1 GVC framework: Strengths and shortcomings.....	59

2.4.2 GVC and TC frameworks: Proposing an integrative analytical tool	63
2.5 Conclusion.....	66

Chapter 3

Constructing methods, developing tools.....	68
3.1 Research questions and propositions.....	69
3.1.1 Research questions.....	70
3.1.2 Propositions.....	71
3.2 Research methods.....	72
3.2.1 Rationale.....	73
3.2.2 Secondary data collection and analysis.....	73
3.2.3. Primary data collection.....	76
3.2.3a) Survey.....	77
3.2.3b) In-depth interview.....	80
3.2.4 Research ethics	81
3.2.5 Case studies.....	82
3.3 Some methodological issues.....	85
3.4 Conclusion.....	86

Chapter 4

Dynamics of the Global Garment and Electronics Value Chains.....	87
4.1 Global shifts in garment value chains.....	88
4.1.1 The emergence of powerful branded marketers and retailers.....	89
4.1.2 Abolition of the multi fibre arrangement.....	96
4.2 Global shifts in electronics value chains.....	99
4.2.1 Relocation strategies of global electronics firms and foreign direct investment.....	102
4.2.2 Value chain modularity and the emergence of global contract manufacturers.....	103
4.3 Conclusion.....	107

Chapter 5

Dynamics of the Indonesian Garment and Electronics Industries.....	109
5.1 The development of the Indonesian textile and garment industry.....	110

5.1.1 Historical trajectories 1970-2005.....	110
5.1.1a) Period 1970-1998.....	110
5.1.1b) Period 1999-2005.....	114
5.1.2 Current situation.....	114
5.2 The development of the Indonesian electronics industry.....	118
5.2.1 Historical trajectories1970-1997.....	118
5.2.1a) Period 1970-1985.....	118
5.2.1b) Period 1985-1998.....	120
5.2.2 Current situation.....	122
5.3 Institutional development: Government strategies and regulations.....	125
5.3.1 Development of government policies and regulations.....	126
5.3.1a) Period 1985-1997.....	126
5.3.1b) Period 1998-2005.....	131
5.3.1c) Period 2005-2009.....	132
5.3.2 Labour standards and social compliance.....	133
5.4 Conclusion.....	136

Chapter 6

Value Chain Governance and Upgrading Processes

amongst Indonesian Garment Manufacturers.....	139
6.1 Descriptive overview.....	140
6.1.1 Overview of buying practices.....	140
6.1.2 Survey of garment manufacturers.....	142
6.2 Mechanisms for insertion into value chains.....	149
6.2.1 Process of engagement in value chains.....	149
6.2.2 Patterns of value chain governance.....	151
6.2.2a) Case of <i>Tunggal Garmenindo</i> : Relational ties with global branded marketer.....	152
6.2.2b) Case of <i>Busana Garmenindo</i> : Captive relationships with global branded marketer.....	155
6.2.2c) Case of <i>Jaya Garmenindo</i> : Market-based governance in domestic and emerging export markets.....	157
6.2.2d) Case of <i>Lestari Garmenindo</i> : Modular value chains in The emerging export market and market-based governance	

in the domestic market	161
6.2.2e) Case of <i>Cipta Garmenindo</i> : Modular value chains in The domestic market.....	163
6.2.3 Closing remarks: How are the Indonesian garment manufacturing firms inserted into value chains?.....	166
6.3 Strategies to upgrade	168
6.3.1 Upgrading patterns and paths.....	168
6.3.1a) Case of <i>Tunggal Garmenindo</i> : Process and product upgrading through production efficiency and diversification.....	168
6.3.1b) Case of <i>Busana Garmenindo</i> : Process upgrading through production efficiency.....	170
6.3.1c) Case of <i>Lestari Garmenindo</i> : Functional upgrading through design and product development	172
6.3.1d) Case of <i>Cipta Garmenindo</i> : Functional upgrading through design and product development	172
6.3.1e) Case of <i>Jaya Garmenindo</i> : Functional and product upgrading through design, product development and diversification, branding as well as marketing.....	173
6.3.2 Closing remarks: To what extent is upgrading potential of Indonesian garment manufacturing firms constrained or promoted through the governance of domestic and global actors?.....	174
6.4 Conclusion.....	175

Chapter 7

Value Chain Governance and Upgrading Processes

amongst Consumer Electronics Manufacturers in Indonesia.....	178
7.1 Descriptive overview.....	179
7.2 Mechanisms for insertion into value chains.....	183
7.2.1 Patterns of value chain governance.....	186
7.2.1a) Case of <i>Pusaka Elektrindo</i> : Joint venture of Japanese lead firm in Indonesia.....	186
7.2.1b) Case of <i>Suara Elektrindo</i> : Subsidiary of South Korean lead firm in Indonesia.....	188
7.2.1c) Case of <i>Cahaya Elektrindo</i> : Domestic subcontractor of Japanese	

lead firm.....	190
7.2.1d) Case of <i>Berdikari Elektrindo</i> : Domestic subcontractor of Chinese lead firm.....	191
7.2.1e) Case of <i>Buana Elektrindo</i> : Domestic lead consumer electronics firm.....	193
7.2.1f) Case of <i>Harapan Elektrindo</i> : Domestic lead consumer electronics firm.....	196
7.2.2 Closing remarks: How are the consumer electronics manufacturing firms in Indonesia inserted into value chains?.....	197
7.3 Strategies to upgrade	199
7.3.1 The upgrading processes and trajectory.....	199
7.3.1a) Case of <i>Suara Elektrindo</i> : Process upgrading through production efficiency.....	199
7.3.1b) Case of <i>Berdikari Elektrindo</i> : Process upgrading through production efficiency.....	200
7.3.1c) Case of <i>Pusaka Elektrindo</i> : Functional upgrading through design and product development.....	201
7.3.1d) Case of <i>Cahaya Elektrindo</i> : Functional upgrading through design and component sourcing	202
7.3.1e) Case of <i>Harapan Elektrindo</i> : Process, product and functional upgrading through developing and marketing of original designs and products.....	203
7.3.1f) Case of <i>Buana Elektrindo</i> : Functional upgrading through design, product development, branding and marketing	204
7.3.2 Closing remarks: To what extent is upgrading potential of the consumer electronics manufacturers in Indonesia constrained or promoted through the governance of domestic and global actors?.....	206
7.4 Conclusion.....	207

Chapter 8

Technological Capabilities and Upgrading

amongst Garment and Consumer Electronics Manufacturers..... 210

8.1 Technological capability of the garment manufacturers in Indonesia..... 212

8.1.1 Descriptive overview of capability of the surveyed garment

manufacturers	212
8.1.2 The nature of capability and capability acquisition processes among the Indonesian garment manufacturers.....	213
8.1.2a) Case of <i>Busana Garmenindo</i> : Operative capability in production operation	216
8.1.2b) Case of <i>Tunggal Garmenindo</i> : Innovative capability in production management	218
8.1.2c) Case of <i>Jaya Garmenindo</i> : Innovative capability in design and marketing	222
8.1.2d) Cases of <i>Lestari Garmenindo</i> and <i>Cipta Garmenindo</i> : Innovative capability in design	225
8.1.3 Closing remarks: What role does technological capability play in value chain upgrading among the Indonesian garment manufacturers at the domestic and global level?.....	225
8.2 Technological capability of the consumer electronics manufacturers in Indonesia.....	227
8.2.1 Descriptive overview of capability of the surveyed consumer electronics manufacturers	227
8.2.2 The nature of capability and capability acquisition processes among the consumer electronics manufacturers in Indonesia.....	228
8.2.2a) Case of <i>Suara Elektrindo</i> : Innovative capability in production management	231
8.2.2b) Case of <i>Berdikari Elektrindo</i> : Innovative capability in production management	232
8.2.2c) Case of <i>Cahaya Elektrindo</i> : Innovative capability in design.....	232
8.2.2d) Case of <i>Pusaka Elektrindo</i> : Innovative capability in production management, design and product development.....	233
8.2.2e) Case of <i>Harapan Elektrindo</i> : Innovative capability in design and product development.....	235
8.2.2f) Case of <i>Buana Elektrindo</i> : Innovative capability in design and business development.....	240
8.2.3 Closing remarks: What role does technological capability play in value chain upgrading within the electronics manufacturers in Indonesia at the domestic and global level?.....	243

8.3 Conclusion.....	244
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Chapter 9

The Nature of Upgrading Processes in Indonesia.....246

9.1 Garment and consumer electronics firms: Comparative patterns and analysis.....	248
9.1.1 Nature of technological capability and learning processes.....	248
9.1.1a) process operative capability.....	248
9.1.1b. Process innovative capability	250
9.1.1c. Product innovative capability: Design and product development..	252
9.1.1d) Product innovative capability: Branding and marketing	253
9.1.2 Concluding remarks: What are the differences and similarities in the nature of technological capability and learning processes between the Indonesian garment and consumer electronics firm?.....	254
9.1.3 Value chains and governance structure.....	255
9.1.4 Concluding remarks: What are the differences and similarities of governance structure between the Indonesian garment and consumer electronics firms?.....	256
9.2 Relation between technological capability and value chain governance.....	257
9.2.1 Nature of governance structure and technological capability.....	257
9.2.2 Capability acquisition and learning process.....	257
9.2.3 Concluding remarks: What light does a comparison of the Indonesian garment and electronics industries shed on capability acquisition within global value chains?.....	259
9.3 Upgrading implications.....	260
9.3.1 What are the similarities and differences in upgrading processes and dynamics between the Indonesian garment and consumer electronics firms?.....	260
9.3.2 Concluding remarks: What light does a comparison of the Indonesian garment and consumer electronics sectors shed on linkages between governance and technological capability in value chain upgrading?.....	263
9.4 Conclusion.....	268

Chapter 10

Conclusion.....	270
10.1 Reviewing the study.....	270
10.2 Addressing the research questions.....	271
10.3 Implications of findings.....	274
10.3.1 on the role of local firms.....	275
10.3.2 on the knowledge flow.....	276
10.3.3 on value chain governance.....	276
10.3.4 on the policy implications.....	277
10.4 Revisiting research on upgrading processes, value chains and technological capabilities.....	278
10.5 Limitations of the study and agenda for further research.....	281
References.....	283

Appendix 1

Survey.....	294
A.1.1 Administration of survey.....	294
A.1.1.1 Invitation – in Indonesian language (original).....	294
A.1.1.2 Invitation – in English (translated).....	296
A.1.1.3 Reminder – in Indonesian language (original).....	298
A.1.2 Survey template.....	299
A.1.2.1 Survey template – in Indonesian language (original).....	304
A.1.2.2 Survey template – in Indonesian language (original) and English (translated).....	306

Appendix 2

In-depth interview.....	310
A.2.1 Interview design.....	310
A.2.2 Interview questionnaire.....	310

Total word count: 82,456

TABLES

Table 2.1 A two-dimensional matrix of technological capability.....	36
Table 2.2 Technological basis of competitive advantage.....	37
Table 2.3 Learning processes within different industrial sectors.....	38
Table 2.4 Key determinants of global value chain governance.....	47
Table 2.5 Some dynamics of global value chain governance.....	48
Table 2.6 Linkages of technological learning to export market	52
Table 2.7 Literature on upgrading	57
Table 2.8 Technological capability in the context of GVC framework	65
Table 3.1 Outcome of upgrading at the industry-level.....	74
Table 3.2 Operationalisation of survey method.....	78
Table 4.1 Leading exporters and importers of garments, 2007.....	89
Table 4.2 Classification of garment buyers.....	90
Table 4.3 Types of codes of conduct in garment value chains.....	94
Table 4.4 Impact prediction of quota abolition on US garment market measured by market share change.....	97
Table 4.5 Actual impact of quota abolition on US garment market measured by market share change.....	98
Table 4.6 Electronic product classification.....	100
Table 4.7 Leading exporters and importers of telecommunication equipment, 2007.....	101
Table 4.8 Global top EMS firms, 2006.....	105
Table 5.1 Textile and garment production.....	111
Table 5.2 Major foreign investors in textiles & garments, 1967-1989.....	112
Table 5.3 Share of major export markets of Indonesian textile and garment industry.....	113
Table 5.4 Indonesian textile highlights.....	115
Table 5.5 Indonesian garment highlights.....	116
Table 5.6 Upgrading indicators for the Indonesian garments in the US market 2005-2006.....	117
Table 5.7 Electronic production and export.....	121

Table 5.8 Export and import of electronics.....	123
Table 5.9 Upgrading indicators for the Indonesian electronics in the US market 2005-2006.....	124
Table 5.10 Indonesian consumer electronics market.....	125
Table 5.11 Summary of Indonesia's industrial objectives and policies through Repelita.....	130
Table 6.1 Garment sample profile.....	143
Table 6.2 Case studies in the context of garment sample characteristics.....	148
Table 6.3 Forms of governance of the Indonesian garment manufacturers.....	152
Table 6.4 Upgrading patterns of the Indonesian garment manufacturers.....	168
Table 7.1 Consumer electronics sample profile.....	179
Table 7.2 Case studies in the context of consumer electronics sample characteristics.....	185
Table 7.3 Governance of consumer electronics manufacturers in Indonesia	186
Table 7.4 Upgrading patterns of the consumer electronics manufacturers in Indonesia.....	199
Table 8.1 Capability of the garment sample.....	212
Table 8.2 Types of capability of the garment manufacturers.....	216
Table 8.3 Capability of the consumer electronics sample.....	227
Table 8.4 Types of capability of the consumer electronics manufacturers.....	231
Table 8.5 Capability acquisition and learning process of <i>Harapan Elektrindo</i>	237
Table 9.1 Comparative patterns of capability between the garment and consumer electronics firms in Indonesia	248
Table 9.2 Comparative patterns of the garment and consumer electronics sample...	255
Table 9.3 Actual learning processes within different types of technological capability.....	258
Table 9.4 Comparative patterns of upgrading processes.....	261

FIGURES

Figure 2.1 A simple value chain	44
Figure 2.2 Sequential patterns.....	50
Figure 2.3 Conceptual elements of GPN framework.....	53
Figure 2.4 The nodes of global flagship network.....	55
Figure 2.5 Technological capability and global value chains framework.....	58
Figure 2.6 A combined theoretical framework: Roles of local and global firms.....	64
Figure 3.1 Methods of data collection and analysis.....	76
Figure 4.1 Garment value chain.....	92
Figure 5.1 Main export destinations of Indonesian textiles and garments in 2007.....	117
Figure 5.2 Main export destinations of Indonesian electronics in 2007.....	123
Figure 6.1 Decision making process within garment manufacturers.....	146
Figure 6.2 Inter-firm relationships of <i>Tunggal Garmenindo</i>	152
Figure 6.3 Inter-firm relationships of <i>Busana Garmenindo</i>	156
Figure 6.4 Inter-firm relationships of <i>Jaya Garmenindo</i>	158
Figure 6.5 Inter-firm relationships of <i>Lestari Garmenindo</i>	162
Figure 6.6 Inter-firm relationships of <i>Cipta Garmenindo</i>	164
Figure 7.1 Decision making process within electronics manufacturers.....	181
Figure 7.2 Inter-firm relationships of <i>Pusaka Elektrindo</i>	186
Figure 7.3 Inter-firm relationships of <i>Suara Elektrindo</i>	189
Figure 7.4 Inter-firm relationships of <i>Cahaya Elektrindo</i>	190
Figure 7.5 Inter-firm relationships of <i>Berdikari Elektrindo</i>	192
Figure 7.6 Inter-firm relationships of <i>Buana Elektrindo</i>	194
Figure 7.7 Inter-firm relationships of <i>Harapan Elektrindo</i>	196
Figure 8.1 Garment production lay-out.....	215
Figure 8.2 Process for development of new electronic products.....	230

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The Indonesian manufacturing sector faces significant challenges in its attempt to upgrade and remain competitive in both domestic and global markets. Indonesian manufacturing firms are increasingly integrated into global markets via global value chain ties. Yet, little is known about how such involvement impacts upon the ability of Indonesian firms to upgrade. This study aims to understand the nature of upgrading processes within the Indonesian manufacturing sector through a comparison of the Indonesian garment and consumer electronics manufacturing firms. To gain a better understanding of upgrading processes, this study integrates the conceptual frameworks of technological capability (TC) and global value chains (GVC) in its analysis. While the GVC literature provides useful insights into the role played by global value chain leaders in assisting, or constraining, through the ways in which they govern value chain ties, the upgrading processes of local producers, the TC framework gives a valuable understanding of the role of capabilities of local manufacturing firms and their ability to undertake upgrading processes. By combining these two frameworks, this study asks the following question: what roles do governance and technological capability play in upgrading processes within the Indonesian garment and consumer electronics value chains?

To address the research question, this study gathered both quantitative and qualitative data through surveys and in-depth interviews of Indonesian garment and consumer electronics firms. Firm level case studies are analysed to obtain detailed insights into the process and dynamics of upgrading, value chain governance and capability acquisition undertaken by Indonesian garment and consumer electronics manufacturing firms.

Based on the evidence drawn from the survey and eleven case studies within the Indonesian garment and consumer electronics sectors, this study suggests that forms of value chain governance and types of technological capability both play important roles in upgrading processes. Furthermore, upgrading processes and dynamics take place not only in global value chains but also in domestic value chains. Insertion into domestic value chains may, in fact, promote the ability of some Indonesian garment and consumer electronics manufacturing firms to undertake functional upgrading.

By demonstrating that the technological capability of the Indonesian garment and consumer electronics manufacturing firms can play an important role in upgrading especially when firms are engaged in domestic value chains but is less pronounced when firms are engaged through hierarchical ties into global value chains, the study provides a more dynamic perspective than standard studies on upgrading and value chain linkages. In terms of policy, this paves the way for a more active role of local manufacturing firms from developing countries to be recognised as contributing to upgrading processes.

DECLARATION

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning

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Chapter 1

Introduction

Undertaking upgrading, refocusing value added activities

1.1 Introduction

The primary objective of this study is to understand the nature of upgrading processes within the Indonesian manufacturing sector. Indonesia is currently going through a relatively sluggish phase of industrial upgrading. This challenges its ability to remain globally competitive. During most of the 1990s the Indonesian manufacturing sector grew at over 18 per cent per annum. However, during the period of 2000-2009 the manufacturing sector's pace of growth slackened to around 5.3 per cent (www.bps.go.id). As regional East and South-east Asian economies continue to power ahead, most notably China and Vietnam, Indonesia's ability to maintain its competitiveness is increasingly being challenged, and its manufacturing firms are under pressure to upgrade. Unfortunately, however, existing studies on industrial upgrading in Indonesia fail to adequately scrutinize the impact of global pressures and challenges on the upgrading at the firm level. This study seeks to fill this gap through an in-depth analysis of upgrading processes of manufacturing firms in Indonesia.

In the era of globalisation, local producers are increasingly integrated into global markets through complex supply chains coordinated by global firms. Upgrading processes of firms nowadays often take place within global value chains that are governed by powerful firms from advanced countries. These global lead firms can play a significant role in facilitating (or even impeding) upgrading processes for local firms from developing countries. To gain a better understanding of upgrading processes within the Indonesian garment and consumer electronics manufacturing firms and their engagement within global value chains, this study draws upon the conceptual framework emanating from the global value chain (GVC) literature. The GVC framework provides insight into

the role played by global lead firms in governing their chains, and in assisting or constraining upgrading processes of local firms. However, while the GVC literature provides a useful framework for grasping the role of governance of global lead firms in upgrading processes, it does not provide an understanding of how local firms might determine their own upgrading by enhancing their own capabilities. Therefore, to complement the GVC framework, this study brings in the technological capability (TC) literature that gives useful insights on the role of local firms in capability acquisition and formation that affect the ability of firms to upgrade. By integrating the GVC and TC frameworks, this study seeks to not only understand whether and how Indonesian manufacturing firms have managed to upgrade, but also to explore the interaction of value chain governance and technological capabilities in bringing this about.

Given the diversity of the Indonesian manufacturing sector, this study undertakes a comparative analysis of the two most critical sectors in the Indonesian manufacturing economy: namely, garments and electronics. These two sectors are important in providing employment and are the country's leading manufacturing export sectors. Furthermore the two sectors indicate different nature of capability, learning process and governance structure as well. By undertaking a comparative study of the garment and electronics sectors, this thesis seeks to generate a more nuanced understanding of the distinctive roles played by the governance of global lead firms and the nature of local technological capabilities of Indonesian manufacturers in bringing about different upgrading processes. By investigating two quite distinct sectors this study seeks to generate interesting comparative patterns of upgrading processes and their linkage to distinct patterns of value chain governance and technological capabilities. Thus, the core or overarching research question of this study is:

What roles do value chain governance and firm-level technological capability play in upgrading processes within the Indonesian garment and electronics value chains?

The rest of this introductory chapter is set out as follows: the next section provides a brief historical overview on the recent trends in Indonesian manufacturing. Section 1.3 identifies the gaps in the literature that this study seeks to fill. Section 1.4 details the study's primary and subsidiary research questions, and Section 1.5 outlines the structure of the thesis.

1.2 Recent trends in Indonesian manufacturing

As mentioned above, Indonesia is currently facing problems in terms of stagnation of industrial upgrading relative to other countries in the region and its leading industrial competitors. This is in sharp contrast to the dynamic process of industrial development that it experienced in earlier years. During the mid 1980s to the mid 1990s, the Indonesian economy underwent a remarkable process of economic transformation, reflected by a dramatic rise in the relative importance of the manufacturing sector alongside a rapid decline of agriculture as well as oil and gas sectors (Hill, 1996; Aswicahyono & Feridhanusetyawan, 2004 and Thee, 2006). In fact, there was double-digit annual growth in the gross value added of manufacturing during that period, which exceeded the gross domestic product (GDP) growth rate. The manufacturing sector grew at an average rate of 18.4 per cent, while GDP average growth was only 9.6 per cent per annum. The contribution of the manufacturing sector to total GDP increased from a mere 13.5 per cent in 1985 to 25.0 per cent in 1998 (Arlini & Suatmi, 2006).

The growth of the manufacturing sector was also aligned with its export performance. During the period from 1986 to 1997, the export of manufactured goods grew at an average rate of 61.4 per cent per annum, while total exports of merchandise and mineral fuels grew by only 23.7 per cent and 17.8 per cent per annum respectively (ICSEAD, 2007). In 1986, the contribution of mineral fuels exports was 56.1 per cent and the share of manufactured exports was 20.2 per cent. By 1998 the contribution of manufactured exports to total exports had increased to 45.5 per cent, while the share of mineral fuels decreased to 19.3 per cent. A closer look within the manufacturing sector suggested that

the remarkable export boom was primarily due to an outstanding growth of exports from several key industrial sectors: namely, textiles, apparel, footwear, leather products and wood products. In 1986, these five industrial sectors accounted for 66.7 per cent of total manufacturing exports (ICSEAD, 2007). Consequently, by the late 1990s the manufacturing sector had become the key driver behind Indonesian economic growth. The strong economic performance and transformation of Indonesia during that period attracted considerable international attention, with Indonesia being identified as a development model for other developing countries (World Bank, 1993).

However, the development model was not sustainable in the face of the Asian Crisis which hit the country in 1997/1998. In 1998, GDP growth fell by -13.3 per cent, as most sectors experienced a setback, including the manufacturing sector which had a negative growth of -11.4 per cent. The devaluation of the Indonesian currency (*Rupiah*) in 1997 and 1998 did not help in boosting Indonesian export performance. The export of merchandise grew at only 8.6 per cent, while the export of manufactured goods fell by -4.2 per cent. In fact, the problems regarding the export of manufactured goods had been detected even before the Crisis. In the period of 1993-1997, the growth of manufacturing exports declined at an average rate of 4.3 per cent annually compared to the 61.4 per cent growth during the preceding five years. The problem was particularly apparent in exports of textiles, apparel, footwear and wood products which grew negatively during that period. This slowdown in the growth of manufactured exports prompted Indonesian policy makers and economists to assess the causes of this decline. Notably, the Government of Indonesia initiated studies by the Harvard Institute of International Development and leading scholars (Sanjaya Lall and Kishore Rao) to look into this problem. Both studies had similar points of recommendation and suggested that Indonesia should deepen the export base of the manufacturing sector by increasing domestic-content exports and building higher value added exports (Thee, 2006).

After the Crisis, industrial upgrading continued to take place in Indonesia, as reflected by the changes in production and export structure within the manufacturing sector. This is

indicated by a decline in the relative importance of labour-intensive and natural resources-intensive industrial sectors (e.g. garments, footwear and wooden products) accompanied by a rise in the relative importance of capital- and technology-intensive industries (e.g. electronics and machinery). However, industrial upgrading within Indonesia has been slower than in other Asian countries, particularly China (Aswicahyono and Feridhanusetyawan, 2004; Bird & Hill, 2005, Thee, 2006). For instance, during the period of 2000-2008, China increased its share of machinery-electronics exports from 33.5 per cent to 45.7 per cent and lowered the share of garments-footwear-wooden products exports from 22.8 per cent to 13.6 per cent. In the same period, Indonesia had lowered the share of garments-footwear-wooden product exports from 22.5 per cent to 19.2 per cent but it could not increase the share of machinery-electronics exports. The share of Indonesian exports from machinery-electronics even declined from 28.9 per cent to 26.1 per cent (comtrade.un.org). Thus upgrading processes become a crucial issue within the Indonesian manufacturing sector that attracted the author as a potential field of research.

1.3 A gap in the literature

This study is located in the emerging literature on upgrading processes within developing countries and factors explaining the processes. The relatively slow rate of industrial upgrading in Indonesia has been analysed by scholars who suggest various strategies to facilitate further industrial upgrading. For instance, Aswicahyono and Feridhanusetyawan (2004) argued that the sub optimal industrial upgrading in Indonesia was due to policy deficiencies and lack of coordination of policies. They asserted that the slow industrial upgrading in Indonesia was due to the automatic adjustment process of climbing up the ladder in terms of comparative advantages, without any effort to direct the adjustment. They suggested that interventions on trade and industry policies were required to generate optimal and efficient upgrading outcomes. Meanwhile Thee (2006) suggested that Indonesia's lack of capability, such as in procurement, production, engineering, design and marketing, meant that for exports of manufactured goods it continued to rely heavily

on low value added products (i.e. resource-based, low skilled and labour intensive). To upgrade the manufacturing sector, he suggested an improvement of the investment climate in Indonesia and incentive systems to encourage firms to invest in developing their capability.

The existing literature mostly analyses upgrading processes at the industry level by highlighting the shifts from lower value added to higher value added industrial sector. The literature suggests that industrial upgrading will take place once the structures of production and exports of the Indonesian manufacturing sector are moving from labour- and natural resources-intensive sectors (e.g. garments, footwear and wooden furniture) to capital- and technology-intensive industries (e.g. electronics and machinery) (Aswicahyono and Feridhanusetyawan, 2004; Bird & Hill, 2005; Thee, 2006). In fact, upgrading processes can also be examined at the firm level in which it is achieved once the Indonesian firm progresses toward high skill content activities and functions. Furthermore, the studies have so far identified the lack of government intervention policies and the capability of firms as key factors in the slow rate of industrial upgrading in Indonesia. However, little attention has been given to investigating how the slowness to upgrade might be linked to emerging global challenges. Nowadays, upgrading often takes place in the context of the rising trends of fragmentation and integration in global economic activities. Global economic activities today are not managed solely by countries, but are increasingly coordinated by global firms as a part of their production and distribution systems (Ernst, 2001; Dicken, 1998). As a result, we do not know much about upgrading outcome of the Indonesian firms in the context of their engagement in global value chains or production networks. Neither do we know how the Indonesian firms responds to the opportunities and challenges of global value chains and production networks or the implications arising from the governance of global lead firms for upgrading processes. This study attempts to address these gaps by focusing the investigation on upgrading processes of Indonesian manufacturing firms within global value chains and production networks. Consequently, attention of this study will be paid

largely to the roles played by global firms in influencing upgrading processes of the Indonesian manufacturing firms.

The significance of the role of global firms is determined by three basic characteristics:

(a) its coordination and control of various stages of individual production chains within and between different countries; (b) its potential ability to take advantage of geographical differences in the distribution of factors of production (e.g. natural resources, capital, labour) and in state policies (e.g. taxes, trade barrier, subsidies); and (c) its potential geographical flexibility - an ability to switch and to re-switch its resources and operations between locations at an international, or even a global, scale. (Dicken, 1998: 177)

Global market integration, intensification of competition and cooperation, and rapid technological advancement has driven global firms to extend their economic activities beyond their borders and to outsource some activities to independent firms. Global firms have made considerable efforts to place each activity in the most suitable sites and firms around the world in terms of complementary advantages. Consequently, global firms play a significant role in determining the industrial structure and performance of countries through their decisions on these locations (Ernst, 2001). The integrative nature of global value chains and production networks provides new opportunities for developing countries to join the global production and distribution systems coordinated by these global firms; and also drives such countries to seek opportunities for continuous upgrading in order to retain their competitiveness. The globalisation of economic activities has generated all sorts of benefits and challenges for developing countries. On the one hand, the relocation and outsourcing of economic activities may increase the demand for labour and thus expand employment in developing countries. Moreover, the developing countries often make use of global firms to access knowledge and capability required to carry out the upgrading process. Many cases have shown that successful industrial upgrading was actually based on integration into the global production and distribution systems which were established by global firms (Ernst, 2001). But on the other hand, integration into global value chains or production networks may cause the

exploitation of workers in developing countries, with competition based on lower wages and declining labour standards leading to a 'race to the bottom', 'immiserising growth' and 'low road growth' (Kaplinsky, 2005). Therefore this study attempts to investigate the impact of integration into global value chains on upgrading processes of the Indonesian manufacturing firms.

A number of theoretical frameworks have been utilised to understand upgrading processes in the global context. One of these, the global value chain (GVC) framework, provides useful conceptual and analytical tools in explaining how firms, particularly in developing countries, upgrade. The GVC framework acknowledges the notion of upgrading which refers to the ways in which firms add value to their activities to bring products and services from conception to market. Upgrading is not only achieved through an inter-sectoral shift, but also through an involvement in higher value added functions within same sectors, and through improvements in products and production processes. Furthermore, the GVC framework suggests that the upgrading processes of local firms from developing countries often takes place within value chains that are coordinated and governed by powerful lead firms from advanced countries. Upgrading refers to processes in which local firms engaged in global value chains increase value added of their activities through the advancement of their position in the chains. These functional relationships indicate that value chain governance is important in understanding how and in what forms upgrading is brought about. Thus the GVC framework highlights the role played by the global lead firms in influencing upgrading processes of local firms from developing countries.

Within the GVC literature, upgrading processes are often assumed to be the result of local firms' acquisition of new knowledge and capability from global lead firms (Gereffi 1996, 1999; Kaplinsky & Morris, 2001; Humphrey & Schmitz, 2002). However, the literature does not explicitly include an analysis of capability acquisition processes of local firms in their attempts to upgrade. Therefore upgrading may also be achieved without new knowledge and capability acquisition by local firms from linkages within the

chains. For instance, local firms from developing countries may increase value added of their process and product by squeezing labour costs or due to a decline in input prices (Morrison et al., 2008; Sato & Fujita, 2009). Therefore, to complement the GVC analysis, this study brings in the technological capability (TC) approach to provide a conceptual framework in examining the process of capability acquisition of the Indonesian manufacturing firms in their attempts to upgrade.

The TC literature highlights the nature of technological capability, capability acquisition and learning process at the firm level. The TC framework offers insights into the distinctive typology of capability. Technological capability can be classified by the functions undertaken by firms and by technological complexity of these tasks. Thus firms are required to upgrade their technological capability to manage and generate technological change. Furthermore, the TC literature aids understanding of the processes and mechanisms of capability acquisition adopted by firms. Firms may acquire new knowledge and capability from different sources, including suppliers, internal research and development (R&D) or users. Nevertheless, capability acquisition is a process since technological capability is neither automatically nor easily acquired. The TC framework asserts that firms have to put in effort in terms of investment and learning to gain mastery of new technological capabilities. Bringing together the significant conceptual frameworks of the GVC and the TC literature will result in a more robust analysis of the upgrading processes within the Indonesian manufacturing firms. While the GVC literature provides useful insights into the role played by global value chain leaders in assisting or constraining upgrading processes of Indonesian firms, the TC framework provides a valuable understanding on the role of capability of firms in upgrading.

Referring to the gap in the literature mentioned above, this study attempts to bridge the empirical gap in respect of upgrading processes within the Indonesian manufacturing firm and the analytical gap in terms of the GVC and TC literature. The Indonesian manufacturing firms are integrating into global value chains and striving to upgrade. However, it is not clear whether the integration into global value chains will

automatically lead to upgrading (downgrading could be possible), unless technological capability of the Indonesian manufacturing firms can also be upgraded. Therefore, the study needs to examine the connection between governance of value chains and technological capability of the Indonesian manufacturing firms to understand the nature of upgrading processes within the Indonesian manufacturing firms. Recent literature on upgrading processes within the GVC framework inadequately explores the nature of technological capability and the capability acquisition and formation. Meanwhile, the TC literature takes insufficient account of the role of global lead firms as a source of knowledge. This study therefore combines the two analytical approaches in an attempt to address the gap through the research question: what roles do governance and technological capability play in upgrading processes within the Indonesian garment and electronics value chains?

1.4 Research question

As mentioned above, the overarching, or core, research question that this study seeks to address is: *what roles do value chain governance and firm-level technological capability play in upgrading processes within the Indonesian garment and electronics value chains?*

This overarching question leads to further sub-questions:

1. What roles do governance and technological capability play in the analysis of upgrading processes within the national and global value chain literature?
2. How are the Indonesian garment and electronics manufacturing firms inserted into value chains? To what extent is their upgrading potential constrained or promoted through the nature of value chain governance of domestic and global actors?

3. What role does technological capability play in value chain upgrading of the Indonesian garment and electronics manufacturing firms at the domestic and global levels?

4. What light does a comparison of the Indonesian garment and electronics shed on linkages between governance and technological capability in the analysis of value chain upgrading?

Upgrading processes differ across countries and industrial sectors and also change over time. Indonesia provides a valuable lesson for other developing countries which are encountering similar challenges due to globalisation. Indonesia experienced periods of rapid and slow economic transformation in adjusting to the global changes. Nowadays, Indonesia is struggling to get back on its economic development path in the new global environment. Indonesia provides an ideal example of manufacturing sector pursuing the processes and path of upgrading in order to retain engagement in global value chains.

The study limits the scope of its investigation to the garment and electronics sectors. Within the Indonesian economy, garments and electronics are the most important manufacturing sectors in providing employment, generating foreign exchange, and promoting economic growth. For instance in 2007, the large- and medium-sized garment and electronics manufacturing firms absorbed 16.5 per cent of total employment (www.kemenperin.go.id). Meanwhile 30.6 per cent of Indonesia's total manufacturing export in 2008 came from garments and electronics (comtrade.un.org). Moreover, the two industrial sectors have been engaged in the export-driven global value chains for decades. In relation to the conceptual framework of technological capability and governance structure, the two sectors indicate different natures. Garment and electronics sectors have different technological composition, in which the garment sector is at the low end of the technological spectrum; while the electronics are more technologically advanced involving advanced design, product engineering, research and manufacturing skills (Lall, 2001). Furthermore, the two sectors have different sources of technological

accumulation. Garment sector tends to acquire technological capability through a linkage with input and machinery suppliers while electronics sector acquires capability through their internal research and development (Bell & Pavitt, 1993). Meanwhile the global garment and electronics sectors insert into different forms of value chain governance. Garment sector is likely to form captive or relational value chains, while electronics sector tends to establish hierarchy or modular value chains (Gereffi et. al., 2005). The different nature of garment and electronics sectors in term of technological capability and accumulation, as well as governance structure, may bring about different upgrading processes and trajectory. Thus a comparative analysis of the two sectors is likely to result in interesting insights into the upgrading processes and trajectory undertaken by Indonesian manufacturing firms.

1.5 Structure

The thesis is structured as follows: Chapter two reviews the literature on upgrading. A number of conceptual frameworks have been drawn on and applied to understand upgrading processes, particularly within developing countries. Subsequently the chapter highlights the GVC framework and suggests an analytical basis for bringing together the GVC framework and the TC literature in order to generate insights on the roles played by value chain governance and technological capability in upgrading processes at the firm level within the Indonesian garment and electronics sectors.

Chapter three outlines the methods of data collection and analysis used to address the research questions posed in this study. The chapter begins by stating the key research questions and propositions, followed by a discussion of survey and in-depth interview methods used for data collection. Furthermore, this chapter examines case study research undertaken in pursuit of more detailed and in-depth analysis. It also discusses some of the methodological issues and challenges that emerged in the course of the study.

Chapter four reviews the shifts within the global garment and electronics value chains. The chapter points out the changes in the global landscape that have affected the insertion of the Indonesian garment and electronics sectors into global value chains. In global garment value chains, the chapter highlights the emergence of global branded marketers and retailers that govern the chains and the abolition of the multi fibre arrangement (MFA) in 2005. Within the global electronics value chain, the chapter focuses on the emergence of value chain modularity and the rise of global contract manufacturers.

Chapter five assesses the dynamics of the Indonesian garment and electronics sectors at the global level. The chapter examines the modes of insertion of the Indonesian garment and electronics sectors into global value chains over time. Furthermore, it reviews upgrading outcomes of the Indonesian garment and electronics sectors. The chapter also describes the role of the Government of Indonesia in supporting the two sectors' engagement in global value chains.

Chapter six presents empirical findings on the mechanisms of insertion into value chains and upgrading processes undertaken by Indonesian garment manufacturers. By drawing on evidence from the primary survey of 22 garment manufacturers in Indonesia and a more detailed analysis of 5 firm cases, the chapter demonstrates the different upgrading processes undertaken by the Indonesian garment manufacturing firms. Furthermore, the garment manufacturers engage in different forms of value chain governance. Therefore, upgrading processes of the Indonesian garment manufacturing firms tend to be influenced by governance of value chains in which they are inserted. Differences in upgrading processes are discovered not only across the case studies but also within individual garment manufacturers. Thus the individual garment manufacturer in Indonesia is able to engage simultaneously in different forms of value chain governance.

Chapter seven presents empirical evidence on how the consumer electronics manufacturing firms in Indonesia become inserted into value chains and undertake upgrading processes. Again by analysing evidence from the primary survey of 15

Indonesian consumer electronics firms and detailed insights from 6 firm cases, the chapter shows the distinctions in upgrading processes between the manufacturers. The upgrading processes of the consumer electronics manufacturers seem to be linked to the distinct forms of value chains governance in which they are engaged.

Chapter eight assesses the nature of technological capability of the Indonesian garment and consumer electronics manufacturers. Based on evidence drawn from the surveys and the selected case studies, the chapter demonstrates the different types of capability possessed and exploited by the garment and consumer electronics manufacturers to undertake their activities. Furthermore, the chapter also shows the differences in capability acquisition and the learning processes involved in acquiring technological capabilities. This chapter argues that the nature of capability has a significant effect on upgrading processes of the Indonesian garment and consumer electronics manufacturers.

Chapter nine provides comparative analysis of governance and technological capability in affecting upgrading processes between the garment and consumer electronics firms in Indonesia. It is true that there are differences in the governance structure and technology intensity between the garment and consumer electronics firms; however, similar insights arise from the two sectors in as far as the garment and consumer electronics manufacturers inserted in global value chains are mostly found to undertake process upgrading. This is because the garment and consumer electronics manufacturers are engaged in captive value chains and hierarchical governance structures in which global buyers and lead firms have direct ownership and a high degree of control over the Indonesian manufacturers. The Indonesian garment and electronics manufacturers exploit process operative capability to complement core competencies of global buyers and lead firms in accomplishing the whole activities of the chains. Meanwhile, functional upgrading mostly takes place within domestic and regional value chains in which the Indonesian garment and consumer electronics manufacturers are able to engage in more symmetrical relationships (i.e. modular or market structure) with buyers. They are able to

exploit not only process operative and innovative capabilities, but also product innovative capability to undertake design, product development, branding and marketing functions.

Chapter ten concludes by reviewing the research process and main empirical findings of this study in its attempts to address the research questions and place them within a bigger picture. The chapter begins with a discussion of how the study addresses the research questions by drawing together empirical evidence obtained from the survey of the Indonesian garment and consumer electronics sectors and the rich insights across the case studies within the two sectors. Furthermore, the chapter explores the implications of the findings and the main contributions of the study in terms of the current body of knowledge, policy formulation, and applicability to other developing countries, and also makes suggestions for further research.

Chapter 2

Revisiting upgrading processes

Theoretical standpoint

The Indonesian manufacturing sector is facing challenges in its attempt to upgrade in the global context. The purpose of this chapter is to consider some of the key analytical frameworks that can help us to understand how upgrading processes in manufacturing can, and are, brought about. Understanding the distinct concepts and perspectives developed by these frameworks will enable the author to recognise the strengths and drawbacks inherent in a particular framework and provide a foundation for identifying compatibility and linkages across complementary frameworks. Therefore, this chapter seeks to address the question: what role do governance and technological capability play in the analysis of upgrading processes within the national and global value chains literature? This chapter provides (i) an insight into different concepts of upgrading, and actors and factors that influence upgrading; (ii) a basis for integration of the global value chains and the technological capability frameworks in addressing the research questions; and, (iii) an analytical tool to apply the integrative approach in practice.

A number of theoretical frameworks have been developed and applied to investigate upgrading processes, particularly in developing countries. Some frameworks highlight the role played by domestic factors and actors in upgrading processes, while others focus on the actions of global actors in influencing upgrading processes. Two prominent approaches within the literature come from the global value chain (GVC) and the technological capability (TC) frameworks. Both approaches are central to understanding the core research agenda of this study, however, in the view of this study, neither frameworks alone is sufficient to offer a thorough understanding of manufacturing upgrading processes are brought about. To address this gap, this study seeks to combine the GVC and TC frameworks.

This chapter is organised as follows: section 2.1 discusses concept of upgrading, those are utilised in some literature and a definition that will be used in this study. Section 2.2 explores technological capability framework to understand process of knowledge acquisition and capability formation at the firm level. Section 2.3 explores GVC and other conceptual frameworks which suggest active role played by global actors in upgrading processes through establishing relationships with local firms from developing countries. Recognising strengths and drawbacks of these theoretical frameworks in investigating upgrading processes, section 2.4 discusses a basis for integrating the GVC and the TC frameworks into a more comprehensive approach. The integrative approach is expected to result in better understanding of upgrading processes within the Indonesian garment and electronics sectors. Finally, section 2.5 draws conclusions.

2.1 Concept of upgrading

What is upgrading? Existing literature refers to upgrading with various definitions and concepts. Upgrading may be measured by productivity or performance of firms, however it may not be enough to explain the concept. Moreover, upgrading may be examined at the firm, the industry and the country level. Hence, before continuing with further discussion, it is necessary to clarify the concept of upgrading utilised throughout this study. Ernst (2001) categorised upgrading into inter-industry upgrading, inter-factorial upgrading, upgrading of demand, upgrading along functional activities and industrial deepening. At the industry and country level, upgrading is defined as substantial changes in a country's specialisation and knowledge base that increase its capacity for value generation (Ernst, 2000). Studies of upgrading at the industry and country level mostly focus on the inter-industry and inter-factorial upgrading; based on low-wage, low-skill industrial sectors and high-wage, high-skill industries. At the firm level, upgrading refer to upgrading along functional activities; from low-end to higher-end value chain stages; and industrial deepening; from tangible and intangible knowledge (Ernst, 2001).

Gereffi (1999) defined upgrading as shifts to move to more profitable and/or technology-intensive, capital-intensive and skill-intensive economic niches. Again, he distinguished upgrading into different level of analysis; that are: within factories,

within inter-firm networks, within local and national economies, and within regions. At the firm level, upgrading refers to a shift of firms to produce from cheap to expensive products, from simple to complex product and from small to large order. Humphrey and Schmitz (2002) defined upgrading as processes of firms to increase skill content of their activities and/or move into market niches which have entry barriers. Furthermore, they also distinguished between different types of upgrading; that are: process upgrading, product upgrading and functional upgrading and inter-sectoral upgrading. Similarly, Kaplinsky (2005) distinguished upgrading into: process, product, functional and chain upgrading.

Ernst (2001) acknowledged the necessity of 'learning' and 'innovation efforts' by the firms throughout the upgrading processes. Innovation refer to processes by which firms master and implement product design and production process that are new to them, regardless of whether these are new to their competitors or not (Nelson & Rosenberg, 1993; Ernst et. al., 1998). Thus upgrading and innovation are closely related. On the contrary, Kaplinsky and Readman (2005) distinguished between upgrading and innovation, in which upgrading places innovation in a relative context; that is how fast the firms innovate in comparison to their competitors.

In the context of this study, upgrading focuses on analysis at the firm level and refers to processes of a firm in increasing the skill content of its activities within value chains, through new knowledge acquisition and capability formation. Therefore, upgrading processes are a result of capability acquisition that enables firm to shift from lower-skill to higher-skill activities. An important assumption that underlies the concept of upgrading within this study is that the functional upgrading is the ultimate goal to be achieved by firm; since activities such as design, product development, branding and marketing, are regarded as high-skill activities which demand firm to acquire different types of capability.

2.2 Technological capability: Intra-firm upgrading processes

Subsection 2.1 discussed upgrading that refers to the processes of firm in acquiring and accumulating capability which enables firm to progress toward higher-skill activities. This subsection examines the process of knowledge acquisition and capability formation at the firm-level, by exploring technological capability framework. The framework emphasises the firms' own technological efforts in acquiring the capability to upgrade¹. Technological capability is defined as skills (i.e. technical, managerial or organisational) needed to utilise technology efficiently and accomplish any process of technological change or innovation (Lall, 2001). Technological capability can be classified into different types. Ernst et al. (1998) categorised technological capability into production, investment, minor change, strategic marketing, linkage and major change capabilities. Meanwhile, Lall (1992) classified technological capability into a matrix which distinguishes between functions and degree of complexity. Functions within firms are classified into investment, production and linkages; while degree of complexity is categorised into routine, adaptive and innovative. Thus Lall (1992) elaborated technological capability in a two-dimensional matrix of functions and degrees of complexity (Table 2.1).

¹ Some literature discuss inter-firm linkages to accelerate process of capability acquisition of firms (Schmitz, 1999; Schmitz & Nadvi, 1999; Piore & Sabel, 1984; Porter, 1998; Freeman, 1995; Nelson & Rosenberg, 1993; Freeman, 1995; Lundvall, 2007)

Table 2.1 A two-dimensional matrix of technological capability

Degree of complexity	Investment		Production			Linkages
	Pre-investment	Project execution	Process engineering	Product engineering	Industrial engineering	Linkages within economy
Basic (Simple, routine, Experience-based)	Pre-feasibility and feasibility studies; site selection; scheduling of investment	Civil construction; ancillary services; equipment erection; commissioning	Debugging; balancing; quality control preventive maintenance; assimilation of process technology	Assimilation of product design; minor adaptation to market needs	Work flow; scheduling; time motion studies; inventory control	Local procurement of goods and services; information exchange with suppliers
Intermediate (Adaptive, duplicative, Search-based)	Search for technology source; negotiation of contracts; bargaining suitable terms; info. Systems	Equipment procurement; detailed engineering; training and recruitment of skilled personnel	Equipment stretching; process adaptation and cost saving; licensing new technology	Product quality improvement; licensing and assimilating new imported product technology	Monitoring productivity; improved coordination	Technology transfer of local suppliers; coordinated design; S&T links
Advanced (Innovative, risky, Research-based)		Basic process design; equipment design and supply	In-house process innovation; basic research	In-house product innovation; basic research		Turnkey capability; cooperative R&D; licensing own technology to others'

Source: adapted from Table 1 (Lall, 1992: 167)

Having technological capability, horizontally in functions and vertically in degrees of complexity, means that innovativeness should not be treated as a standalone category of capability. Therefore, within a particular function, firms may carry out simple routine activities, adaptive activities or even engage in innovative capability. Innovativeness refers to a quality or a depth in which functions are achieved to different extents (Bell & Albu, 1999). To be competitive, firms have to move both horizontally and vertically within the matrix. Accordingly, firms have to upgrade their technological capability by shifting from production to linkages and from simple to innovative activities as well.

In line with technological upgrading, at the product-level, products cannot be classified into a dichotomy of low-tech and high-tech product. Instead, there are various product categories based on technology composition and structure as shown in Table 2.2. Therefore, product upgrading is a shift from labour-intensive to scale-intensive production, to differentiated products, and ultimately to science-based products which use leading edge technologies.

Table 2.2 Technological basis of competitive advantage

Activity group	Major competitive factor	Examples
Resource-intensive	Access to natural resources	Aluminium, food processing, oil refining
Labour-intensive	Cost of unskilled, semi skilled labour	Garments, footwear, toys
Scale-intensive	Length of production runs	Steel, autos, paper, chemicals
Differentiated	Product tailored to varied demand	Advanced machinery, TVs, power generating equipment
Science-based	Rapid application of science to technology	Electronics, biotechnology, pharmaceuticals

Source: adapted from Table 7.2 (Lall, 2001: 276)

The TC framework, in contrast to the neoclassical approach, assumes that technological capability of firms or nations is neither automatically nor efficiently acquired over time due simply to the cost of factors and product prices. Technology is not freely available from a known 'shelf'; instead it requires purposive efforts and investment to decide on, to acquire, and to absorb the best technology.

Table 2.3 Learning processes within different industrial sectors

Characteristics	Category of firm				
	Supplier dominated	Scale intensive	Information intensive	Science based	Specialised supplier
Typical sector	Agriculture, housing, private services, traditional manufacturing	Bulk materials, consumer durables, automobiles, civil engineering	Finance, retailing, publishing, travel	Electrical-electronics, chemicals	Capital goods, instruments, software
Main focus of technological activities	Cost reduction	mixed	mixed	mixed	Product improvement
Main sources of technological accumulation	Suppliers, production learning, advisory services	Production engineering, production learning, suppliers, design	Corporate software & system eng., equipment & software suppliers	Corporate R&D, Basic research, production engineering, design	Design & development, advanced users
Main direction of technological accumulation	Process technology & related equipment	Process technology & related equipment	Process technology & related software	Technology-related products	Product improvement
Main channels of imitation and technological transfer	Purchase of equipment & related services	Purchase of equipment, know-how licensing & related training, reverse engineering	Purchase of equipment & software, reverse engineering	Reverse engineering, R&D, hiring experienced engineers & scientists	Reverse engineering, learning from advanced users
Main methods of protection against imitation	Non-technical (marketing, trademark)	Process secrecy, design and operating know-how	Copyright, design & operating know-how	R&D know-how, patents, design & operating know-how	Design know-how, patents, knowledge of users' needs
Main strategic management tasks	Use technology generated elsewhere to reinforce other competitive advantages	Incremental integration of new technology in complex systems, improvement & diffusion of best practice, exploit process technology advantages	Design and operation of complex information-processing systems, development of related products	Develop related products, exploit basic science, obtain complementary assets, reconfiguring divisional responsibilities	Monitor advanced users needs, integrate new technology in products

Source: adapted from Table 1 (Bell & Pavitt, 1993: 180)

Technological knowledge is often tacit or implicit, difficult to understand and costly to diffuse (Lall, 2001). Knowledge has different dimensions which determine the

effectiveness of knowledge transfer and adoption (Kogut & Zander, 1995). Some types of technological knowledge are explicitly embodied in capital goods, operating manuals or product specifications which are easy to diffuse. Other types are implicitly embedded in people or organisations and are difficult to transfer. Consequently, the effective knowledge transfer and adoption by firms requires a learning process. Learning involves a process in which firms acquire explicit and tacit technological knowledge to strengthen their technological capability.

The learning process of firms differs between the types of technological knowledge. Firms may learn while producing goods (i.e. learning by doing) or using capital goods (i.e. learning by using) to acquire explicit technological knowledge. On the other hand, passive learning by doing may not be enough to acquire tacit technological knowledge (Bell & Albu, 1999). Furthermore, the patterns of learning processes tend to differ not only between types of technological knowledge and capability but also among industrial sectors. Thus firms within different industrial sectors follow diverse methods of learning in acquiring technological knowledge. For instance, firms in a particular sector may acquire technological capability from suppliers of machinery or production inputs, while firms in other sectors obtain knowledge from research and development efforts (Bell & Pavitt, 1993).

The objective of this study is to understand the nature of upgrading processes at the firm level within the Indonesian manufacturing sector. The TC framework is appropriate for addressing the research questions and helping the author to achieve the objective of this study. The framework provides analysis at the firm-level and explicitly relates upgrading processes of firms to their capability formation. The TC framework recognises the relationships between national firms and international actors. This is because firms, particularly from developing countries, are still dependent on new technology and innovation developed in advanced countries. For instance, firms from Indonesia may access new knowledge and capability from foreign input and machinery suppliers. However, the TC framework suggests that the role of firms' own efforts is more fundamental. The learning process of firms strengthens their absorptive capacity to gain the most from imported technology and innovation. Further innovation and upgrading will depend upon the efforts of the

receiving firms. Firms with poor absorptive capacity will only obtain simple technological capability and knowledge. Moreover, international sources may be an effective means of transferring the results of innovation, but not necessarily the innovative capability itself (Lall, 1996).

The TC framework stresses firms' own efforts to acquire new knowledge and capability. However, the TC framework pays little attention to the role played by global actors in assisting or restraining firms' efforts to acquire capability and to upgrade. Therefore, in order to obtain a better understanding of upgrading processes within the Indonesian manufacturing sector and achieve its objective, this study will take into account the role of global firms. Section 2.3 highlights certain conceptual frameworks which relate upgrading processes, particularly in developing countries, to the role of global firms.

2.3 Global value chains: Inter-firms upgrading processes

The previous section discussed the technological capability framework that highlight upgrading as a result of firms' own efforts to acquire knowledge and capability. Little attention is paid to inter-firm linkages particularly to global actors. This needs to be incorporated in order to obtain complete understanding of upgrading processes and achieve the objective of this study. This section looks at the role played by global actors in upgrading of firms. Global actors and factors influence upgrading processes of local firms from developing countries, in different ways: (i) source of demanding market. Global market is more demanding than the domestic market. The requirements imposed by global competition on local firms create a powerful incentive for them to upgrade. (ii) Source of technology and knowledge. Local firms can access technology from more advanced countries, and by interacting with global actors (e.g. customer, input/machinery suppliers and competitors) local firms will be exposed to global best practice and gain opportunities to access technology or knowledge which is necessary to furthering their growth.

The nature of involvement on the international scale is distinguished between 'internationalisation' and 'globalisation'. Internationalisation refers to the extension of economic activities across national boundaries, while globalisation entails not only the geographic extension of economic activities across borders but also functional integration and organisation of such internationally dispersed activities (Dicken, 1998). Internationalisation is reflected through international trade in goods and services between countries (i.e. arm's length market relationships). The Heckscher-Ohlin theory of trade assumes that factors of production (i.e. capital, labour, land and technology) do not move between countries, and the utilisation of a country's factors of production across the world is achieved through international movement of finished goods. Consequently labour-abundant countries will export labour-intensive products and import capital-intensive products, while capital-abundant countries will export capital-intensive products and import labour-intensive products.

In reality, internationalisation is also indicated by a movement of capital and technology. Under the system of international trade protectionism, the movement of capital and technology between countries also becomes a way to utilise factors. Therefore, capital will flow from capital-abundant countries to labour-abundant and capital-scarce countries. Meanwhile, technology is transferred from advanced countries to less developed nations since new technology and innovation are mostly developed in advanced countries. In many cases, advanced countries transfer technology to less developed countries, in combination with capital and managerial skills, through foreign direct investment (Kojima, 1978). Liberalisation and deregulation of international trade and investment, and the rapid development of technologies, particularly in transport, communication and information, have led to the globalisation of economic activities and geographical spread of firms. There is a new divide in industrial organisation in which foreign direct investment is augmented by a network system whereby distinct functions or value added activities may be located in dispersed sites to optimise the division of labour around the world. The network system breaks down the production processes into a variety of discrete tasks and then integrates their dispersed functions into a global production and distribution system (Ernst, 2001; Dicken, 1998).

Fragmentation and integration of global economic activities affects upgrading processes of local firms in developing countries. Global factors and actors are expected to become a more powerful determinant of upgrading. In many countries, especially in the East Asian newly industrialised economies (NIEs), successful upgrading was, to some extent, based on their integration into this global production and distribution system. Many scholars (Hobday, 1995; Gereffi, 1996; Ernst, 2000) have extensively explored how the East Asian NIEs, such as South Korea, Taiwan, Singapore and Hong Kong, upgraded their manufacturing sectors by integrating into the global system. The following sub-sections assess global commodity chains/global value chains and other key theoretical frameworks that relate upgrading of firms to the process of involvement of firms across international boundaries, namely: (i) the 'flying geese' model, (ii) the latecomer model; and (iii) the global production network. These different frameworks may provide useful concepts that will subsequently help the author to understand the nature of upgrading processes in the Indonesian manufacturing sector through consideration of the effects of global factors and actors.

2.3.1 Global commodity chains/global value chains

Similar to the GPN and the flagship frameworks, the global commodity chain (GCC) analyses the effect of globalisation of economic activities on the development of local firms in developing countries. The GCC framework recognises a fragmentation of value added activities, organised within independent but interconnected firms and coordinated mostly by global lead firms from advanced countries. Global commodity chains are defined as a set of networks (nodes) clustered around one final product or service, and linking firms, industries and communities to one another across the world economy. Commodity chains have four main dimensions: (i) geographical configuration; (ii) the governance structure; (iii) the input-output structure; and, (iv) the social and institutional environment in which the chain operates (Gereffi, 1994). Although the GCC identified four main dimensions, the analysis focuses on the governance structure or power relations between global lead firms and local firms and in subsequent GCC/GVC writings there has been less exploration of iv (the social and institutional environment). The governance structure of the GCC is distinguished into buyer-driven and producer-driven commodity chains, which reflect different barriers

to entry, *vis-à-vis* rents and coordinators within the chains. Governance within the buyer-driven chains is coordinated by retailers, branded manufacturers and branded marketers, and the barrier to entry comes from brand names and functional coordination. This buyer-driven chain is commonly found in consumer non-durable industrial sectors such as garments, footwear and toys. Meanwhile the producer-driven chains are commonly discovered in consumer durables industries, including computers, automobiles and electrical machineries. The producer-driven chains are governed by the producer or manufacturer, and there are high barriers to entry, including production facility and technology.

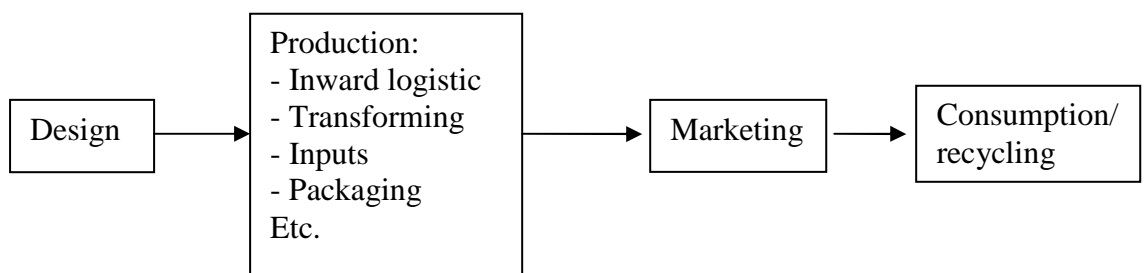
Since the GCC framework highlights the governance structure, it is argued that local firms' upgrading and development are influenced by global lead firms. Reflecting on industrial upgrading within the NIEs, the GCC framework identifies industrial upgrading as a shift within manufacturing activities, from assembly operation towards full package (OEM) and ultimately to original brand manufacturing (OBM). It is assumed that the successful industrial upgrading within the NIEs is due to their ability to establish close linkages with global lead firms. These lead firms are the main sources of inputs, technology and knowledge within the chains (Gereffi, 1999).

The governance structure of GCC framework has been criticised by other scholars (Whitley, 1996; Raikes et al., 2000, Henderson et al., 2002), particularly on the distinction between buyer- and producer-driven chains. Whitley (1996) raised the question of whether the distinction was derived from the product/industrial sector, or came from specific business systems of countries in which such chains were initiated. The coordination of global economic activities was considered as the extension of national business system of the countries concerned. Raikes et al. (2000) argued that the distinction was too rigid and uncontextualised time-wise. Some industrial sectors might be neither buyer- nor producer-driven chains, thus within these industrial sectors there could be 'multi-polar driving', with diffusion of power between producer and buyer. Furthermore, the two governance classifications, based on an industrial sector or product, tend to be static since they prohibit particular sectors from changing category over time. Similarly, Henderson et al., (2002) remarked that the distinction was not an ideal-typical construction since it was sector- and organisation-specific.

The distinction between buyer-driven and producer-driven commodity chains is also questionable due to a shift within global producer-driven chains (e.g. electronics sector) towards outsourcing of production and the emergence of the 'global supplier', particularly in the US during the 1990s. This shift creates a more complex network-based governance structure, namely modular production networks (Sturgeon & Lee, 2001; Sturgeon, 2002).

In response to these criticisms, the notion of global value chain (GVC) has replaced global commodity chains, particularly for obtaining an industry-neutral framework that can include a wider range of industrial sectors (Sturgeon, 2008). The concept of value chain derives its popularity through its analysis of competitive advantage of nations (Porter, 1998). A value chain was defined as all activities that provide value-added for firms and customers. Furthermore, Kaplinsky (2005) defined value chain as the sequence of activities which is required to bring products or services from conception to final consumption and even to a recycling process. The concept of value chains recognises that production process is merely one of a number of value added activities within firms. Moreover, barriers to entry into a production process are declining, since, by lowering wage costs, more and more countries and firms have developed the capability to produce high quality goods at a low cost (Kaplinsky, 2000). The falling of barriers to entry causes returns in production activity to fall; while in other intangible value added activities including design and marketing, returns are growing.

Figure 2.1 A simple value chain



Source: adapted from figure (Kaplinsky, 2005: 101)

Individual firms may conduct the full range of value added activities or functions. However, the emergence of a concept of core competence in business management and practice (Prahalad and Hamel, 1990) makes it possible to outsource non core functions to other firms and keep core functions in-house. Based on the concept of value chain and core competence, the GVC framework is concerned with which functions should be outsourced and which should be kept in-house, as well as with the issue of where these (non core) functions are located around the world. Firms will act in the most logical way possible to keep the highest value added functions in-house while outsourcing low value added activities, in order to get the most benefit or profit. Hence, upgrading means a movement toward higher value added functions or activities. The main question is then: Which value chains provide high value added? To answer this question, an understanding of the concept of rent can be helpful. Rent refers to return on factors and activities involved in production processes. The concept of rent can be used to measure and compare a return for each activity as well as to analyse a distribution of return among firms engaging in value chains. Kaplinsky (2005) classified rent as: (i) endogenous and constructed by individual firms, such as technological rent, organisational rent, marketing and design rent; (ii) endogenous and constructed by group of firms, such as relational rent; and (iii) exogenous and external to firms such as resources rent, policy rent, infrastructural rent and financial rent.

The nature and sustainability of rent is dependent upon its relative scarcity and effective barriers to entry. The role of endogenous rents, especially technology, marketing and relational rent, is growing more important since these rents are highly protected and thus more sustainable. In contrast, exogenous rents, especially resources and policy rents, have eroded or have no uniqueness anymore (Kaplinsky, 2005). The distribution of rent among firms in a value chain depends on efforts and investment to achieve the rent. Since maintaining endogenous rents is capital- and knowledge-intensive, these rents are often exploited by very large firms from advanced countries (i.e. global lead firms). Therefore, global lead firms generally obtain the greatest part of rents while local firms in developing countries tend to get a lesser amount.


Since global lead firms outsource their low value added activities, it is necessary for them to upgrade local firms to meet their requirements. It is even more obvious that

integration into global value chains is an important factor for the upgrading prospects of developing countries. Taking part in global value chains is a necessity for developing countries to improve their value added functions and profit. Moreover, based on the concept of rent mentioned above, the GVC framework provides a broader concept of upgrading that is not, as suggested by the GCC, restricted to production functions in the form of manufacturing activities. In general, upgrading is defined as strategies through which firms add value to their activities. In the GVC framework, upgrading is classified in four distinct ways: (i) product; (ii) process; (iii) functional; and (iv) inter-sectoral or chains. Firms can upgrade by moving toward a more sophisticated product line that can increase unit value (i.e. product upgrading), or transforming input into outputs more efficiently through reorganising production systems or introducing superior technologies (i.e. process upgrading). Meanwhile, functional upgrading is a way in which firms acquire new functions (or abandon existing functions) to increase the overall skill content of activities. Inter-sectoral/chain upgrading is defined as movement of firms toward new productive activities or chains (Kaplinsky, 2005; Humphrey & Schmitz, 2002). The upgrading trajectory is typically portrayed by a movement from process and product toward functional and inter-sectoral/chain upgrading (Kaplinsky, 2005).

Furthermore, a new concept of governance structure is developed to replace the buyer-driven and producer-driven chains dichotomy. The idea remains of a governance structure in which powerful or lead global firms play a significant role in integrating and coordinating globally dispersed value added activities. Thus the specific form of coordination and control within value chains is determined by three factors: first, complexity of information and knowledge required to sustain a particular transaction, particularly with respect to product and process specification (i.e. complexity of transactions). Second, the extent to which this information and knowledge can be codified and therefore transmitted efficiently and without transaction-specific investment between the parties to the transaction (i.e. codifiability of information). Third, the capability of actual and potential suppliers to meet requirements of the transaction (i.e. capability of supplier) (Gereffi et al., 2005). Based on a combination of these determinant factors and 'low/high' categorisation,

the GVC framework defines five distinct governance structures; (i) market, (ii) modular, (iii) relational, (iv) captive, and (v) hierarchy.

Table 2.4 Key determinants of global value chain governance

Governance type	Complexity of transaction	Codifiability of information	Capabilities of supplier	Degree of explicit coordination and power asymmetry
Market	Low	High	High	Low  High
Modular	High	High	High	
Relational	High	Low	High	
Captive	High	High	Low	
Hierarchy	high	low	low	

Source: adapted from Table 1. (Gereffi et al., 2005: 87)

A market structure can be expected when transactions are easily codified, product specifications are relatively simple and suppliers have the capability to make products. Since the complexity of information exchanged is relatively low, transactions can be governed with little explicit coordination. Modular value chains will be expected when the ability to codify specifications extends to complex products and suppliers have the competence to supply full packages. Because of high codification, complex information can be exchanged with little explicit coordination and the cost of switching to new partners remains low. Relational value chains can be expected when product specification cannot be codified, transactions are complex and supplier capabilities are high. This is because tacit knowledge must be exchanged between buyer and supplier, and this exchange of complex tacit information is most often accomplished by frequent face to face interaction and governed by high levels of explicit coordination, and all of these make the costs of switching to new partners high. The value chain governance will tend toward captive type when the ability to codify and the complexity of product specifications are both high, but supplier capabilities are low. This condition requires a great deal of intervention and control, encouraging the build-up of transactional dependence in order to exclude others from reaping the benefits of their efforts. Captive value chains control opportunism through the dominance of lead firms, while at the same time providing enough resources and market access to the subordinate firms to make withdrawal an unattractive option.

When product specifications cannot be codified, products are complex and highly competent suppliers cannot be found, lead firms will be forced to establish and manufacture products internally through a hierarchical structure (Gereffi, et al., 2005).

Value chain governance pattern itself is not static or strictly associated with particular industries, but can change depending on the improvement or deterioration of determinant factors: increasing or decreasing complexity of transactions, better codification or de-codification of information and increasing or decreasing supplier capability.

“Information complexity changes as lead firms seek to obtain more complex outputs and services from their supplier. This can reduce the effective level of supplier capabilities since existing capabilities may not meet the new requirements (trajectory no. 1). Alternatively, reduced complexity may increase the ability to codify transactions (no. 2). Second, within industries, there is a continuing tension between codification and innovation, since new technologies can restart the clock on process of codification (no. 3 and 4). Third, supplier competence changes over time: increasing as suppliers learn, but falling again as buyers introduce new suppliers into value chain, as new technologies come on-stream, or as lead firms increase the requirements for existing suppliers (no. 5 and 6)” (Gereffi et al., 2005: 96)

Table 2.5 Some dynamics of global value chain governance

Governance type	Complexity of transaction	Codifiability of information	Capabilities of supplier
Market	Low	High	High
Modular	1 ↓ High ↑ 2	3 ↑ High ↓ 4	5 ↑ High ↓ 6
Relational	↓ High	Low ↓	High ↓
Captive	High	High	Low
Hierarchy	High	Low	Low

Source: adapted from Table 1. (Gereffi et al., 2005: 87)

The GVC framework asserts that firms in developing countries depend greatly on global lead firms for upgrading. More specifically, upgrading outcomes for local firms are determined by the nature of their relationships with global lead firms (i.e. governance patterns and power asymmetry) within the value chains. Captive value chains, in which this type of value chain governance offers very favourable conditions

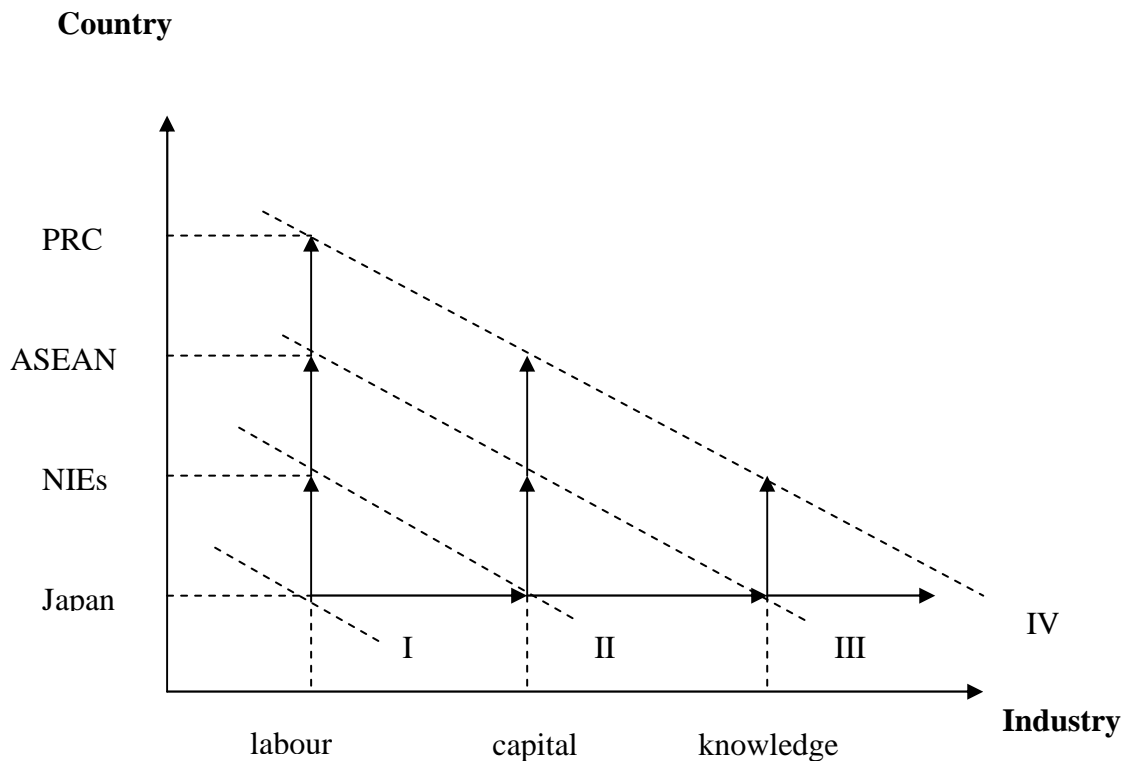
for process and product upgrading of local firms, are common in developing countries. However, the captive form of governance hinders functional upgrading. In contrast, within a market structure, process and product upgrading tend to be slower since it is not supported by global lead firms, but the possibility of functional upgrading is greater. The ideal value chain governance structure, that offers the greatest upgrading opportunity, is relational; however, it is the least likely for firms from developing countries due to the high level of (complementary) competences required (Humphrey & Schmitz, 2002).

2.3.2 The 'flying geese' model

The 'flying geese' model originated in the 1930s when a Japanese scholar, Kaname Akamatsu, examined the phenomenon of East Asian industrial development. According to his analysis, Japan played an important role in driving the catching-up processes in the other East Asian countries through foreign direct investment. The catching-up process is described as a flock of flying geese in an inverse 'V' formation in which Japan is the lead goose, with other countries following behind. The first-tier followers are Singapore, Hong Kong, South Korea and Taiwan (i.e. the NIEs), while the second-tier followers include Malaysia, Indonesia, Philippines, Thailand (i.e. the ASEAN-4) and other countries including China (Kojima, 2000; Kasahara, 2004; Ozawa, 2001).

The key to industrial development and the catching-up process among 'followers' is the simultaneous occurrence of three types of sequential economic activities within and between the group of countries (Kojima, 2000; Kasahara, 2004): (i) production and trade pattern explaining the sequential catching-up process over time from import to domestic production and ultimately to export; (ii) product and industrial pattern changes describe the catching-up process from labour-intensive to capital-intensive and ultimately to knowledge-intensive goods; (iii) country and inter-economy patterns that show transmission from advanced countries to less advanced countries and finally to least advanced countries.

Figure 2.2 Sequential patterns



Source: adapted from Fig 3 (Kojima, 2000: 386)

The production sequential pattern illustrates that during the first phase, developing countries import goods from abroad, which gradually initiates industrial development in their countries. The second phase begins with production of imported goods, while the third phase starts when the countries export their goods. This production pattern demonstrates that industrial development of developing countries normally progresses from import substitution to export promotion. The product pattern indicates product diversification over time through 'intra-industry' and 'inter-industry' product cycles. Intra-industry cycle is indicated by the emergence of a new product within a particular sector, for instance, moving on from the production of cotton to wool and synthetic materials. Inter-industry cycle is characterised by a shift from production of consumer goods to capital goods, for instance, from textiles to steel and shipbuilding. The product cycle follows the three-stage import-production-export sequence. Country or inter-economy patterns illustrate that industrial transmission will be made within

'followers' that have acquired suitable resources and technological capability (Kojima, 2000; Kasahara; 2003). Japanese firms play a significant role in inter-economy sequential patterns through their industrial relocation among the followers. In addition to foreign direct investment, Japanese corporations facilitate inter-economy industrial relocation through licensing, subcontracting, technical assistance, turnkey operation, market agreement, financial loans and official economic assistance (Kasahara, 2003).

In summary, the 'flying geese' framework explains the sequential catching-up processes through leader-follower relationships among countries. The notion of leader-follower suggests that industrial upgrading within follower countries is highly dependent on the leader strategies.

2.3.3 Latecomer model

In contrast to the 'flying geese' framework, the latecomer analysis does not use the notion of leader-follower in explaining the catching-up process. Instead, it introduces the notion of 'latecomers', referring to firms or countries that face two main barriers to entry to export markets: technological and market disadvantages. The technological disadvantage of the latecomer comes from the fact that developing countries are dislocated from main sources of technological innovation in advanced economies. In addition, developing countries are also dislocated from fast growing export markets in advanced countries in which consumer tastes have developed alongside sophisticated marketing and distribution channels. Thus, to catch up with the advanced countries in the global economy, latecomers have to overcome market barriers to entry and stimulate technological advancement (Hobday, 1995). In this respect, the latecomer framework emphasises the learning process of firms in upgrading both technological and marketing capabilities in order to gain competitiveness in export markets.

The latecomer framework highlights the OEM (original equipment manufacture) mechanism, which assists latecomer firms in overcoming barriers to market entry and acquisition of technology. Under the OEM system, foreign buyers provide advice on the selection of capital equipment and assist in the training of managers, engineers and technicians from latecomer firms: thereby the firms acquire assembly capability.

At the next stage, latecomer firms convert to ODM (original design manufacture) as the firms acquire product and process design capability. Since ODM applies incremental improvement to existing products rather than a newly designed innovation, ODM remains within the latecomer status. Only when the firms produce and market their own brand name products (OBM) will they break away from the latecomer status, because they will have applied new processes and products based on their own R&D (Hobday, 1995, 2005).

Table 2.6 Linkages of technological learning to export market

Marketing	Simple OEM/ subcontracting	—————→ ODM ———→ OBM				
Process Technology	Simple assembly	Process adaptation	Incremental improvement	Process development	Applied research	Process R&D
Product technology	Assessment selection	Reverse engineering	Prototype development	Design for manufacture	New design	Product R&D

Notes: No stages or linearity implied but a general tendency to catch up cumulatively through time with capabilities building systematically upon each other.

Source: adapted from figure 8.1 (Hobday, 1995: 188)

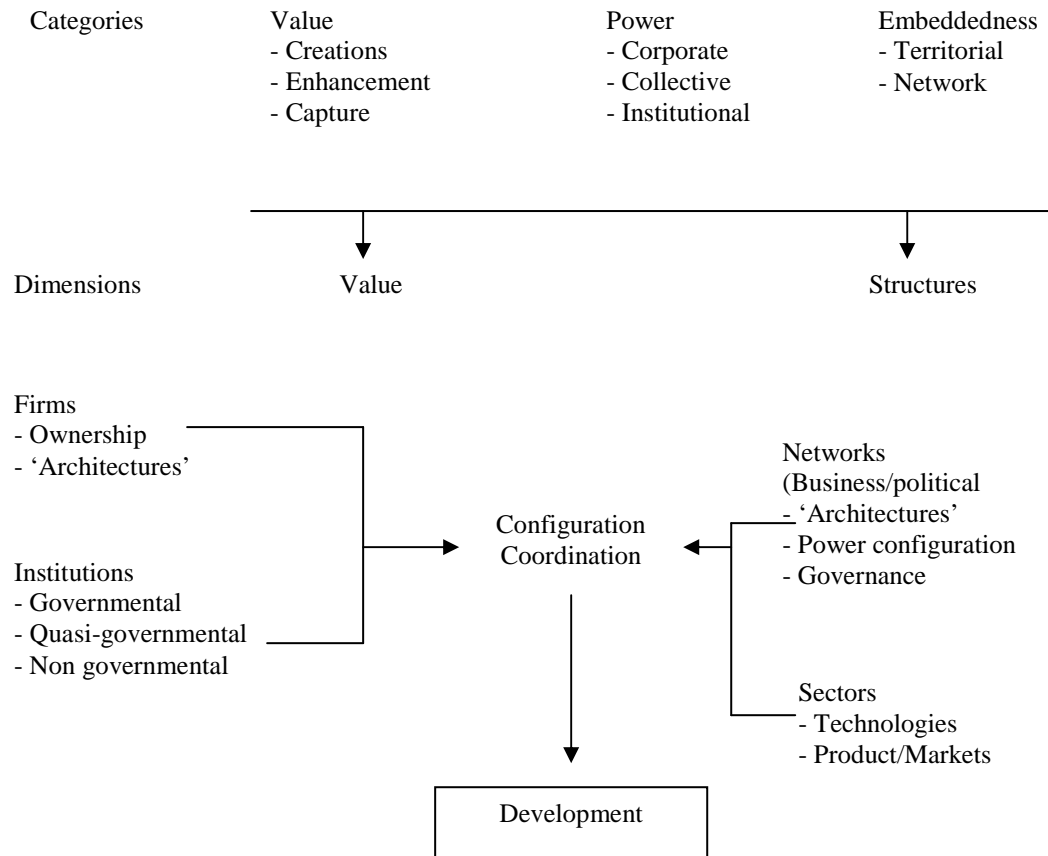
2.3.4 Global production network

Globalisation of economic activities has led to complexity in the way production, distribution and consumption of goods and services are organised across firms and geographical locations dispersed around the globe. Two major concepts of global production network are recognised and applied by scholars. Firstly, there is the global production network (GPN) approach which was developed by the ‘Manchester School’ (Henderson et al., 2002; Coe et al., 2004; Hess & Yeung, 2006; Coe et al., 2008) and secondly, the global network flagship approach (or flagship model) proposed by the ‘East-West Centre’ (Ernst, 2001; Ernst & Kim, 2001).

The first model, the GPN, offers a conceptual framework for understanding the complexity of production, distribution and consumption across the global economy. This framework includes all kinds of network configuration and all relevant sets of actors and relationships (Coe et al., 2008). Global production network divides its analytical framework into ‘conceptual categories’ and ‘conceptual dimensions’.

Conceptual categories refer to three major issues under investigation: (i) value; (ii) power and (iii) embeddedness.

Figure 2.3 Conceptual elements of the GPN framework



Source: adapted from Figure 1 (Henderson et. al., 2002: 448)

GPN is concerned not only with the nature of production activities within the network, but also with value creation and capture, in terms of surplus or economic rents. Analysis of value creation and capture lead the GPN framework to also focus on governance systems of networks by concentrating on power relations between actors within the networks. The governance systems of production networks are complex, involving not only intra and inter-firm relationships (linear/horizontal dimension), but also those between firms and government, trade unions, non governmental organisations and international agencies (non linear/horizontal dimension) (Henderson et al., 2002; Coe et al., 2008). Firms not only connect functionally with other firms, but also with other aspects, including spatial and social

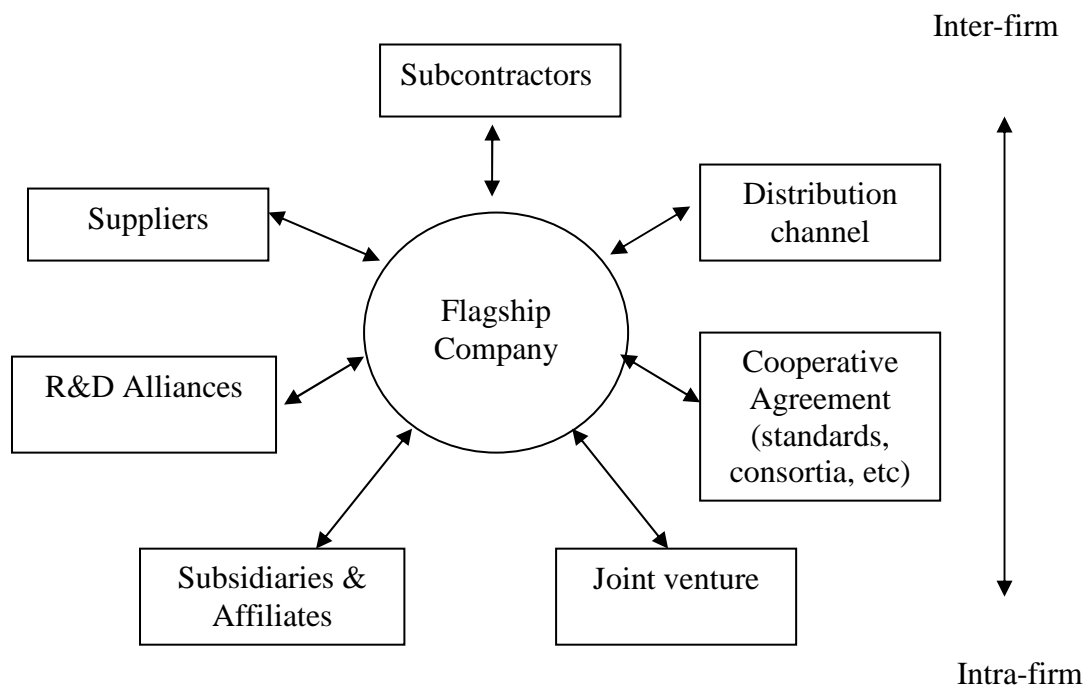
arrangements in which the firms are embedded. Meanwhile, conceptual dimensions refer to various frameworks within the networks, in which value is created, power is exercised and institutionally embedded. These dimensions include firms, sector, networks and institutions (Henderson et. al., 2002).

By utilising the mapping technique, the GPN framework provides a visualisation of various actors and their relationships within the networks with regard to value, power and embeddedness. The map can thus be used to identify the main actors responsible for a firm's upgrading and development.

The second model, the flagship model, focuses analysis on the role of global lead firms (the flagships) in determining the upgrading of suppliers under their networks. The model describes the network as a hierarchical structure which consists of different layers. The network flagship takes on leadership of the network through its control over critical resources and capabilities, as well as having the capacity to coordinate transactions and knowledge exchange between different nodes in the network. Network suppliers are distinguished into higher-tier 'lead suppliers' and lower-tier suppliers. Higher-tier suppliers act as an intermediary between the flagships and lower-tier suppliers. While higher-tier suppliers possess technological and coordination capabilities, lower-tier suppliers rely more on low cost, delivery speed and flexibility (Ernst, 2001).

Growth, strategic direction and network position of suppliers are highly dependent on the strategy of the flagships. The flagships act as powerful carriers of knowledge to be transferred to their network suppliers. Thus flagships transfer knowledge to local suppliers in order to upgrade suppliers' skills to the level required to meet the specification set by the flagships. The success of network suppliers in upgrading their capabilities creates an incentive for flagships to transfer more sophisticated knowledge, including product engineering and design. The upgrading processes of network suppliers will depend on the absorptive capacity of the supplier and the location of the suppliers within the network (Ernst, 2001).

Figure 2.4 The nodes of global flagship network



Source: adapted from Figure 2 (Ernst, 2001: appendix 2)

The GPN and the flagship models have common as well as different features. The common characteristic comes from the focus of analysis on networks of relationships between global firms and local suppliers. However, the structure of the network within the GPN framework differs from the flagship model. The GPN framework recognises multidimensional relationships that incorporate not only inter-firm relationships, but also extra-firm relationships. In contrast, the flagship model highlights the vertical inter-firm relationships between flagships, higher-tier suppliers and lower-tier suppliers. Consequently, while the GPN framework argues that the development of local suppliers is affected by multiple factors aside from global lead firms, the flagship model only emphasises the network flagship.

2.3.5 Global value chains: Conceptual relevance to the research objective

The four conceptual framework discussed above highlight the role played by global actors and factors in determining upgrading processes within developing countries. The latecomer and the ‘flying geese’ models are rooted in a catching-up process with those East Asian countries with advanced global economies. While the ‘flying geese’

model emphasised foreign direct investment (FDI) and the relocation strategy of lead 'goose' firms (i.e. Japanese) as driver of the catching-up process, the latecomer framework highlights the accumulation of technological and marketing capabilities of firms through supplier roles for global firms under the OEM arrangement. Meanwhile, the GPN, the flagship model and the GCC/GVC frameworks investigate effects of globalisation of economic activities on development and upgrading within developing countries. The core insight of these frameworks is how production, distribution and consumption of goods and services are organised within the interrelated functions, operations and transactions (Coe et al., 2008). Accordingly, power relations and governance of global firms become the central issues of these frameworks. The difference is that, while the GCC/GVC and the flagship frameworks focus analysis on relationships of local firms with global lead firms within value chains, the GPN framework emphasises not only these inter-firm relationships but also the network of relationships of local firms with all kind of actors and configurations through which the firms are embedded in the global economy.

The objective of this study is to understand the nature of upgrading processes within the Indonesian manufacturing sector. Thus the investigation of this study is not restricted to the role of global firms from a particular country (e.g. Japan) and FDI in affecting the upgrading processes. This renders the 'flying geese' analysis unsuitable for application to this study. Furthermore, this study focuses on upgrading processes within Indonesian manufacturing firms in the context of value chains. Therefore the study considers the inter-firm relationships within the value chain, rather than taking a broad view of network relationships in which the Indonesian manufacturing firms are embedded as suggested by the GPN framework.

The latecomer and the flagship frameworks may be useful in investigating upgrading processes through supplier roles for global lead firms. However, these frameworks do not provide comprehensive understanding of how governance by global actors over local firms influences the upgrading potential of developing countries. Therefore, the GVC framework is more applicable to this study than the other conceptual frameworks in the international linkage models mentioned above. The GVC framework provides a useful concept for analysing how governance by global buyers

and lead firms influences upgrading of local firms engaged in their value chains. Global buyers and lead firms that include local firms in their value chains may make efforts to improve the capability of these firms to meet their requirements. They will transfer knowledge to local firms to be used to carry out value added activities and functions.

2.4 Upgrading: Integrating the technological capability and the global value chains frameworks

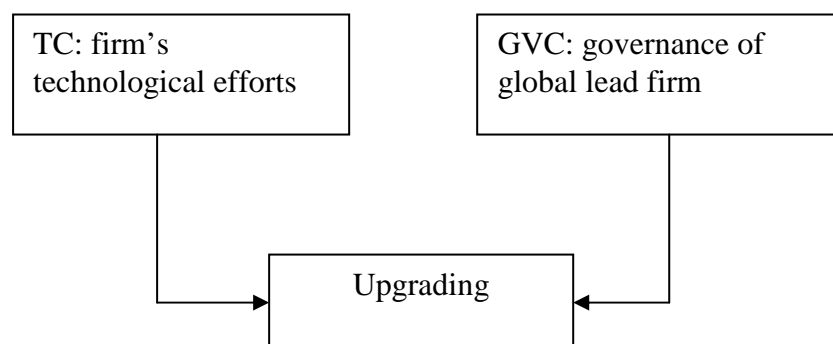
Table 2.7 Literature on upgrading

Author	Description	Implications for upgrading
Lall (1992 & 2001), Bell & Albu (1999), Bell & Pavitt (1993)	Technological Capability	(Technological) upgrading depends on purposeful effort at the firm-level in terms of investment and learning process to acquire technological knowledge from external sources
Kojima (2000), Kasahara (2004)	Flying Geese	Upgrading of follower countries (i.e. less advanced countries) is dependent on and determined by leader countries through FDI and relocation strategy
Hobday (1995)	Latecomer	Upgrading follows a certain path and takes place cumulatively over time and systematically, involving technological and marketing accumulation by serving global firms
Henderson et al., (2002)	Global Production Network	Upgrading affects all kinds of network configurations and all relevant sets of actors and relationships
Ernst (2001)	Global Flagship Network	Upgrading depends on location and position in global production network led by flagship firms
Gereffi (1994, 1996, 1999), Gereffi et al (2005), Humphrey & Schmitz (2002), Kaplinsky (2005)	Global Commodity Chains/Global Value Chain	Upgrading depends on form of value chain governance and power relations with global lead firms

Table 2.7 summarises some theoretical frameworks that can be used to understand nature of upgrading processes at the firm level. Multiple factors and actors influence upgrading processes in which each framework emphasises on particular actors and

factors and each have their own inherent strengths and drawbacks. The objective of the study aims to obtain insight of upgrading processes within Indonesian manufacturing sector. The focus of this study is on upgrading processes of garment and electronics manufacturing firms in the context of value chains. Thus this study attempts to understand how garment and electronics manufacturing firms in Indonesia progress toward high-skill activities to bring products from a conception to consumption. Specifically, this study focuses on analysis at the functional linkages between local and global firms in order to accomplish value chains. Overall, the GVC framework provides useful concepts of governance structure in which upgrading of firms within value chains take place. The framework focuses on global lead firms that coordinate the chains. These global lead firms have the power to include local manufacturers in the chains and determine their upgrading. However, the framework understates the role of endogenous efforts of local manufacturers in achieving upgrading outcomes. Meanwhile, the TC framework offers insights into various typologies of technological capability at the firm-level, and the mechanism of knowledge acquisition and learning process which generates capability formation. Nevertheless, the TC framework suggests very little about the relationships between local manufacturers and global lead firms, which can assist or constrain learning processes and capability formation among local manufacturers.

Figure 2.5 Technological capability and global value chains framework



This study recognises the limitations inherent in each theoretical framework. By integrating the two frameworks, this study avoids putting undue emphasis on global actors over local firms' endogenous efforts, or *vice-versa*, but seeks to understand the interaction between the two factors in explaining upgrading processes at the firm-level in the Indonesian garment and electronics sectors. Thus, this study brings these two frameworks together to help the author to address the overarching research question on the roles of governance of global actors and technology capability in influencing upgrading processes of the Indonesian garment and electronics manufacturing firms. The study does not address the broader network of relationships between firms and non-firm organisations nor institutions as suggested by other frameworks. This is not due to ignorance of these factors in influencing upgrading, but rather, the view that the explanation of upgrading at the firm-level lies in establishment of functional relationship within value chains. Therefore the study seeks to address the overarching research question: what roles do governance and technological capability play in upgrading processes within the Indonesian garment and electronics value chains?

2.4.1 GVC framework: Strengths and shortcomings

In order to construct an analytical tool to be used in practice, this study examines the GVC framework further to understand its strengths and drawbacks as well as its potential for integration with the TC framework. The GVC framework provides a broader concept of upgrading in the context of value chains, which refers to ways in which firms add value not only to manufacturing activities (i.e. process and product upgrading), but also to other activities including design, branding and marketing (i.e. functional upgrading). This concept of upgrading can be applied for all types of industrial sectors and products, including labour-intensive and capital-intensive industries; thus it will be beneficial to analysis of upgrading processes within Indonesian garment and electronics manufacturing firms. Furthermore, the GVC framework brings in the concept of governance, involving power relationships of actors within value chains. The framework asserts that global value chains are governed and coordinated by powerful or lead firms, mostly from advanced countries. These lead firms set parameters (i.e. what, when, how, how many) to be met by firms from developing countries that are inserted in the chains. Thus the GVC framework

provides an insight into the relationships between upgrading of local firms and the governance structure in which the local firms are engaged. More specifically, the framework is concerned with analysing how local firms upgrade within value chains organised by global lead firms.

Despite its popularity, the GVC framework has also attracted criticism. At the conceptual level, the criticisms are mainly of the notion of upgrading and governance which is a central argument of the GVC framework. The concept of upgrading is sometimes unclear since it does not explicitly refer to innovation. Morrison et al. (2008) raised the question of whether upgrading is akin to innovation or the result of innovation. Firms may achieve upgrading by lowering labour wages rather than making improvements in manufacturing activities. There are a few GVC studies that differentiate clearly between the notion of upgrading and innovation, including that of Kaplinsky & Morris (2001). Other scholars (Gibbon, 2001 and Schrank, 2004) comment on the benefits of upgrading. Gibbon (2001) argued that upgrading may improve competitiveness of local firms, but they do not automatically obtain rewards in terms of increased security and profitability. Similarly, Schrank (2004) suggested that upgrading was inversely linked to the number of producers which adversely affect economic growth. It is apparent that criticism of the concept of upgrading as propounded by the GVC framework is mainly levelled at the ambiguity over whether upgrading is a cause or effect (Morisson et al., 2008). Meanwhile, some scholars, including Whitley (1996), Henderson et al., (2002), Hess & Yeung (2006) and Gibbon & Ponte (2008) have criticised the concept of governance, which emphasises merely the role played by powerful global firms. They argue that the governance structure ignores the institutional dimension in which local firms are embedded, such as: the business system, government policies or expert knowledge and practices, which also influence upgrading outcomes of firms or countries. Hence, some scholars prefer a notion of network within chains to explain all actors and factors which affect the upgrading of firms (Henderson et al., 2002). In addition, governance structure increasingly includes parameters beyond the aspects set by a global lead firm (i.e. what, when, how, how many), such as codes of conduct, quality and environmental standards (e.g. ISO standards), which are established by non-firm organisations (Bair, 2005; Nadvi & Waltring, 2004; Ponte & Gibbon, 2005; Hess & Coe, 2006). Thus

criticisms of the concept of governance are mainly aimed at the lack of attention paid to the roles of actors other than global lead firms in determining local upgrading and development.

At the empirical level, the upgrading potential for firms in developing countries may not be as great as the GVC framework might suggest. Some findings disprove the argument of the GVC framework that integration into global value chains leads to extensive upgrading. For instance Hassler (2003) and Tokatli (2007) indicate that manufacturers in developing countries can achieve functional upgrading by creating own brands without having any ties to global lead firms. Gibbon (2003) demonstrated that insertion into global value chains led to a limited endogenous growth opportunity for the developing countries. This was because such value chains were governed by large size, and concentrated global retailers, based on a model of high volume and low value added manufacture. Rabellotti (2004) found that local producers, even in advanced countries, might undergo downgrading rather than upgrading in order to participate in global value chains. Thus both upgrading and downgrading may take place within global value chains. Similarly Bair & Dussel Peters (2006) found evidence that participation in global value chains was unlikely to generate sustainable industrial upgrading and development for developing countries.

The failure of the GVC framework to predict upgrading potential within developing countries is due to its emphasis on the role of global lead firms in driving the upgrading process while neglecting other attributes (Morrison et al., 2008; Bair, 2005; Hess & Yeung, 2006; Coe et al., 2008; Gibbon & Ponte, 2008, Sato & Fujita, 2009). The framework undermines the role of endogenous factors, such as firms' own efforts and their linkages with actors within sub-national or national boundaries, which also shape upgrading processes and dynamics. In response to this less than satisfying upgrading outcome, some scholars combine the GVC framework with other frameworks to obtain a more comprehensive tool for analysing upgrading of developing countries. Scholars including Humphrey & Schmitz (2000), Bazan & Navas-Aleman (2004), Giuliani et al. (2005), and Nadvi and Halder (2005) integrated the GVC framework with cluster analysis. The literature demonstrates that the competitiveness and efficiency of firms in developing countries is obtained by

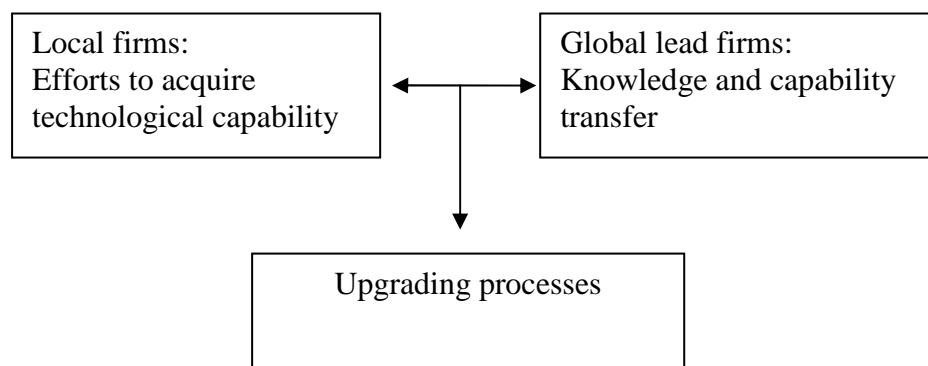
operating within global value chains, while simultaneously benefiting from gains related to collective efficiency and joint action within the industrial clusters.

Other scholars (Morrison et al., 2008, Zhang, 2009; Sato & Fujita, 2009) integrated the TC analysis at the firm-level with the GVC framework. While they offer a conceptual framework and practical tool for increasing understanding of upgrading at the firm-level, they do not provide empirical evidence from the field. They assert that the GVC literature does not explicitly include analysis of the nature of technological capability and the learning process. Although recent developments in the theory of value chain governance involve capability of supplier firms in determining governance structures, there is little attention paid to the details of the nature of technological capability and technological accumulation (Morrison et al., 2008). The GVC analysis refers to the capability of suppliers without further classification as suggested by the technological capability framework (Lall, 1992, 2001; Bell & Pavitt, 1993; Ernst, 1998). Thus GVC analysis does not discriminate in terms of capturing the different dimensions of capability. Moreover, technological capability of local firms in the GVC framework is solely transferred by global value leaders: while in fact capability can come from sources other than the global lead firms. The learning process within local firms is little explored by the GVC framework. In contrast, the learning process forms a central argument of the TC framework, since the framework acknowledges the tacit nature of technological knowledge. The tacit nature of knowledge makes difficult the diffusion of technology and flow of knowledge and learning processes from global lead firms to local firms. Consequently, insertion into a global value chain will not automatically and efficiently provide greater upgrading (Morrison et al., 2008). While Morrison et al. (2008) provided a useful conceptual framework for integrating the TC analysis and the GVC framework, they do not offer a practical tool to be applied in conducting empirical research. The practical tool is elaborated in publications of Zhang (2009) and Sato & Fujita (2009). They developed their analytical tool by applying different types of technological capability as suggested by Lall (1992). In the context of GVC analysis, the different types of technological capability of firms are explored through their relationships with global lead firms.

2.4.2 GVC and TC frameworks: Proposing an integrative analytical tool

Taking up the criticisms of the GVC framework, this study attempts to take a more comprehensive approach by bringing together the critical elements of the TC and GVC frameworks for the purpose of developing an analytical tool. Capability at the firm level in this study is drawn on Lall's taxonomy (1992); however, for purposes of simplification, the study does not utilise a detailed matrix of technological capability as suggested by the TC literature. Instead, this study proposes a classification of technological capability into three types: (i) process operative; (ii) process innovative; and (iii) product innovative. Functions within firms can also be simplified into activities linked to manufacturing process and product. This distinction of activities is important, since developing countries are able to reach mastery in manufacturing capability, but make only limited progress in product design and development (Gammeltoft, 2004). The depth of capability consists of operative and innovative capabilities. Operative refers to the ability of firms to operate, maintain, control, production equipment and to manage the production process. Innovative refers to the ability of firms to generate original improvements. The nature of improvements refers to a broader concept of innovation (Nelson & Rosenberg, 1993) in which firms are able to generate not only processes and products new to global or domestic markets (i.e. innovative/major change), but also new to the firms (i.e. adaptive/minor improvement). Since there is no operative capability relating to products, technological capability of firms can be classified into process operative, process innovative and product innovative (Gammeltoft, 2004). These three types of technological capability simultaneously capture both the width of functions and the depth of capabilities.

Figure 2.6 A combined theoretical framework: Roles of local and global firms



Furthermore, in the context of GVC, the analytical tool highlights the importance of local firm's functional relationships with global firms in influencing local firm's learning process and capability acquisition. Therefore, the different types of technological capability of the Indonesian garment and electronics manufacturing firms are assessed in the context of upgrading processes (i.e. process, product and functional upgrading) at the domestic and global value chains. In addition, the capability acquisition and learning process of Indonesian garment and electronics firms are examined in the context of value chains: that is, whether the firms acquire the different types of capability within global value chains or not. The inclusion of TC analysis in this study leads to a different concept of upgrading from the GVC framework. As discussed in the beginning of the chapter, the concept of upgrading used in this study refers to processes of local firms to increase skill content of their activities within value chains through capability acquisition and formation.

Table 2.8 shows how key concepts of the TC and the GVC frameworks can be combined as the analytical tool of this study. It clearly shows that upgrading, theoretically, is a result of capability acquisition of local firm within global value chains. The analytical tool sets out three different types of capability (i.e. process operative, process innovative and product innovative) that are required to undertake different activities within value chains (i.e. production, design and product development and branding and marketing). Thus it can be used to assess capability of a particular firm as well as to compare capability between multiple firms. This

analytical tool can also be used to provide the path of capability development of firm over time.

Table 2.8 Technological capability in the context of GVC framework

Functions	Production	Design and product development	Branding and marketing
Technological capability	<p>- Process operative (i.e. operation, maintenance and control of production equipment)</p> <p>- Process innovative (i.e. minor and major improvements of production equipment and management)</p>	Product innovative (i.e. minor and major improvements of design and product development)	Product innovative (i.e. branding and market development)
Source of capability accumulation (learning)	Global value chain leaders and other actors	Global value chain leaders and other actors	Global value chain leaders and other actors
Upgrading	<p>- Process (i.e. improvement of product quality and production efficiency)</p> <p>- Product (i.e. production of higher value products)</p> <p>OEA/OEM</p>	<p>Functional (i.e. involvement in design and product development function)</p> <p>ODM</p>	<p>Functional (i.e. involvement in marketing function)</p> <p>OBM</p>

In the context of global value chains framework, the analytical tool can be applied to investigate firms that operate under specific value chain governance and explore the process of capability acquisition within that governance structure. Alternatively, it can also be used in comparing process of capability acquisition of firms operating under different forms of governance structure.

For practical use of the analytical tool, the study will investigate the functions in which the garment and electronics manufacturers in Indonesia are engaged (i.e. design, product development, production, branding and marketing) in the domestic and global value chains. Subsequently, the means, by which Indonesian garment and electronics manufacturers acquired the different types of capability to undertake the functions, will also be assessed; particularly the acquisition of capability within global value chains. The study investigates garment and electronics firms that operate in various types of value chain governance. Finally, analysis will be conducted to explore the relationships between upgrading processes, the nature of capability and value chain governance.

2.5 Conclusion

Through a literature review, this chapter has attempted to construct a comprehensive approach to analysis of the roles governance and technological capability play in the upgrading processes within the national and global economy. The GVC framework provides useful concepts for understanding upgrading processes within the Indonesian manufacturing sector in the global context. The GVC framework highlights upgrading processes of local firms within global value chains under the governance of global firms. However, the GVC framework does not link upgrading processes explicitly to capability acquisition by local firms and therefore there is a lack of detailed analysis of learning processes of local firms in acquiring capability. Meanwhile, the TC literature provides understanding on the distinct typology of capability and the process of capability acquisition, whilst paying little attention to the role of global value chain leaders in supporting and constraining local firms' acquisition of capability. The integrative approach is expected to provide a better tool to help the

author to understand upgrading processes and dynamics within the Indonesian manufacturing sector. This is because such an approach will not put excessive emphasis on the role of global lead firms over the Indonesian manufacturing firms, or *vice-versa*, but will seek to understand the interaction between the two actors in explaining upgrading processes.

Chapter 3

Constructing methods, developing tools

Questions, propositions, and framework of investigation

As examined in chapter two, a number of analytical frameworks have been drawn on for the analysis of upgrading processes in Indonesian manufacturing. The GVC framework may explain the role of global firms in affecting upgrading processes but it offers little exploration of the nature of capability of local manufacturing firms and their acquisition processes. Therefore, the TC literature can play a significant and complementary analytical role in gaining a better understanding of upgrading processes. This theoretical standpoint provides the basis for the empirical ground toward which this study is addressed: understanding upgrading processes within Indonesian garment and electronics manufacturing firms in the face of global challenges. This also has helped the author to formulate the overarching question: what roles do governance and technological capability play in upgrading processes within Indonesian garment and electronics value chains? More specifically, this study questions how Indonesian garment and electronics manufacturing firms are inserted into value chains. And, to what extent is their upgrading potential constrained or promoted through the nature of value chain governance of domestic and global actors?

To obtain the empirical basis for the analysis, this study collects both quantitative and qualitative data through surveys and in-depth interviews within the Indonesian garment and electronics sectors. The survey assists the author in profiling distinct characteristics of the garment and electronics manufacturing firms in Indonesia. Meanwhile, the in-depth interview provides rich information to help with more detailed analysis. This study is exploratory in seeking in-depth insights into upgrading processes within the Indonesian garment and electronics manufacturing firms in a global value chain that has not been widely investigated, and therefore utilises qualitative research through a detailed scrutiny of comparative case studies across the two sectors. This comparative analysis includes both typical and atypical cases within

each sector and generates the quality of insight necessary for addressing the research questions.

This chapter is organised as follows: section 3.1 looks at the overarching research question and sub-questions to be addressed in this study. It also presents propositions based on the existing literature. Section 3.2 outlines the research methods used in collecting and analysing the empirical evidence to answer the research questions. Section 3.3 draws out some methodological issues and challenges. The final section (3.4) draws conclusions.

3.1 Research questions and propositions

This study seeks to address an overarching question: what roles do value chain governance and firm-level technological capability play in upgrading processes within the Indonesian garment and electronics value chains? As argued in chapter two, the upgrading processes of firms are, at least theoretically, a function of nature of value chain governance in which the firms are inserted and nature of firms' technological capability. As this relationship lies at the heart of this study, the roles of governance and technological capability in affecting upgrading processes will be explored through investigation of the Indonesian garment and electronics sectors. A method of analysis was required that would produce in-depth and rich understanding about the process and dynamics of upgrading undertaken by the Indonesian garment and electronics manufacturing firms. To reach this objective, this study uses qualitative analysis through the case study approach. Furthermore, in order to obtain insights into diversity of upgrading processes in the Indonesian manufacturing sector, this study uses comparative analysis of multiple case studies selected from different industrial sectors, garment and electronics. Comparative analysis across the two sectors will be extremely significant in elucidating the process of upgrading within the Indonesian manufacturing sector. By investigating the Indonesian garment and electronics sectors, this study may capture different characteristics of value chain governance and technological capability between the two sectors. In addition, it may provide common patterns of upgrading and similar explanations regardless of industrial sector.

3.1.1 Research questions

Value chain governance seems to have played a significant role in explaining upgrading processes of firms from developing countries such as Indonesia. However, the literature suggests that entering a global value chain will not automatically result in upgrading, unless the firms put in their own efforts in terms of learning process and investment to improve their capability. To understand these issues further in Indonesia, this study focuses on the following sub-questions:

1. How are the Indonesian garment and electronics manufacturing firms inserted into value chains? To what extent is their upgrading potential constrained or promoted through the nature of value chain governance of domestic and global actors?

This question investigates the forms of governance in the value chains into which the Indonesian garment and electronics manufacturers are inserted at both domestic and global levels (i.e. are they market, modular, relational, captive or hierarchical governance structures?). It also assesses factors which determine the governance structure (i.e. Indonesian manufacturers' capability, transaction complexity and information codifiability). Furthermore, the question examines the upgrading processes of the Indonesian garment and electronics manufacturers in the context of value chain governance (i.e. is it process, product, functional or chain upgrading?) at domestic and global level.

The second sub-question is:

2. What role does technological capability play in value chain upgrading of the Indonesian garment and electronics manufacturing firms at the domestic and global level?

This question assesses the different types of capability possessed and utilised by the garment and electronics manufacturers in Indonesia (i.e. is it a process operative, process innovative or product innovative capability?). It also analyses the learning process of the garment and electronics manufacturers in acquiring the different types of capability within global value chains (i.e. the extent of support provided by global

value chain leaders). Thereby the question examines the extent of knowledge flow and learning potential within global value chains.

The third sub-question is:

3. What light does a comparison of the Indonesian garment and electronics shed on linkages between governance and technological capability in the analysis of value chain upgrading?

The question investigates the similarity and differences of upgrading processes between the Indonesian garment and electronics manufacturing, by shifting the focus from merely the contribution of governance to also include the role of capability of Indonesian garment and electronics manufacturers. It analyses the extent of upgrading potential of Indonesian garment and electronics manufacturers through their insertion into value chains and their capability acquisition.

3.1.2 Propositions

Based on the literature reviewed in chapter two, this study puts forward some propositions. The aim of these propositions is not to predict empirical results, but to anticipate the course of the investigation.

First, there is a link between upgrading processes and governance of the value chains in which the Indonesian garment and electronics manufacturers are engaged. Studies on industrial upgrading which use the theory of value chain governance (Humphrey & Schmitz, 2002; Bazan & Navas-Aleman, 2004; Giuliani et al., 2005) have discovered that the governance of value chains affects the extent of upgrading of firms in developing countries. Based on this empirical evidence across industrial sectors and countries, this study anticipates that the extent of upgrading among Indonesian garment and electronics manufacturers is related to the governance structure of value chains in which they are engaged.

Second, upgrading processes and dynamics are also dependent on the accumulation of technological capability of Indonesian manufacturers. Some studies (Humphrey & Schmitz, 2002; Schmitz & Knorrninga, 2000; Bazan & Navas-Aleman, 2004) have

identified a limitation of learning opportunity within global value chains. Global value chain leaders hinder their supplier firms in developing countries from acquiring non production capabilities (i.e. design, branding and marketing capabilities), which may actually be required to upgrade further (i.e. functional upgrading). Consequently, such capability development relies more on firms' efforts in term of purposive investment and learning, to shift from production to non production functions as suggested by the technological capability framework. Therefore, this study expects to see that the accumulation of technological capability will enhance the upgrading potential of the Indonesian garment and electronics manufacturers. More specifically, the focus of expectation is on how the Indonesian garment and electronics manufacturers acquire product innovative capability, and make use of the capability to progress toward non production functions (i.e. design, product development, branding and marketing activities). Moreover, the study also anticipates seeing different patterns of capability acquisition process between the garment and electronics manufacturers in Indonesia due to the difference in intensity of their technologies.

3.2 Research methods

The nature of the research question is crucial to selection of the most relevant research methods. Quantitative methods may be suitable to identify 'what' outcomes of value chain upgrading within the Indonesian garment and electronics sectors and their causal relationships with governance and technological capability. However, the quantitative method is less likely to provide a thorough understanding of 'how' the Indonesian garment and electronics manufacturing firms: undertake upgrading processes, are inserted into value chains and acquire technological capability. Furthermore, the method is unable to provide explanation on 'why' the Indonesian garment and electronics manufacturers are confined to particular upgrading processes and fail to shift toward far-reaching upgrading processes. Qualitative methods, in contrast, can provide detailed accounts and in-depth insights into the issues under investigation within the Indonesian garment and electronics manufacturers by addressing the 'how' and 'why' forms of research questions. However, qualitative methods cannot produce quantifiable outcomes of the issues under investigation that

can be generalised to the larger population of the garment and electronics firms in Indonesia (Yin, 2003; Bryman and Bell, 2003).

3.2.1 Rationale

This study aims to understand the nature of upgrading processes within the Indonesian garment and electronics manufacturing firms, particularly the roles of governance and technological capability in affecting the upgrading processes. It is clear that this study is exploratory in nature in its attempt to provide in-depth understanding of issues that have not been much investigated. This study seeks not only to identify the factors and actors affecting upgrading of the Indonesian garment and electronics manufacturing firms, but also to gain insights on how they influence the process and dynamics of upgrading. For this reason this study applies the qualitative method of analysis, particularly case studies approach, to address the research questions. By means of case study analysis, primary data will be examined to obtain detailed accounts on experiences of the Indonesian garment and electronics manufacturers in: being inserted into value chains; acquiring technological capability; and undertaking upgrading. Therefore this study uses the epistemological framework of empiricism in acquiring the knowledge needed. Empiricism, in the philosophy of science, emphasizes those aspects of scientific knowledge that are closely related to evidence gathered through experience. This study is scientific hence it relies on empiricism to ensure that all propositions are tested against observations, which is a fundamental part of the scientific method. By implementing the abovementioned methods, this study attempts to be methodologically empirical in nature (Dancy, 1985; Hunnux, 1986; Audi, 2003).

To some extent, a quantitative method of (descriptive) analysis is applied to this study as part of the case studies. The quantitative descriptive analysis is intended to put the case studies in the context of a bigger picture of the Indonesian garment and electronics sectors. It uses both primary and secondary data.

3.2.2 Secondary data collection and analysis

The study uses secondary data to identify the outcome of upgrading processes within Indonesian garment and electronics industrial sectors. For this purpose, this study

utilises a combination of market share and unit price analysis as suggested by Kaplinsky & Readman (2005). Market share and unit price trends have been applied separately to measure competitiveness and innovativeness; for instance, Lall & Albaladejo (2004) used market share as an indicator to reflect and compare competitiveness and innovativeness of developing countries in specific markets. Meanwhile other studies (Aiginger, 1997; Kaplinsky & Santos-Paulino, 2006) utilised unit price as the indicator of innovativeness. However, the use of market share or unit price separately as the indicator of innovation or upgrading processes may cause confusion. A higher market share may be due to cost reduction rather than product innovation. Similarly, changes in unit price may be due to changes in input prices or reflect exchange rate fluctuations rather than process innovation. Cost reduction or falling input prices may be attained by lowering labour wages or a firm's income: which result in lower standards of living in the exporting countries (Kaplinsky & Readman, 2005).

Table 3.1 Outcome of upgrading at the industry-level

	Market share decrease	Market share increase
Unit value rises relative to industry average	<i>Quadrant 1:</i> Failed product upgrading	<i>Quadrant 2:</i> Product upgrading
Unit value falls relative to industry average	<i>Quadrant 3:</i> Product and process downgrading	<i>Quadrant 4:</i> Process competitiveness

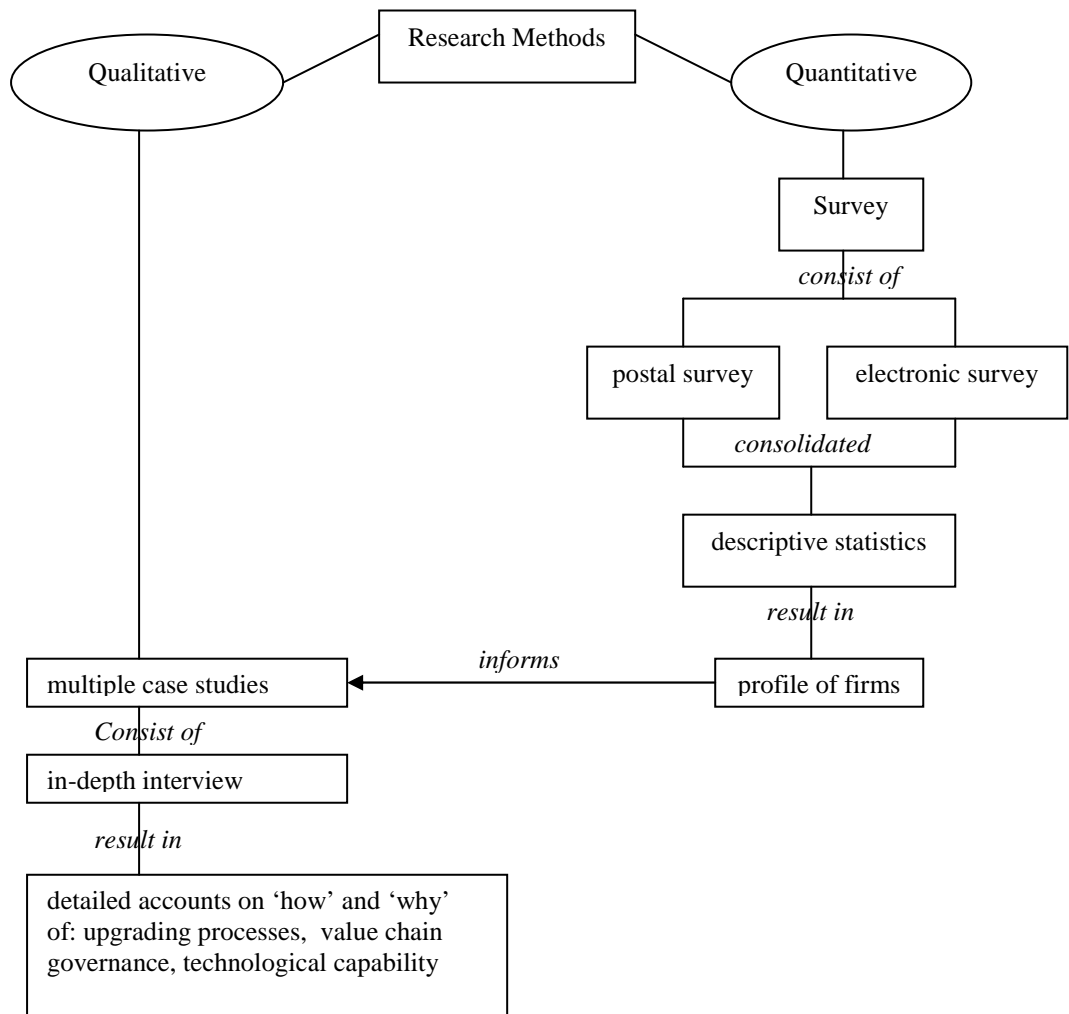
Source: adapted from Figure 1 (Kaplinsky & Readman, 2005: 684)

A combination of market share and unit price is used to capture the outcomes of upgrading or innovative processes. Product upgrading is indicated by market share increase and a rise in unit price, as shown in quadrant 2 of Table 3.1. Commonly, by increasing unit price, exporters are likely to lower their market share, since the consumer might select a lower price product. Increase in market share despite raising the unit price can only happen if the exporter is able to achieve relatively high product values through product innovation. Process competitiveness is indicated by market share increase, but with falling unit prices (Table 3.1, quadrant 4). By lowering the unit price, the exporter will increase the number of consumers and the demand for its product. Process upgrading may take place if the exporter lowers its unit price through

efficient production process, rather than by reduction of labour wages or exporter's income.

In obtaining the upgrading indicator above, caution should be exercised in the data analysis by complying with several assumptions, such as: the products under investigation are homogenous, and the exchange rate is relatively stable (Kaplinsky & Readman, 2005). The upgrading performance of Indonesian garment and electronics sectors in global market is analysed by using the United Nations UN-COMTRADE database. Trade classification based on the *Harmonised System (HS) 1996* is used for analysis, since the HS trade data classification provides the highest level of product disaggregation (i.e. 6 digit) (Ng and Yeats, 2003; Kaplinsky & Readman, 2005). The extent of product disaggregation reflects the more homogenous product that is required for the appropriate analysis and comparison. The garment sector is denoted by HS No. 61 (i.e. articles of apparel & clothing access, knitted or crocheted) and 62 (i.e. articles of apparel & clothing access, not knitted/crocheted), while electronic products are listed under HS No. 85 (i.e. electrical machinery and equipment and parts thereof; sound recorders and reproducers; TV image and sound recorders and reproducers of such articles).

Figure 3.1 Methods of data collection and analysis



3.2.3 Primary data collection

This study collected primary empirical evidence through a survey and through in-depth interviews. The survey was intended as an initial exploration phase to provide descriptive evidence and to assist in the selection of manufacturing firms for case studies. Thus cases are selected not only to provide in-depth insights on the issues under investigation but also to put them into the context of the bigger picture of the garment and electronics manufacturers sample in Indonesia. Meanwhile, the in-depth interview is used to provide deeper understanding on the mechanisms for insertion of the Indonesian garment and electronics manufacturers into value chains, learning process of the manufacturers in acquiring capability and process and path of

upgrading. The collection of primary data was conducted during the period of January to April 2008 on-site in Indonesia.

3.2.3a) Survey

The survey aimed to identify value chain upgrading outcomes, forms of governance of value chains and types of capability of the garment and electronics manufacturers in Indonesia. The survey emphasised the perception of firms concerning their relationships, particularly with global value chain leaders, regarding issues of value added activities and learning opportunity.

- *Design and measurement of the constructs*

The survey was meant to identify case studies for further analysis, thus the survey was designed to gather information about: first, profile of the firms, to capture the nature of garment and electronics manufacturers in Indonesia with regard to their typology, e.g. size, market-orientation and ownership; second, issues under investigation, to identify forms of value chain governance, types of technological capability and separation of value chain activities. These are all addressed in the five-part survey (see Appendix 1).

- ❖ Part one: asks about the profile of firms, including year of establishment, structure of ownership, number of employees and export share. The questions in this part are aimed at obtaining basic information about the firms.
- ❖ Part two: asks about the nature of firms' relationships with buyers, including number of buyers, years of relationships with key buyers, decision making within the value chain and learning opportunity from buyers.
- ❖ Part three: enquires on the nature of the firm's technological capability, including age of machinery and equipment, application of production system and management, reject rate, quality assurance, design practice, R&D activity and marketing activity. To capture the nature of firms' technological capability, the study does not utilise a detailed matrix of capabilities as suggested by Lall (1992); instead, it applies the simple typology as suggested

by Gammeltoft (2004). In constructing the questionnaire on technological capability, this study employed indicators applied by Rasiah (2004) and Cammuffo et al. (2005), to capture not only production capability but also design and marketing capabilities.

- ❖ Part four: asks about knowledge tacitness, including transaction complexity and information codifiability. The construct of transaction complexity will use the measure of task complexity and investment specificity adopted by Bensaou & Anderson (1999). Meanwhile, to catch information on codifiability, the research adopts codifiability indicators used by Kogut & Zander (1995). In constructing the scale, the study follows the argument that knowledge should not be viewed as a dichotomy, high or low. Knowledge categorisation is more likely to be a continuum, with tacit or implicit knowledge at one extreme, while explicit knowledge lies at the other extreme (Cavusgil et al., 2003). For this reason, variables are measured using a four-point interval scale instead of a dichotomy measurement.

Table 3.2 Operationalisation of survey method

Variables	Dimensions	References
Technological Capability	Process and product, design and marketing capabilities	Gammeltoft (2004), Rasiah (2004), Camuffo et al. (2005)
Knowledge tacitness	Task complexity and investment specificity, knowledge codifiability	Bensaou & Anderson (1999), Kogut & Zander (1995), Birkinshaw et al. (2002)

- ❖ The final part enquires about the extent of value added activities carried out by the firms.

- *Sample frame and strategy*

The survey was targeted at medium- and large-sized garment and electronics manufacturing firms that have production facilities in Indonesia. It was assumed that those manufacturers would have more resources and expertise to deal with powerful global firms, and to acquire a wider range of technological capability. Employment level was used as an indicator of firm size. The survey was intended to cover the as

many potential firms as possible, by sending questionnaire to all garment and electronics manufacturing firms in Indonesia. However since the survey was constrained by the limitation of available detailed information of firms, thus the survey covered only a small portion of population. The target population of the Indonesian garment sector was 901 medium- and large-sized manufacturers stated in a publication of the Ministry of Industry of Indonesia and the Statistics Office of Indonesia. However, since the publication had no detailed information about the individual manufacturers (e.g. name of firms, address and telephone number), the study utilised a detailed database of Indonesian textile and textile product association's (i.e. API). Therefore in total, the questionnaire was sent to only 138 garment manufacturers, based on the list of members of API instead of 901. The questionnaire of the Indonesian garment sector was completely filled in by 22 garment manufacturers. Meanwhile, the target population of the Indonesian electronics sector was 522 electronics firms listed by the Statistics Office of Indonesia. Similarly since the data was not supported by detailed information, the study used the database of the Indonesian Electronics Business Association (i.e. GABEL) and the Electronics Marketing Club (i.e. EMC). In total, the questionnaire was sent to only 64 electronics firms, using a compilation list of members from the two associations. Fifteen (15) electronics manufacturing firms responded to the survey on the Indonesian electronics industry. It is clear that the sample of the surveyed garment and electronics manufacturers was small and therefore does not represent the Indonesian garment and electronics population as a whole.

- *Deployment and analysis*

The survey was carried out through two different modes; electronic and postal. The electronic survey utilised an automated Microsoft-Word form, sent as an email attachment. The postal survey was administered in Jakarta, using a printed version of the same questionnaire which was sent to respondents, via special express mail delivery.

The survey results, based on a sample of only 22 garment manufacturers, is not sufficient to represent the entire Indonesian garment sector as it represents only 2.4 per cent of the population of garment firms in 2007 (i.e. 901 firms). Hence, to obtain a

more balanced picture of the population of the Indonesian garment sector, secondary sources were also utilised, as will be discussed in chapter five alongside the primary data. Furthermore, a range of interviews were undertaken with key informants from the API, global and domestic buyers, economic scholars and government officials, to provide complementary information on the Indonesian garment and electronics sectors. A similar situation also emerged in the electronics sector survey, with only 15 consumer electronics manufacturers responding to the questionnaire. This was only a small portion of the whole Indonesian electronics industry, which comprised 522 firms in 2007. Since all manufacturing firms responding to the survey were engaged in consumer electronics, this study narrowed its focus to the Indonesian consumer electronics sector. In general, the electronics industry consists of three sub-sectors: (i) electronic components and parts, (ii) industrial electronics and (iii) consumer electronics. The EMC is a trade association made up of consumer electronics firms operating in Indonesia. There were 30 members on the EMC's list in 2007; thus the sample of 15 consumer electronics manufacturers in this study accounted for 50 per cent of all consumer electronics firms listed by the EMC. Furthermore, some firms on the EMC's list of members did not have production facilities in Indonesia and were only sales and distribution offices of global consumer electronics firms. Consequently, the sample of this study accounted for 88 per cent of total consumer electronics manufacturing firms listed by the EMC (i.e. 17 manufacturers). Hence the sample may actually provide a good overview of the Indonesian consumer electronics industry as a whole. The survey results on Indonesian garment and electronics sectors were summarised using Excel and SPSS software.

3.2.3b) In-depth interview

In-depth interviews were conducted to provide rich and detailed information of the process of upgrading and capability acquisition as well as the mechanisms for insertion into value chains at the firm-level. Interviews were arranged with executives at director and manager level, from 13 garment manufacturers and 12 consumer electronics manufacturers. In addition, the author also interviewed 3 global garment buyers; 1 department store executive; 1 domestic garment trading agent, 3 Indonesian scholars who had expertise in garment and electronics industries; 2 government officials from the Ministry of Industry of Indonesia; key informants from the API and

the GABEL; 1 garment branding consultant; 1 social compliance consultant and 1 enterprise resource planning (ERP) consultant in garments. The author obtained additional insights about the Indonesian garment industry while attending the Executive Development Program organised by Garment Partnership Indonesia (GPI)/SENADA program in February 2008. During the six-day workshop, the GPI invited various speakers from among garment manufacturers, global buyers and trading agents, input suppliers and compliance audit firms to share their knowledge with garment manufacturers in Indonesia.

In-depth interviews were guided by an open-ended questionnaire to make sure of the free flow of information and to represent the interviewees' perspectives. Each interview was carried out face to face for about 120 minutes on average, recorded and transcribed for analysis. The interviews were carried out during the period of January to April 2008 and mostly in Bahasa Indonesia, the official language of Indonesia.

3.2.4 Research ethics

Since this study involves primary data collection through surveys and in-depth interviews, some ethical implications emerged. The study followed the relevant guidelines set by the Committee on the Ethics of Research of University of Manchester and had gained approval from the Committee of the Ethics of Research of University of Manchester before primary data collection was undertaken. Some ethical issues which emerged during the interviewing process were tackled; first, informed consent was requested, with a cover letter sent in advance to respondents to introduce the author and to explain the research objective as well as the relevance of this research to the respondents. The letter also asked the respondents to take part in this study voluntarily, and the place and time for interview were arranged to suit the respondents. Thus the interviews were conducted before, during or after office hours as requested by respondents. Second, confidentiality was assured by protection of the identity of respondents through anonymity. Recording equipment was used only with the permission of the respondents, and the identity of respondents was disclosed only to the author's supervisors for validation purposes. Furthermore, the respondents were given pseudonyms in all written reports. The third issue concerns the positionality of the author. This refers to the dualism of 'insider' and 'outsider' perspectives in

influencing the interpretation of interviews. The author, although Indonesian, did not have extensive direct experience with the Indonesian garment and electronics sectors, thus his positionality was fairly unproblematic. However, the author recognised that his personal values, attitudes and feelings might play a part in data collection and analysis, which could result in subjective bias. The author attempted to acknowledge his own position as an 'outsider' by examining the meaning of all findings based on multiple respondents' experiences and utilising other methods of data collection in addition to the in-depth interview, including observations, questionnaires, and documents. Meanwhile, being an 'outsider', the author was at a disadvantage in accessing the respondents to arrange interviews. To solve the problem, the author utilised informal references from relatives and scholars who had contacts with garment and electronics manufacturers in Indonesia. This informal approach proved to be effective in gaining both access to the respondents and their trust and cooperation.

3.2.5 Case studies

For more detailed analysis, this study uses case studies in order to provide a richer description and deeper understanding of the issues under investigation (Yin, 2003; Stark & Torrance, 2005; Flyvbjerg, 2006). The 'richness' of case study analysis derives from the complexity and contradictions of real life from the respondents' perspectives (Flyvbjerg, 2006). Therefore, a case study seeks to illuminate the reader's understanding of issues under investigation (Stake, 1995; Stark & Torrance, 2005).

Case study research directs to answer the 'why' and 'how' type of research questions within real-life context. A clearly specific research question is central in applying the case study research since it determines the unit of analysis. The specific research question may be drawn from: existing theories, evidence observed in the field and *a priori* hypotheses about causal relationships of issues under investigation (Yin, 2003; Stern et. al., 1998). Given the clearly specific research question and proposition, the next step in applying case study is to determine case study design. There are four basic designs for case study research which depend on the number of cases and unit of analysis. Cases are not representative sample instead they are analogous to a series of

experiments in a laboratory. Thus, the case studies are used to determine whether the theory could hold up under particular conditions of given cases or not. The selection of cases is expected to provide two replications that are: cases predict concurring result with the propositions and cases predict contrasting result with the propositions. For this reason, multiple case studies may be better than single case study since the multiple cases accommodate the two replications. The unit of analysis of case study research should provide the greatest insight into issues under investigation and research questions to be addressed. The unit of analysis of case study research may be a holistic design if the case study investigates only the global nature of an organisation; or an embedded design if the case study examines organisation and additional unit of analysis embedded within the organisation (Yin, 2003, Stern et. al., 1998).

The criticism toward case study research is concerning biasness and generalization. To deal with biasness, appropriate tactics as suggested by Yin (2003) can be applied in each stage of case study research (e.g. research design, data collection, data analysis) to enhance its validity and reliability. For instance, a case study protocol can be used to allow other researchers to verify data collection, findings and interpretation in a research, since the protocol contains not only instrument such as questions but also procedures and rules to be followed. In multiple case studies, the protocol is essentially required to gain consistent information that is needed for replication. The cases are representative sample, thus case study research is difficult to generalise from one or a few cases to the population. The case study contributes to theory-building by providing more in-depth understanding of issues under investigation, this is because cases are selected to include both archetypical cases that appear to represent a particular type and atypical cases which are unique (Yin, 2003; Stern, 1998).

From the total of 22 garment manufacturers surveyed, 5 manufacturers were selected for further analysis in this study. Similarly, 6 out of 15 surveyed consumer electronics manufacturers were chosen for case study analysis. These cases were selected purposively based on six criteria generated from the theoretical frameworks and the survey results. This selection was made in the attempt to address not only the research questions, but also to reflect the diversity within the sample of garment and consumer

electronics manufacturers in Indonesia. First, were garment and consumer electronics manufacturers that engaged in different forms of value chain governance (i.e. market, modular, relational, captive and hierarchical structure). Second, were garment and consumer electronics manufacturers that possessed and exploited different types of capabilities (i.e. process operative, process and product innovative capabilities). Third, were garment and consumer electronics manufacturers that had undergone different forms of value chain upgrading (i.e. process, product, functional and chain upgrading). Fourth, were garment and consumer electronics manufacturers serving different markets (i.e. 100% export, 100% domestic and mixed markets). Fifth, were garment manufacturers representing different firm sizes (i.e. medium- and large-sized manufacturers). Sixth, were consumer electronics manufacturers representing different kinds of firm ownership (i.e. 100% FDI, joint ventures and 100% domestic-owned).

The materials for the case study analysis were gathered not only from the primary data (i.e. survey result, transcribed recorded in-depth interview and direct observation) but also from secondary sources (e.g. publicly available information). For analytical purposes, the study applied a chronology and a cross-case analysis to provide not only descriptive information but also explanation of issues under investigation (Yin, 2003; Eisenhardt, 1989). Thus, the study addressed the mechanisms for insertion of Indonesian garment and consumer electronics manufacturers into value chains, the learning process of the manufacturers in acquiring different types of capability, as well as the process and path of upgrading followed by the manufacturers. The chronology technique allowed the study to address the research questions by exploring the upgrading path, capability acquisition process and value chain governance dynamics over time. The upgrading path of the Indonesian garment and consumer electronics manufacturers might follow certain sequential stages: from process and product (OEA/OEM) to functional upgrading (ODM/OBM) as predicted by the GVC framework. Furthermore, the capability of the Indonesian garment and consumer electronics manufacturers might also be developed and upgraded over time, while governance of value chains into which the Indonesian garment and consumer electronics manufacturers were inserted might also evolve over time. The cross-case analysis compared and contrasted the issues under

investigation across multiple case studies within and between the garment and the consumer electronics sectors in Indonesia. The analysis sought similarities and differences across the Indonesian manufacturing firms and sectors to generate a better understanding on upgrading processes within the Indonesian manufacturing sector.

3.3 Some methodological issues

Since the detailed analysis of this study relies more on the case study approach, the author is aware of the limitations of applying this approach. Criticism of qualitative research, including case studies, is predominantly concerned with generalisability and validity (Bryman & Bell, 2003; Yin 1981, 2003; Flyvbjerg, 2006). Due to the small number of manufacturing firms involved, the findings of this study can not result in an outcome of statistical generalisation to the population of the Indonesian garment and electronics sectors as a whole. Instead the use of case study analysis helps to provide a more nuanced and detailed understanding of the processes by which case study firms upgraded, and the consequences that arise from this for both empirical and theoretical considerations within the literature.

Validity of empirical findings of this study was achieved through a triangulation of multiple data collection methods, including surveys, in-depth interviews, direct observations and public information (Eisenhardt, 1989; Stark & Torrance, 2005). To some extent, the in-depth interviews were conducted with different respondents from the same firms. Direct observation was conducted when the author visited production facilities of garment or electronics manufacturers. Observation of machinery and equipment or floor-worker activity provided additional information about the issues under investigation. Public information regarding garment and electronics manufacturers in firm websites, company profile, magazines and newspapers was also accessed to enrich the information.

Furthermore, the case study method used in this study created practical challenges for the author. Case study analysis aims to provide a greater amount of information on issues under investigation. Thus, a good case study analysis can contain a substantial

quantity of narrative material in discussing the complexities and contradictions of real life. Such narrative is difficult to summarise without losing contextual meaning and factual findings (Flyvbjerg, 2006). Having a limit on the number of words allowed in this thesis, the author was challenged to be selective in recounting information issues and to synthesise empirical evidence. Therefore, the author selects short quotations which provide clear illustrations to readers in addressing the research questions of this study. It is true that the selection of facts may underplay the complexities and contradictions of reality of the garment and electronics manufacturers in Indonesia; however, the author tried to make this selection in a meticulous way in order to provide a good representation of the whole body of data in answering the research questions. Moreover, the author has retained the full-length interview transcriptions for further study, and which are available for further scrutiny.

3.4 Conclusion

To provide an empirical basis for the analysis, both quantitative and qualitative data were gathered through surveys and in-depth interviews within the Indonesian garment and electronics sectors. The survey data and further secondary information helped to describe the different characteristics of garment and consumer electronics manufacturers in Indonesia. However, it did not address the detailed processes, mechanisms and efforts of the manufacturing firms to bring about upgrading. Here, the in-depth interview was used to add detail. To provide deeper and richer insights on the nature of upgrading processes within the Indonesian garment and electronics manufacturers, this study used qualitative data from selected case studies. The case studies were purposively selected from the survey, not only from the garment and consumer electronics manufacturing firms that provided detailed information to address the research questions, but also to reflect different characteristics of the garment and electronics manufacturing firms in Indonesia. However, since the survey was not carried out with representative samples, indications provided by findings of this study apply to the selected cases only and should not be generalised to the entire population of the Indonesian garment and electronics firms.

Chapter 4

Dynamics of the Global Garment and Electronics Value Chains *New Challenges and Opportunities*

The Indonesian manufacturing sector is facing numerous challenges in its attempt to upgrade. Within global value chains, upgrading of manufacturing firms in Indonesia is influenced by the role played by global lead firms. Therefore, in order to upgrade, the Indonesian manufacturing firms are required not only to develop their capability but also to cope with the governance of global firms. Before conducting a more detailed exploration of such upgrading processes in Indonesian garment and electronic firms, this chapter assesses the shifts in the global garment and electronics value chains to better understand the context of fragmentation and integration of global economic activities and the role of powerful global firms. The changes in the global landscape not only challenge the insertion of the Indonesian garment and consumer electronics manufacturing firms into global value chains but also impact on the ability of Indonesian firms to upgrade. Therefore, this chapter seeks to examine how the dynamics of their global counterparts affect Indonesian garment and electronics manufacturing firms. This chapter presents the challenges and opportunities encountered by the Indonesian garment and electronics manufacturing firms intent on becoming part of these global value chains.

The emergence of global branded marketers and retailers, and the abolition of the quota system in international trade have brought about opportunities and challenges for garment manufacturing firms from developing countries, including Indonesia, in engaging in global markets. The Indonesian garment manufacturing firms are able to engage in global value chains with less restriction by international trade rules. At the same time, low prices and production costs are no longer the only factors determining whether or not Indonesian garment manufacturers can join the global value chains. Instead, other factors, including social compliance and shorter time to market, appear to play a more crucial role.

Similarly, within the global electronics value chains, the emergence of value chain modularity and global contract manufacturers may affect how Indonesian consumer electronics manufacturing firms are inserted into chains. Foreign direct investment does not provide their only means of participation. The Indonesian electronics manufacturing firms may take up roles as suppliers to global lead electronics firms. To engage in global electronics value chains, the Indonesian electronics manufacturing firms have to possess the capability to provide services that meet the requirements of global lead electronics firms in terms of quality, technological and environmental standards.

This chapter is organised as follows: section 4.1 examines the shifts in the global textile and garment value chains due to the emergence of powerful branded marketers and retailers (4.1.1) and the abolition of the MFA rule (4.1.2). Section 4.2 discusses the shifts within the global electronics value chains, demonstrating the relocation strategy (4.2.1) and the outsourcing strategy (4.2.2) conducted by global lead electronics firms. The last section (4.3) compares the shifts between global garment and electronics value chains and draws conclusions on the impact of the shifts on the insertion of the Indonesian garment and consumer electronics manufacturers into global value chains.

4.1 Global shifts in garment value chains

Recent developments in the global garment value chains show a geographical shift of production to certain developing countries: notably to East Asia, the European Union and Southern Asia and to a lesser extent, Mexico and Sub Saharan Africa. Table 4.1 shows that China dominates world garment exports by contributing to 33.4 per cent of the world total. Meanwhile, Indonesia emerges as the world's eighth largest exporter of garments (1.7 per cent of the world total). In terms of garment imports, the European Union and United States receive more than 60 per cent of the world total.

Table 4.1 Leading exporters and importers of garments, 2007 (in billions dollars and percentage)

	Value	Share in world	Annual percentage change	
	2007	2007	2000-07	2007
Exporters				
China a	115.2	33.4	18	21
European Union (27)	103.4	29.9	9	13
extra-EU (27) exports	24.8	7.2	10	19
Hong Kong, China	28.8	8.3	2	1
domestic exports	5.0	1.4	-9	-26
re-exports	23.8	6.9	8	10
Turkey b	14.0	4.1	12	16
Bangladesh b	10.1	2.9	10	4
India	9.7	2.8	7	2
Viet Nam b	7.2	2.1	22	29
Indonesia	5.9	1.7	3	2
Mexico a	5.1	1.5	-7	-19
United States	4.3	1.2	-9	-12
Thailand	4.1	1.2	1	-4
Pakistan	3.8	1.1	9	-3
Morocco a	3.6	1.0	6	11
Tunisia	3.6	1.0	7	18
Sri Lanka b	3.3	1.0	2	8
Above 15	298.1	86.3	-	-
Importers				
European Union (27)	162.8	45.5	10	13
extra-EU (27) imports	84.2	23.5	11	13
United States	84.9	23.7	3	2
Japan	24.0	6.7	3	1
Hong Kong, China	19.1	5.4	3	2
retained imports
Russian Federation b, c	14.5	4.1	27	79
Canada c	7.6	2.1	11	12
Switzerland	5.2	1.4	7	11
United Arab Emirates b	5.0	1.4	29	64
Korea, Republic of	4.3	1.2	19	15
Australia c	3.7	1.0	10	13
Mexico a, c	2.5	0.7	-5	-2
Singapore	2.4	0.7	4	-3
retained imports	0.9	0.2	7	16
Norway	2.3	0.6	9	16
China a	2.0	0.6	7	15
Saudi Arabia	1.9	0.5	13	18
Above 15 d	323.1	90.3	-	-

Source: adapted from Table II.69 (WTO, 2008)

Notes: a Includes significant shipments through processing zones

b Includes Secretariat estimates.

c Imports are valued f.o.b.

d Excludes retained imports of Hong Kong, China.

4.1.1 The emergence of powerful branded marketers and retailers

During the 1990s, global garment value chains were marked by the fragmentation across national boundaries under the organisational structure of densely networked firms. All activities and firms involved in value chains were coordinated and governed by lead firms. In the context of global garment value chains, the lead firms were often buyers (Gereffi & Korzeniewicz, 1994). Global buyers from major

importing countries (e.g. United States and European Union) had diversified their activities, and were predominantly branded marketers and retailers.

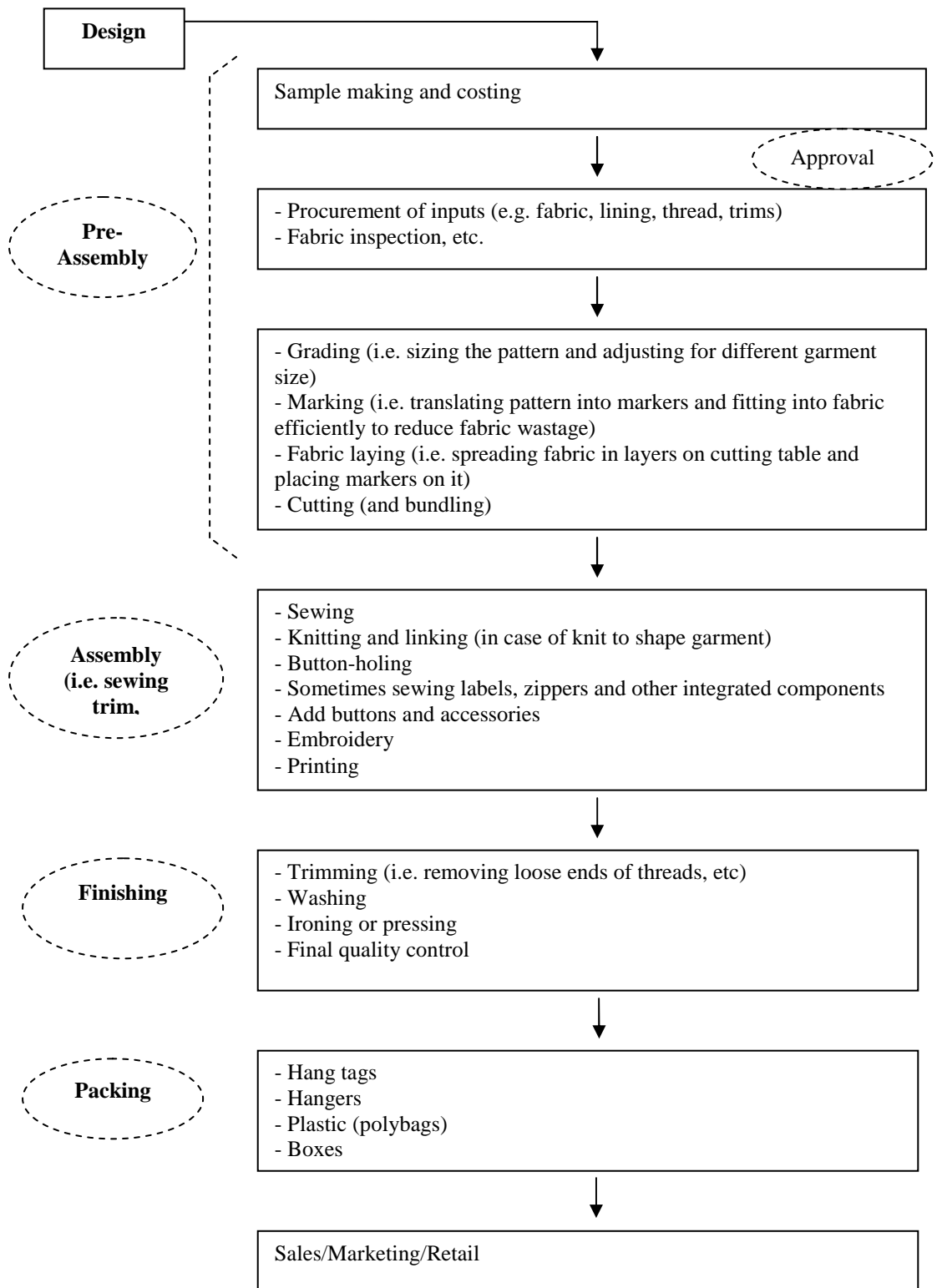
Table 4.2 Classification of garment buyers

	Classification	Definition	Examples
1	Branded marketer	Merely design and market garments. Have no experience with production activity since they outsource production to manufacturer. They sometimes own stores	<i>Nike, Adidas, Polo Ralph Lauren, Calvin Klein</i>
2	Buying agent	Have a selective producer's location and qualification. They organise and negotiate orders among them. They often conduct quality control and compliance with other standards	<i>Li & Fung, Swire & Maclaine, Connor Group</i>
3	Branded manufacturer	Conduct own design and marketing. Have experience with production activity, but outsource to manufacturer. They often have overseas production facilities	<i>Levi's, Sara Lee, Hugo Boss, Fruit of the Loom</i>
4	Designer label	Focus on design and production by hiring designers. Heavily involved in marketing and retailing of their products, sometimes in their own stores.	<i>Yves Saint Laurent, DKNY</i>
5	Retailers		
5.1	Department store	Market and sell garments along with other consumer products. They also sell private labels next to other brands. Garments are sourced either from own designs or through OEM or OBM operation	<i>JC Penney, C&A, Marks & Spencer</i>
5.2	Mass merchandiser	Usually a very large retailer or supermarket which focuses on economies of scale and the lowest price. Compete primarily on low prices, source for their private labels, either based on own designs or through OEM or ODM operations	<i>Sears, Kmart, Walmart, ASDA, Tesco, Carrefour</i>
5.3	Retail chain	Run own chains of stores, often internationally, selling only their own labels. Most of them based on OEM but lower end may source on ODM basis	<i>GAP, Liz Claiborne</i>
5.4	Speciality store	Retailer of specific products, e.g. sportswear, source or buy from garment merchandiser or their designated subcontractors, sometimes also own label	<i>Footlocker, Royal Sporting House (SPH)</i>
5.5	Mail order firms	Sell their products through catalogues, which consumers can pick and order. Source products/labels, either based on own designs or through OEM or ODM operation	<i>LandsEnd, Quelle, Littleworld</i>

Source: adapted from Table 1.4 (Smakman, 2004: 20)

Global branded marketers and retailers tend to concentrate on design and marketing/retailing activities, thus they are located at the 'end' of the garment value chain, as illustrated in Figure 4.1, Global buyers are least likely to be involved in pre-assembly, assembly, finishing and packing activities. Therefore global branded marketers and retailers rarely have production facilities (Gereffi, 1999). Since global branded marketers and retailers govern and coordinate global garment value chains, they play a significant role in determining production networks in developing countries (Gereffi & Memedovic, 2003; Nordas, 2004). They supply designs, specifications, fabrics and accessories to garment factories in developing countries, including Indonesia, for manufacture, and then market and retail the finished garments under their own brand names.

Figure 4.1 Garment value chain



Source: adapted from Figure 1.2 (Smakman, 2004:17)

To gain greater profitability in exceedingly competitive markets, global branded marketers and retailers carry out product and market segmentation by creating distinctive brand names. They invest heavily in advertising and promotion to sustain recognition of their brand names (Audet, 2004). Global branded marketers and retailers not only sell their products as consumer goods, but also market them as lifestyle choices. For instance *Nike* has represented its brand as a symbol of the 'healthy American way of life' (Quinteros, 2005). Therefore global branded marketers and retailers rely heavily on corporate images which can be vulnerable to negative publicity (Jenkins, 2001; Hughes, 2005). To protect the value of their corporate images and brand names, they require their suppliers and subcontractors to comply with their codes of conduct, and are concerned particularly with social and labour standards. Hence their suppliers have to comply with the codes of conduct of global branded marketers and retailers, in addition to the factors of price-quality-delivery, to secure orders.

Codes of conduct refer to voluntary initiatives adopted by the business sector, and the significant upsurge of such codes is due to the following factors: (i) the globalisation of value chains in which global buyers from advanced countries control suppliers from developing countries and require the suppliers to take responsibility for working and environmental conditions, (ii) the increased significance of brand and corporate reputation which is susceptible to negative publicity, (iii) changing public attitudes toward the impact of global lead firms' activities on the environment and (iv) developments in global communications that facilitate transmission of information about poor working conditions of suppliers in developing countries and thereby increase public awareness and lead to campaigning activities (Jenkins, 2001; Hughes, 2005; Barrientos & Smith, 2007).

Since garments are a relatively labour-intensive sector, codes of conduct emphasise labour standards. Labour standards have become a critical issue since customers, non-government organisations (NGO) and other private and public organisations are concerned with poor labour and working conditions of suppliers in developing countries. Codes of conduct on labour standards typically set guidelines on issues

with reference to conditions of the International Labour Organization (ILO) Core Convention, including Freedom of Association (C87), Right to Collective Bargaining (C98), No Forced Labour (C29, C105), Minimum Age (C138), No Discrimination (C111), Equal Remuneration (C110) (Jenkins, 2001; Pearson & Seyfang, 2001; Mamic, 2005; Barrientos & Smith, 2007). These core labour standards also refer to additional aspects of labour conditions such as health and safety, minimum wage, maximum working hours, and security of employment (Jenkins, 2001).

Table 4.3 Types of codes of conduct in garment value chains

<u>Gap's Code of Vendor Conduct</u>	<u>Nike's Code of Conduct</u>	<u>The ETI Base Code</u>	<u>BSCI Code of Conduct</u>
1. Compliance with laws 2. Environment 3. Labour - Child Labour - Contract Labour requirement - Discrimination - Forced labour - Freedom of association and the right to collective bargaining - Humane treatment - Wages and benefits - Working hours 4. Working Conditions - Occupational health and safety - Dormitory	1. Forced labour 2. Child labour 3. Compensation 4. Benefits 5. Hours of work/overtime 6. Environment, safety and health 7. Documentation and Inspection	1. Employment is freely chosen 2 Freedom of Association and the right to collective bargaining are respected 3. Working conditions are safe and hygienic 4. Child labour not to be used 5. Living wages are paid 6. Working hours are not excessive 7. No discrimination is practised 8. Regular employment is provided 9. No harsh or inhumane treatment is allowed	1. Legal compliance 2. Freedom of Association and the right to collective bargaining 3. Prohibition of discrimination 4. Compensation 5. Working hours 6. Workplace health and safety 7. Prohibition of child labour 8. Prohibition of forced labour and disciplinary measures 9. Environment and safety Issue 10. Management systems

Source: www.gapinc.com; www.nikebiz.com; www.ethicaltrade.org; www.bsci-eu.org

Each global branded marketer and retailer applies distinctive codes of conduct; some of them adopt their own corporate codes when establishing business relationships with suppliers, such as *Gap's Code of Vendor Conduct* or *Nike's Code of Conduct*. Others apply codes which are set by trade associations or by multiple stakeholders, including corporations, industry representatives, NGOs and trade unions. For instance, *S Oliver* applies the Brussels-based Business Social Compliance Initiative (BSCI) Codes of Conduct that are set by the foreign trade association, while *Marks and Spencer* adopts the UK's Ethical Trading Initiative (ETI) Base Code which was established by multi-stakeholders. Table 4.3 illustrates the variation in labour standards among different codes of conduct of global branded marketers and retailers. Such variety may cause confusion among local garment factories since implementation may bring about conflicts between standards (Jenkins, 2001). Furthermore, global buyers are likely to examine not only labour standards but also other aspects, including environment, to enhance their brand name recognition and corporate image. Consequently, global buyers have started including environmental standards in their codes of conduct. *Marks & Spencer*, for instance, is not concerned only with labour standards but also with environmental issues such as energy saving, material re-use and recycling (www.marksandspencer.com).

Code of conduct compliance can improve labour and working conditions in local factories in ways that positively affect their global competitiveness (Barrientos, 2000; Jenkins, 2001, Barrientos & Smith, 2007). Global buyers such as *Gap* and *Nike* evaluate their suppliers around the world based on code compliance. Therefore, garment factories from developing countries, including Indonesia, have to comply with codes of conduct adopted by global branded marketers and retailers without any exemption, since non-compliance will result in their exclusion from global value chains. However, implementation of these codes of conduct has created new challenges for garment suppliers in developing countries in terms of increases in direct and indirect costs. The cost of improving labour standards cannot be offset by purchase prices that are in decline; however, empirical evidence indicates that the cost is offset by dynamic microeconomic efficiency gains, macroeconomic effects and social benefits from higher labour standards (Van der Meulen Rodgers & Berik,

2006). Thus, compliance with codes of conduct is the key for garment factories in developing countries: both in gaining insertion into global garment value chains and achieving better labour standards and working conditions.

4.1.2 Abolition of the multi fibre arrangement

During the period of 1974-2004, international trade in textiles and garments was subject to the MFA, by which importing countries were permitted to restrict imports of textile and garment products. Under the MFA, the insertion of garment producers from developing countries into global value chains was highly dependent on their quota fulfilment. When their respective quota allocations had been fully utilised, their garment manufacturers were unable to export additional textiles and garments. If the manufacturers still intended to export their textiles and garments, they would have to produce other types of garment which were not restricted by the quota system in order to achieve product upgrading. Alternatively the manufacturers might shift their production activities to other countries that were either not bound by the quota system or still had unutilised quota allocations. Some studies have examined the impact of the MFA on developing countries (Goto, 1989; Trela & Whalley, 1990; Krishna & Tan, 1998).

In January 2005 the quota restrictions on all textile and garment products under the MFA were lifted. The abolition of the MFA is likely to bring about adjustments in global garment value chains, and create new challenges for both global buyers and garment factories. Various studies (Ianchovichina & Martin, 2001; Nordas, 2004; Mayer, 2004) have been conducted to measure the impact of the post quota system on global garment value chains. Simulation results of these studies demonstrated that China and India would increase their market share in the global garment market at the expense of other developing countries. Nordas (2004) predicted that the impact of quota elimination on supplier countries' market share would be dramatic. She predicted that China and India would significantly increase their market share in garment imports to the US to 50 per cent and 15 per cent respectively. However, she argued that some exporting countries, including Mexico, Indonesia, and Bangladesh, would experience a decline in their global market shares. Thus both China and India

would gain at the expense of other developing countries. The prediction was driven by changes in relative prices. She argued that both China and India would increase their market shares due to their cost competitiveness. This view was supported by the US International Trade Commission's identification of China as the 'supplier of choice' for US buyers due to its cost competitiveness (USITC, 2004).

Table 4.4 Impact prediction of quota abolition on US garment market measured by market share change (%)

Exporting countries	Before	After
China	16	50
India	4	15
Hong Kong	9	6
Rest of Americas	16	5
Mexico	10	3
Thailand		3
Philippines	4	2
Indonesia	4	2
Bangladesh	4	2
Sri Lanka		2
Chinese Taipei	4	
European Union	5	
Rest of the world	24	10

Source: adapted from Figure 10 (Nordas, 2004: 30)

However, recent developments in global garment value chains demonstrate that other developing countries have also been able to maintain their competitiveness in terms of stable and even increased global market shares. The US trade data on garments after quota abolition confirms that China and India increased their market share of garment imports to the US. China achieved a considerable increase in its market share: from 11.9 per cent in 2003 to 30.8 per cent in 2007, while India increased its market share slightly: from 3.3 per cent in 2003 to 4.3 per cent in 2007 (see Table 4.5). However, the increased market shares of China and India are not, as predicted by Nordas (2004), completely at the cost of other developing countries. It is true that some exporting countries, including Mexico and Philippines, have experienced a declining market share. Nevertheless, countries such as Indonesia and Bangladesh have been able to increase their market share post abolition of MFA.

Table 4.5 Actual impact of quota abolition on the US garment market measured by market share change (%)

Exporting countries	2003	2007
China	11.9	30.8
India	3.3	4.3
Hong Kong	6.1	2.8
Mexico	11.3	6.1
Thailand	2.8	2.4
Philippines	3.0	2.3
Indonesia	3.5	5.4
Bangladesh	3.0	4.2
Sri Lanka	2.4	2.1
Chinese Taipei	2.6	1.2
European Union 15	3.4	2.7

Source: US Office of Textiles and Apparel (www.otexa.ita.doc.gov)

The difference between the predictions and the actual impact of quota abolition raises some questions. Mayer (2004) argued that the actual impact was less than the model had predicted, since the model had neglected to include the industry structure and sourcing strategies. In reality the sourcing strategy of global branded marketers and retailers was not, as claimed by Nordas (2004), based solely on cost or price competitiveness of suppliers. It is clear that post MFA, other factors beyond mere low price determine whether or not garment manufacturers from developing countries are included in global garment value chains. With the lifting of barriers on garment trade flows, global branded marketers and retailers have begun to adjust by consolidating their supply chain management systems. They select fewer garment suppliers, focusing on those who are most competitive, in order to pursue the global buyers' objectives in terms of efficiency and profitability. Industry sources claim that global retailers, such as *JC Penney*, are reducing their number of suppliers and countries in the quota free environment, selecting the suppliers that are able to provide quality product and service. Subsequently *JC Penney* will grow its business using fewer suppliers (JC Penney, 2004b). In 2006 *JC Penney* reduced its supplier base from 50 to 35 countries and had plans to cut back further to approximately 20 countries (Atkinson, 2006). Other US branded marketers and retailers will trim down their

sources from about 50 countries to 10-15 countries post quota system (Appelbaum, 2008). Consequently, massive substitution and relocation of textile and garment sources is taking place among developing countries, resulting in winners and losers.

It is apparent that the insertion of Indonesian garment manufacturers into global value chains is highly dependent on whether the manufacturers are able to contribute to global buyers' efficiency and profitability or not. Indonesian garment manufacturers that rely only on low prices and production costs will not be included in global garment value chains. Audet (2004) suggested that one of the other factors beyond low price is time. Time to market is playing a more crucial role in determining inclusion of garment manufacturers in global value chains, particularly in highly competitive, time sensitive and fashion-oriented garment chains. Shorter time to market contributes to global buyers' profitability since it ensures higher retail prices for the product (JC Penney, 2004). The time to market is also important for global branded marketers and retailers that adopt the lean retailing strategy. In lean retailing, global buyers no longer have warehouses for storage of stock. Instead, they require frequent small quantity shipments on a weekly basis rather than large, bulky shipments from factories (Abernathy et al., 2000). The time to market is dependent on the proximity of garment manufacturers to final markets. Thus the shorter the distance of garment manufacturers from the final market of global branded marketers and retailers, the greater the possibility of inclusion in their global value chains.

4.2. Global shifts in electronics value chains

Most studies on the electronics industry concentrate on hardware, i.e. electronic equipment and components (Hobday, 1995; Kim, 1997; Dicken, 1998; Ernst, Ganiatsos & Mytelka, 1998; Belderbos & Zou, 2006), while others include software and information and communication services (Ernst, 2002; Grantham & Kaplinsky, 2005; Hess & Coe, 2006). Electronic equipment is in itself a very broad term and can be classified into six categories; telecommunications, defence, consumer electronics, computing, industrial equipment and semiconductors. Advanced countries tend to concentrate on high-end electronic hardware and software (Hobday, 2001).

Table 4.6 Electronic product classification

Classification	Product and system
Consumer electronics	Compact disc, high definition TV, videocassette player and recorder, stereo system, camcorder, radio
Telecommunications	Exchange, telephone, radar, broadcast equipment, mobile base station, microwave, fibre optics, satellite earth station
Defence	Aircraft, missile control system, shipping navigation equipment, space vehicle and testing system
Computing	Internet infrastructure (e.g. super server), personal and mainframe computer, disk drive, optical disk, laser and other printer, terminal
Industrial equipment	Process control equipment, robot system, numerical control equipment, motor control
Semiconductors	Microprocessor, memory, transistor, flat panel display, standard logic circuit, application specific integrated circuit

Source: adapted from Table 1 (Hobday, 2001: 14)

The electronics sector also shows a production shift among countries, particularly in the East Asian region (Lall, Albaladejo & Zhang, 2004). The East Asian region has become a centre of global electronics production. This is not only due to the division of labour in global production activities but also a catching-up process over time (Luthje, 2004; Hobday, 2001). In contrast to global garment value chains, advanced countries are still important producers and exporters of electronics. For instance, the European Union, United States, Japan and the East Asian NIEs (Hong Kong, South Korea, Singapore and Taiwan) are still leading exporters of telecommunications equipment; China and Mexico are the only exceptions. Meanwhile, Indonesia has not made any significant contribution to international trade of telecommunications equipment (Table 4.7). In terms of telecommunications equipment imports, Table 4.7 shows the European Union and United States to be the destinations for more than 50 per cent of the world total.

Table 4.7 Leading exporters and importers of telecommunication equipment, 2007
(in billions dollar and percentage)

	Value	Share in world	Annual percentage change	
	2007	2007	2000-07	2007
Exporters				
European Union (27)	174.1	31.1	7	-13
extra-EU (27) exports	53.3	9.5	6	4
China a	146.3	26.1	33	18
Hong Kong, China	54.7	9.8	16	18
domestic exports	1.0	0.2	9	849
re-exports	53.7	9.6	16	16
Korea, Republic of	40.2	7.2	16	8
Mexico a	39.8	7.1	11	24
United States	38.6	6.9	2	12
Japan	34.7	6.2	2	3
Singapore	17.7	3.2	11	-1
domestic exports b	6.4	1.1	8	-13
re-exports b	11.3	2.0	14	6
Malaysia a	13.2	2.4	0	-8
Taipei, Chinese	11.6	2.1	8	1
Canada	8.6	1.5	-4	-1
United Arab Emirates b	8.4	1.5	36	14
Thailand	6.3	1.1	7	-2
Israel	4.0	0.7	-1	11
Indonesia	2.7	0.5	-4	-7
Above 15	547.1	97.6	-	-
Importers				
European Union (27)	221.6	37.7	10	-7
extra-EU (27) imports	105.0	17.9	14	18
United States	124.7	21.2	8	7
Hong Kong, China	48.3	8.2	13	12
retained imports
China a, c	35.7	6.1	16	1
Japan	21.9	3.7	7	25
Mexico a, d	21.6	3.7	13	14
Singapore	15.8	2.7	13	-2
retained imports b	4.6	0.8	10	-19
Canada d	14.2	2.4	5	12
Russian Federation b, d	12.5	2.1	36	44
India	9.9	1.7	46	30
United Arab Emirates b	8.7	1.5	19	-7
Australia d	8.5	1.4	8	11
Korea, Republic of	8.2	1.4	5	9
Brazil	5.1	0.9	8	16
Malaysia a	4.9	0.8	5	8
Above 15 e	513.5	87.4	-	-

Source: adapted from Table II.50 (WTO, 2008)

Notes:

- a Includes significant shipments through processing zones
- b Includes Secretariat estimates.
- c In 2007, China reported imports of telecommunications equipment from China amounting to \$13.4 billion. For further information, see the Metadata.
- d Imports are valued f.o.b.
- e Excludes retained imports of Hong Kong, China.

4.2.1 Relocation strategies of global electronics firms and foreign direct investment

Electronics is a more capital-intensive industry than the garment sector because this industry needs substantial investment to establish production facilities and to keep updating the process and product technologies. Hence, foreign investment plays a significant role in the development of the electronics industry in the developing countries. Many developing countries have attempted to get involved in the electronics industry, given that the sector not only contributes to economic growth, export, and employment, but also improves technological capability. In East Asia, the Japanese electronics industry began to develop in the late 1960s, driven by *Sony* and *Matsushita*. In the 1980s, Japanese electronics firms dominated the global consumer electronics market, particularly in audio and video equipment (Gangnes & Van Assche, 2008). Within the East Asian region, Japanese electronics firms became the leaders in electronics production and export, supported by high technological capability.

The engagement of the other East Asian economies, including Indonesia, in global electronics value chains is linked to the significant role played by Japanese lead electronics firms during 1970s-1980s. During this period, Japanese lead electronics firms searched for locations with lower production costs within the East Asian countries due to unfavourable domestic conditions. First, the sharp appreciation of the Japanese Yen brought down the cost competitiveness of electronic products produced in Japan. Second, the increase in trade protection by the Europe and the United States against Japanese electronic products induced outward investment by Japanese lead firms (Belderbos and Zou, 2006). The Plaza Accord, which was agreed by the G5 (i.e. United States, United Kingdom, West Germany, Japan and France) to depreciate the US dollar, meant that the Japanese Yen appreciated sharply. The Yen's value rose from around 240 per US dollar to below 200 per US dollar within 3 months and within 3 years of the Accord had appreciated by around 70 per cent (Kuroda, 2004). Furthermore, Japanese consumer electronics products, including colour televisions and video recorders, became the target of antidumping action and other trade policies applied by United States and Europe, resulting in increases in import duties and voluntary export restraint (Belderbos, 1997).

Due to these reasons, Japanese lead electronics firms were forced to relocate their production facilities to other East Asian countries by establishing affiliates (i.e. joint ventures and subsidiaries) and sub-contracting to local electronics manufacturers. The establishment of foreign affiliates was a dominant mode in the ASEAN (Association of South East Asian Nations), which included Indonesia, while the sub-contracting model under OEM (original equipment manufacture) was more common within the East Asian NIEs (Hobday, 2001). Under the OEM arrangement, independent local electronics manufacturers typically imported electronic components from the Japanese lead firms to be assembled into finished products. The foreign affiliates were simply a replication of Japanese lead firms' assembly facilities off-shore. Thus Japanese electronics firms were involved in shaping the development of the electronics industry in the East Asia by providing capital, production machinery and technology, electronics components, business model and management style (Ernst, 2006). Consequently, the insertion of developing countries in global electronics value chains was largely determined by the global lead firms' strategies through their relocation of their production facilities and foreign direct investment (FDI). Developing countries made efforts to attract FDI inflow by offering favourable policy frameworks, investment incentives and tax concessions.

4.2.2 Value chain modularity and the emergence of global contract manufacturers

Global electronics production has experienced a breakthrough since the late 1980s. This is indicated by the break-up of vertically-integrated firms which used to perform all production activities internally. These production activities are now split into discrete fragments to be performed by different firms. Furthermore, the fragmentation applies not only to production processes but also to the whole chain of value added activities; and global lead firms no longer need to perform the whole value chain internally, in- and off-shore. Global lead firms have to select and focus on particular value chain activities and outsource the rest of the activities to other independent firms (Sturgeon, 2003; Ernst, 2005). The fragmentation in global electronics value chains is driven by several factors. First, modularisation of electronics production allows the application of standardised components or systems. Electronic products such as personal computers and telecommunications equipment are assembled using

standardised disk drives, integrated circuits (IC), microprocessors, operating systems and so on to produce differentiated products. In personal computers, for instance, *Windows* and *Intel* have become the standardised operating system and microprocessor respectively (Luthje, 2004; Sturgeon, 2003). Second, there is growing capability among 'global electronics suppliers' to perform not only assembly operations but also take on other value added activities (e.g. design, input sourcing). Global electronics suppliers such as *Quanta*, *Compal*, *Wistron*, *Asustek* and *Inventec* provide not only manufacturing but also product design services for global personal computer firms. Third, the intense competition within the global electronics industry requires firms to be both flexible and specialised. The competitiveness of electronics firms in the global market is dependent not only on cost and price, but also on product differentiation and time to market. Global lead electronics firms are unlikely to possess the necessary capabilities to carry out the whole value chain effectively, thus firms need to specialise in particular activities (Ernst, 2005).

The US electronics firms became the first to take advantage of value chain fragmentation through modularity (Ernst, 2005). Sturgeon (2003) refers to production modularity as an 'American Model' of new industrial organisation. *IBM* became a pioneer in global electronics value chains by starting to outsource its value added activities to other companies. Traditionally, *IBM* designed and produced the key software and hardware in-house. Moreover, *IBM* outsources not only assembly of its motherboards but also purchases microprocessors and operating systems for its personal computers from other firms (Luthje, 2002, 2004). Thus *IBM* no longer produces its personal computers in-house, and their computers are manufactured by independent manufacturing firms which are known as contract manufacturers (CM). In this relationship, *IBM* focuses more on product design, brand and market development, while the rest of the activities (e.g. assembly operation, logistics, distribution and after sales services as well as system and component making) are performed by the contract manufacturers (CM) and turn-key suppliers. In fact *IBM* now has no production facilities at all, since they have been sold to the contract manufacturers. This high level of dependence of existing and newer American electronics firms on manufacturing services provided by the contract manufacturers

creates modular production networks (Sturgeon, 2003). In the modular production network, global lead electronics firms depend on exchange of codified knowledge with independent global contract manufacturers who have high capability. The modular relationships provide advantages in terms of speed, flexibility, access to low cost inputs and information exchange (Sturgeon, 2003).

Table 4.8 Global top EMS firms, 2006

Company	Headquarters	Net Sales (US\$ millions)
Hon Hai Precision (Foxconn)	Taiwan	39,253
Flextronics International*	Singapore	17,773
Solectron*	California	11,103
Jabil Circuit	Florida	11,087
Sanmina SCI	California	10,872
Celestica	Canada	8,811
Elcoteq Network	Finland	5,139
Benchmark Electronics	Texas	2,907
Venture	Singapore	1,971
Universal Scientific	Taiwan	1,676
Total top ten		110,592

Source: adapted from Table 1 (Pick, 2007)

*) In 2007, Flextronics acquired Solectron

Today, electronic products are increasingly manufactured by contract manufacturers. As a consequence, the contract manufacturers have experienced rapid growth as indicated by Table 4.8. In addition, contract manufacturers have a global presence through facilities expansion both in advanced and developing countries around the globe. For instance, *Flextronics* has production facilities in 30 countries which are mostly located in the East Asian region (www.flextronics.com). Thus, the contract manufacturers have emerged as influential global firms alongside traditional lead electronics firms.

In contrast to the American and the European electronics firms, Japanese and South Korean electronics firms are less likely to adopt a modular production network (Luthje, 2002). Very few Japanese lead electronics firms have sold their production facilities or depend upon independent contract manufacturers. The slowness of

Japanese electronics firms to adjust their strategy and organisational structure became an obstacle to exploitation of the modular production network. For instance, the Japanese electronics lead electronics firms typically demand duplication of their factory lay-out, quality control and management procedures in their foreign affiliates (Ernst, 2006). They continue to rely on improving internal manufacturing efficiency rather than utilising high technological capability of global contract manufacturers and, for example, use a cell production system to improve productivity and flexibility and for integration and rationalisation of all value added activities (Isa & Tsuru, 2002).

The emergence of value chain modularity and the global contract manufacturers brought new opportunities for Indonesia to participate in global electronics value chains as suppliers for global lead electronics firms. At the same time, however, this presents the Indonesian electronics manufacturers with new challenges. Global lead electronics firms demand high capability of the Indonesian electronics suppliers to perform not only manufacturing activities, but also other services, including product and component design and development, component sourcing and supply chain management. The Indonesian electronics manufacturers are also required to comply with quality and technological standards, as well as codes of conduct adopted by global lead electronics firms. For instance, a number of global lead electronics firms and global contract manufacturers are members of the Electronic Industry Citizenship Coalition (EICC). The EICC aims to promote adoption of codes of conduct by its members. The EICC codes of conduct extend beyond labour standards to include health and safety, environment, management systems and ethics (www.eicc.info). Environmental standards are also applied by some countries. For instance, the waste electrical and electronic equipment (WEEE) and restriction of hazardous substances (RoHS) directives adopted by the European Commission require compliance by Indonesian electronics manufacturers that sell products in the EU. Electronics manufacturers from Indonesia may prefer not to fulfil the requirements of global lead electronics firms and advanced markets; however, this would preclude the manufacturers from entering into global electronics value chains.

4.3 Conclusion

Through secondary sources, this chapter has outlined the key challenges facing Indonesian garment and consumer electronics manufacturing firms seeking to enter into global value chains. The chapter has highlighted the fundamental shifts emerging within the global garment and electronics value chains, which have resulted in new opportunities and challenges. Both global garment and electronics value chains have experienced geographical shift between countries and value chain fragmentation among firms.

Within the global garment value chains, the emergence of powerful global branded marketers and retailers from advanced countries has led to a division of activities. Global branded marketers and retailers focus on non production activities, which create greater opportunities for suppliers from developing countries, including Indonesia, to become involved in manufacturing activities. To be included in the chains, the Indonesian garment manufacturers have to comply with the requirements of global branded marketers and retailers. Factors such as social compliance and time to market are becoming more crucial than low cost in determining whether or not the Indonesian garment manufacturers achieve such inclusion. Furthermore, the abolition of the multi-fibre agreement (MFA) in 2005 increased the importance of global branded marketers and retailers to global garment value chains. Since international restrictions no longer determine their production sources, global buyers are able to practise consolidation. Purchase orders tend to be placed with a smaller number of garment suppliers that can contribute to the objectives of these global buyers.

Within the global electronics value chains, the emergence of contract manufacturers (CM) and electronics manufacture service (EMS) suppliers has augmented common practices of direct investment within global electronics firms (FDI). Under the operation of FDI, global electronics firms establish production facilities in developing countries to access lower production costs and to penetrate protected domestic markets. Technological advancement, capability improvement of global electronics suppliers and new global competitiveness lead some global electronics firms to

become buyer-like. These global lead electronics firms concentrate on non-manufacturing activities while outsourcing the manufacturing activities to independent suppliers. Thus electronics manufacturers from developing countries, including Indonesia, have opportunities to enter into global electronics value chains as suppliers. However, the Indonesian electronics manufacturers must first possess the capability to provide services that meet quality and technological standards of global lead electronics firms and to comply with labour, health and safety regulations as well as environmental standards.

The dynamics of global garment and electronics value chains provide opportunities for the Indonesian garment and consumer electronics manufacturing firms. At the same time, however, their success or failure to gain entry to global value chains depends on the manufacturers' ability to cope with the challenges. Responses of the Indonesian garment and electronics sectors to these global challenges will be explored in chapter five.

Chapter 5

Dynamics of the Indonesian Garment and Electronics Industries

Governance and upgrading in the context of value chains

Chapter four examined the global challenges confronting Indonesian garment and consumer electronics manufacturing firms. To enter global markets through global value chain ties, global buyers and lead firms require their Indonesian garment and consumer electronics suppliers to not only meet the requirements of quality-price-delivery, but also comply with labour and environmental standards. It is only by satisfying these requirements that Indonesian garment and consumer electronics manufacturing firms can gain entry to value chains. This has implications for the need for, and the ability of, such firms to upgrade. Before we turn to a detailed analysis of individual firm level experiences on upgrading, it is worth considering at a more aggregate and sectoral level how the Indonesian garments and electronics industry has faced the shifts and emerging challenges in the global garment and electronics value chains. This chapter considers the response of the Indonesian garment and electronics sectors in dealing with the global shifts and challenges to sustain their engagement in global value chains over time, and assesses the outcomes of value chain upgrading of the Indonesian garment and electronics sectors at the global level. The chapter provides (i) a descriptive overview of the responses made by the Indonesian garment and electronics sectors to maintain their positions in global value chains, (ii) a macro overview of upgrading outcomes of the Indonesian garment and electronics sectors within the global value chains, and (iii) an examination of the Government of Indonesia's role in supporting the Indonesian garment and electronics sectors' efforts to cope with global challenges.

The Indonesian textiles and garments and electronics industries have been embedded in export-driven global value chains since the 1970s. Foreign direct investment (FDI) plays a significant role in promoting the two industrial sectors' engagement in global value chains, and the Government of Indonesia has supported both sectors by creating favourable institutions. However, different upgrading outcomes between the

Indonesian garments and electronics sectors are observed at the aggregate level, with the electronics sector found to be less successful in upgrading than the garment sector.

The chapter is structured as follows. Section 5.1 assesses the dynamics of insertion of the Indonesian garment sector into global value chains since the 1970s and the recent upgrading outcomes. Section 5.2 similarly reviews the experience of the Indonesian electronics sector. Section 5.3 discusses the institutional setting which may support or constrain the insertion of the Indonesian garment and electronics sectors into global value chains. Finally, the last section (section 5.4) draws conclusions on lessons learned from the Indonesian garment and electronics sectors with respect to their response to global challenges and upgrading outcomes. Section 5.4 also points out some unanswered questions which require further, empirical, investigation.

5.1 The development of the Indonesian textile and garment industry

5.1.1 Historical trajectories 1970-2005

5.1.1a) Period 1970-1998

The history of the Indonesian textile industry begins in the 1920s when cottage industry woven fabrics were supplied to nearby local markets. This then evolved into mechanised spinning and fibre industries (Hill, 1991). The growth of the textile industry gained momentum in the 1970s when the Government of Indonesia (GOI) adopted import-substitution policies to provide adequate textiles for the domestic market. In addition, by launching laws on foreign investment in 1967 and domestic investment in 1969, the GOI created investment incentives for domestic and foreign investors. As a result, a modern weaving and spinning industry grew rapidly during the 1970s and the 1980s. Synthetic fibre manufacturing began to be established during the late 1970s as a response to the GOI's strategy to exploit petroleum (Thee & Pangestu, 1998). The emergence of fibre manufacture in the late 1970s was indicated by an expansion of Japanese textile firms (e.g. *Teijin Limited, Toray Industries*) with direct investment in Indonesia. The growth of fibre manufacturing further supported the development of spinning and weaving sectors as shown in Table 5.1.

Table 5.1 Textile and garment production (thousand tons)

Year	Fibre		Yarn		Textiles	Garments
	Polyester	Rayon	Spinning	Filament	Fabrics	
1970	--	--	39.4	--	80.4	n.a.
1975	3.8	--	75.9	4.9	136.7	n.a.
1980	53.8	--	179.5	35.3	272.5	61.0
1985	75.0	34.2	265.7	74.9	335.8	94.7
1990	106.6	70.4	502.1	128.0	683.1	204.9
1998	480.7	266.2	1,131.5	652.2	1,341.2	535.0
2002	485.1	292.3	997.4	562.4	1,275.5	462.3

Source: adapted from Table 5.4 (Thee & Pangestu, 1998: 217) and Table 11, 13, 15 & 16 (Djafri, 2003: 59, 61,62)

Although the modern textile industry had been established since the 1970s, the garment sector only started to grow rapidly in the late 1980s. The development of the garment industry in the 1980s was the result of rising domestic demand and export opportunities. A modern concept of department stores (e.g. *Matahari Dept Store*, *Ramayana Dept Store*) started to emerge and play an important role in domestic garment retailing (Aswicahyono & Maidir, 2003; Hassler, 2004). Meanwhile, the emergence of greater export opportunity was facilitated by the economic transformation of Indonesia in the mid 1980s toward an export-oriented strategy. As a result, the Indonesian garment sector grew rapidly and surpassed the growth of spinning and weaving production (Hill, 1991; Thee & Pangestu, 1998).

The new export opportunities were exploited by the Indonesian textile and garment industry, which had become a leading exporter of manufactured goods by the 1980s (Pangestu & Thee, 1998; William et al., 2002). For instance, the value of the Indonesian textile and garment exports increased tenfold in the period from the mid 1980s to 1992 (Aswicahyono & Maidir, 2003). The dramatic increase in Indonesian textile and garment exports during the 1980s was also due to the country's low labour costs and unutilised MFA quotas. These conditions were exploited by East Asian textile and garment industries, particularly those of Japan, South Korea, Taiwan and Hong Kong, who relocated their factories to Indonesia. During this time the Japanese and the East Asian NIEs' textile and garment industries were encountering

comparative disadvantages due to their higher labour and land costs as well as appreciation of their currencies (Thee, 2009). Consequently, East Asian export-oriented textile and garment industries became interested in investing in Indonesia as indicated by Table 5.2.

Table 5.2 Major foreign investors in textiles & garments, 1967-1989 (% of total)

Source	Realised	Approved	
	1967-1989	1988	1989
Japan	79.7	9.8	14.2
Other Asia	15.4	86.2	77.5
- Hong Kong	15.0	16.5	12.2
- Korea	0.2	47.4	39.5
- Taiwan	0.2	20.1	19.7
Europe/North America	1.2	2.9	2.9
Others	3.6	1.1	5.4

Source: adapted from Table 4 (Hill, 1991: 101)

During the period of 1970-1998, various factors contributed to the rapid insertion of the Indonesian textile and garment industry into export-driven global value chains. First, an inflow of FDI into this industry exploited the economic transformation in Indonesia. The GOI switched its development strategy from import substitution industrialisation toward export orientation industrialisation (see section 5.3 for detail). Second, the MFA protected the Indonesian textile and garment industry, particularly in its early development. The quota system applied in international trade safeguarded the Indonesian textile and garment industry from direct competition from established textile and garment exporters. This was because such exporters were subject to the quota restrictions adopted by particular importing countries (Thee & Pangestu, 1998). The MFA also drove the relocation of the East Asian textile and garment industry to make use of unutilised quota of Indonesia.

The positive impact of the MFA on the Indonesian textile and garment industry becomes more apparent when the main export destinations of Indonesian textiles and garments are taken into account. As shown in Table 5.3, the quota-constrained markets, particularly the United States and the European Union, were the important

export markets for the Indonesian textiles and garments. Furthermore, the quota system led the Indonesian textile and garment industry to undertake process and product upgrading. To increase exports to the quota-constrained markets, the Indonesian textile and garment industry had to move toward the categories of textiles and garments that were not restricted by quotas. Thus Indonesia could produce and export textiles and garments with higher unit value. During the 1990s, Indonesia was able to export higher unit value textiles and garments to the US. This might be attributable to an improvement in production efficiency and a shift toward more complicated products (Hill, 1991; Aswicahyono & Maidir, 2003).

Table 5.3 Share of major export markets of Indonesian textile and garment industry

Export market	1990	1995	2000	2005
Quota-constrained markets	47.7	55.5	56.0	58.8
- United States	24.0	20.1	27.4	35.3
- European Union	19.5	24.7	21.7	18.4
- Canada	4.2	10.7	6.9	5.1
Non-quota markets	52.3	44.5	44.0	41.2
Total	100	100	100	100

Source: UN Comtrade (comtrade.un.org)

Just prior to the Asian Crisis in 1997/1998, the export of Indonesian textiles and garments was becoming sluggish. During the period of 1993-1995, the value of these exports stagnated at around US\$ 6 billions, and, in 1994, even fell for the first time since the 1980s (Aswicahyono & Maidir, 2003). Aswicahyono & Maidir (2003) argued that the emergence of producing countries with lower wage bills, notably China, and the implementation of minimum wage regulation in Indonesia were potentially behind the slowdown of Indonesian garment and textile export performance. Meanwhile, William et al. (2002) pointed out other factors which might explain the slowdown, including the slowdown of new private investment, the creation of the North American Free Trade Agreement, the *de facto* pegging of the Indonesian currency to the US dollar and the slow rate of trade liberalisation under the GATT's Uruguay Round Agreement.

5.1.1b) Period 1999-2005

By 1999, the Indonesian textile and garment sector was gradually recovering from the adverse impact of the Asian Crisis, as indicated by an increase in numbers of textile and garment firms (William et al., 2002). A financial and industrial restructuring programme, carried out by the GOI, brought about a more conducive business environment. However, after the Asian Crisis, the Indonesian textile and garment industries were facing external challenges, particularly in the emergence of textile and garment competitors from other developing countries which had the advantage of comparatively lower labour costs (Ianchovichina & Walmsley, 2003; Shafaeddin, 2002). Furthermore, challenges were also posed by China's accession to the World Trade Organisation (WTO) and the consequent lifting of entry barriers applied to that country in the past. These external challenges subjected the Indonesian textile and garment industries to intense competition with other developing countries in maintaining its position in global markets. For instance, data from the US Office of Textiles and Apparel (otexa.ita.doc.gov) demonstrated that in 2001, US imports of textiles and garments from China accounted for 6.7 per cent of the total imports of the US from around the world. By 2004 the import share of the US from China had increased considerably to 24.8 per cent. Meanwhile, the share of Indonesian textiles and garments in the US market declined from 3.5 per cent in 2001 to 2.7 per cent in 2004. The intense competition with China affected not only the global textile and garment value chains, but also the domestic value chains, due to the massive influx of lower priced textiles and garments from China into the more open Indonesian market after the Asian Crisis.

5.1.2 Current situation

The phasing out of the MFA and subsequent lifting of quota restrictions in the global textile and garment trade has had an impact on the Indonesian textile and garment industry. Although China is still subject to entry restrictions in the US market under the Safeguard Mechanism, China's dominance in the US textile and apparel market is unavoidable. In 2007, China accounted for 33.5 per cent of the total US\$ 91.6 billion of textile and garment imports into the US from around the world (otexa.ita.doc.gov), and the share continues to increase. Even though China's textile and garment industries have competitive advantages in the global market, the country's industries

are not without their problems. First, global buyers are keen to avoid excessive risks, thus they prefer to source in a number of countries rather than ordering wholly from China. Second, global buyers are becoming increasingly concerned with codes of conduct compliance rather than just price or cost advantage. Third, China's production costs will tend to increase in the future due to wage rises and power shortages. Fourth, safeguards imposed on China's textile and garment products will continue in the future. Although the US's China Textile Safeguard terminated in 2008, the EU's Transitional Product-specific Safeguard Mechanism is retaining restrictions on China's textile and garment exports to the EU market until 2013 (Wattanapruttipaisan, 2005). The fact that there are some 'restrictions' on China's engagement in global textile and garment value chains implies that there may be opportunities for the Indonesian textile and garment sector to remain in global value chains, especially with the abolition of the MFA quota system. Factors other than cost advantage, including social compliance, may determine the inclusion of the Indonesian textile and garment sector in global value chains.

Table 5.4 Indonesian textile highlights

Description	Unit	2002	2003	2004	2005	2006	2007	
Number Of Companies	Unit	1,797	1,799	1,800	1,800	1,772	1,803	
Capital Investment	Billion Rp	129,188	129,397	129,378	129,063	132,359	134,095	
Manpower	People	831,311	830,414	830,489	829,889	830,051	829,042	
Export	Value	Million US\$	3,083	3,107	3,358	3,704	3,916	4,093
	Volume	'000 Ton	1,430	1,441	1,302	1,427	1,481	1,487
Import	Value	Million US\$	1,797	1,659	1,692	1,553	1,645	1,900
	Volume	'000 Ton	1,037	958	877	840	939	973
Net Export	Value	Million US\$	1,286	1,448	1,666	2,151	2,271	2,193
	Volume	'000 Ton	393	483	425	587	542	514

Source: Asosiasi Pertekstilan Indonesia (Indonesian textiles and apparel business association)

In fact, the Indonesian textile and garment industries has since 2005, post-quota system, kept on growing. This is indicated by the establishment of new textile and garment firms, and the increase in the number of workers (see Table 5.4 and 5.5).

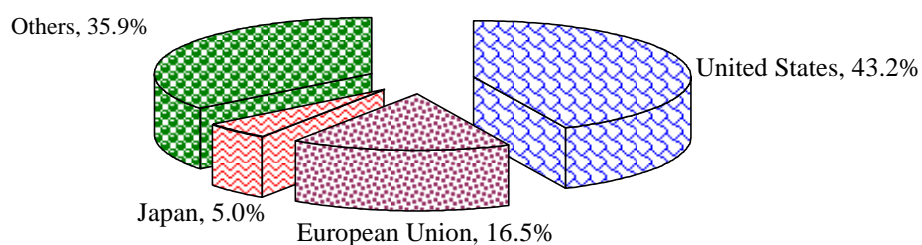
Table 5.5 Indonesian garment highlights

Description	Unit	2002	2003	2004	2005	2006	2007	
Number Of Companies	Unit	849	855	861	856	897	901	
Capital Investment	Billion Rp	2,913	2,958	2,984	3,318	3,318	3,740	
Number of Machines	Unit	285,136	290,838	294,100	294,100	326,253	316,520	
Manpower	People	350,901	352,457	353,590	346,294	360,685	371,800	
Production Capacity	'000 Ton	591	590	666	678	754	779	
Production	Value	Million US\$	5,787	6,353	6,209	5,546	5,995	6,355
	Volume	'000 Ton	462	461	517	383	n.a	410
Export	Value	Million US\$	3,805	3,926	4,289	4,899	5,534	5,970
	Volume	'000 Ton	328	332	324	367	398	385
Import	Value	Million US\$	27	14	28	53	69	150
	Volume	'000 Ton	11	4	3	11	11	20
Domestic	Value	Million US\$	2,009	2,441	1,948	700	530	535
Consumption	Volume	'000 Ton	145	133	196	27	n/a	45

Source: Asosiasi Pertekstilan Indonesia (Indonesian textiles and apparel business association)

Furthermore, exports of Indonesian textiles and garments continue to increase. In 2007, the value of Indonesian textile and garment exports reached US\$ 10.1 billions, with garments accounting for about 60 per cent of the value. The United States was still the main export destination, absorbing 43 per cent of the total exports of Indonesian textiles and garments, and, in 2006, 4.2 per cent of US textile and garment imports came from Indonesia. This figure was relatively high compared with the 2.7 per cent in 2004 which was the final year of the quota system. The US import share from Indonesia put the country in fourth place behind China (29.0 per cent), Mexico (6.8 per cent) and India (5.4 per cent) (otexa.ita.doc.gov). This increase in market share post 2005 indicates that Indonesia has been able to improve its competitiveness since the MFA was phased out.

Figure 5.1 Main export destinations of Indonesian textiles and garments in 2007



Source: Asosiasi Pertekstilan Indonesia (Indonesian textiles and apparel business association)

The rise in Indonesia's market share and competitiveness may indicate successful product upgrading in providing higher product value, and/or reflect process competition through the lowering of production costs. The use of a high level of disaggregation in the US garment import statistics for 2005-2006 revealed that the rise in Indonesian competitiveness is due to both product and process upgrading. Fifty three (53) garment categories exported by Indonesia to the US have experienced a combination of increasing market share and increasing unit prices, indicating product upgrading. In addition, fifty (50) garment categories recorded both increasing market share and declining unit price, reflecting process competition. Meanwhile, twenty nine (29) garment categories experienced a decline in both market share and unit price. These garment categories are unable to sustain their competitiveness in the US market since they continue to lose market share despite the lowering of their unit price.

Table 5.6 Upgrading indicators for the Indonesian garments in the US market 2005-2006

	Market share decrease	Market share increase
Unit value rises	30 categories	53 categories
Unit value falls	29 categories	50 categories
	59 categories	103 categories

The macro-level analysis suggests that upgrading processes are taking place within the Indonesian garment sector. This explains the Indonesian competitiveness in the US market post-quota system. The number of garment categories which are experiencing product upgrading and process competitiveness (103 categories) is greater than the number of categories experiencing product and process downgrading (29 categories). Furthermore, product upgrading is occurring not only for woven items but also for knitted items, which account for 29 out of 53 garment categories. This indicates that product upgrading is taking place regardless of the type of fabric. The phenomenon of product upgrading in knitted items is quite interesting, since knitted items such as t-shirts or polo shirts may also provide high rewards. Further investigation at the firm-level will be conducted in the following chapter.

5.2 The development of the Indonesian electronics industry

5.2.1 Historical trajectories 1970-1997

5.2.1a) Period 1970-1985

The Asian Games event in 1962 became a milestone of the Indonesian electronics industry, given that the GOI wanted the Indonesian people to be able to watch the event on TV. During the 1960s, there were only radio assemblers in Indonesia, including *Philips*, which was inherited from the Dutch colonial regime (Elektronika Indonesia, 1996). Indonesian manufacturers first began assembling black and white televisions under technical cooperation with a Japanese electronics firm. After the Asian Games, the Indonesian electronics industry developed very slowly since the GOI paid more attention to political affairs than economic and manufacturing developments.

The real growth of Indonesian electronics started in 1970 when the GOI introduced import substitution policies to save foreign exchange. The foreign exchange was used to finance imported products, including electronic products. In addition, the policies were aimed at encouraging domestic industrialisation to produce manufactured products to fulfil domestic need. The GOI applied both tariff and non tariff barriers to support the import substitution industrialisation effectively. In the electronics sector, the GOI prohibited the importing of radios and televisions in the form of finished

goods (completely built-up/CBU) by imposing an import tariff on final products at 2-50 per cent. In addition, the GOI applied a negative import list, approved importation and sole agency system (Thee & Pangestu, 1998). Foreign firms were encouraged to invest in the electronics industry directly by establishing joint ventures or technical cooperation with Indonesian partners. Thus the Indonesian electronics industry began engaging in global value chains by attracting FDI or operating under subcontract arrangements.

During the 1970s, the structure of the Indonesian electronics industry was dominated by foreign direct investment. For instance, in 1974 59 per cent of the Indonesian electronics industry was under foreign ownership, while domestic private and government ownership accounted for 40 per cent and 1 per cent respectively (Balasubramanian, 1984). The electronics manufacturers which were established during the 1970s produced mostly consumer electronics, including televisions and refrigerators. For instance, in the mid 1980s, consumer electronics accounted for 54 per cent of the total electronics production (Thee & Pangestu, 1998). These electronic products were mostly intended for the domestic market; thus the industry was not export oriented. In 1985, for instance, the export of Indonesian electronics accounted for just 28 per cent of total production (Thee & Pangestu, 1998). Furthermore, the GOI also established bonded warehouse status for particular electronics manufacturers to promote exports. Under this system, the manufacturers received import tariff and tax incentives for exporting their products. As a result, exports of electronics products have increased since the mid 1980s

The import substitution policies during the period from the 1970s to the mid 1980s had reduced import of electronic finished goods; however, these policies were unable to reduce the sector's dependency on imported components. Under joint venture or technical cooperation arrangements, electronics manufacturers in Indonesia obtained components from their foreign principals. The problem was exacerbated by the relocation of two of the US's semiconductor manufacturers, *Fairchild* and *National Semiconductor*, out of Indonesia in 1986. The local content of consumer electronics products was only about 25-30 per cent (Elektronika Indonesia, 1996).

5.2.1b) Period 1985-1998

A new era of Indonesian electronics development started in 1985, when the GOI replaced the import substitution policies with export oriented strategies. The GOI reduced import tariffs on electronic finished products from 20-60 per cent to 20-40 per cent and on electronic components from 20-30 per cent to 0-5 per cent (Thee & Pangestu, 1998). In addition, the GOI developed export processing zones (EPZ) and bonded zones (BZ) and provided export processing *entrepot* (EPE) status¹ to promote exports. The GOI also gradually² eased restrictions on foreign ownership of investments in Indonesia. This made it possible to have fully foreign-owned subsidiaries operating in Indonesia. The period of export-oriented industrialisation in the electronics industry was indicated by an inflow of export-oriented foreign investment from Japan and the East Asian NIEs, particularly South Korea, Singapore and Taiwan. These foreign electronics firms moved their production activities to Indonesia in order to exploit the lower labour costs for supplying export markets.

Consequently, production and export of Indonesian electronic goods grew rapidly, particularly in the early 1990s. Exports of electronics increased from US\$ 118.3 millions in 1985 to US\$ 865.5 millions in 1992, and accounted for 55 per cent of total production. In 1992, consumer electronics contributed 49 per cent of total production, while industrial electronics and components accounted for 29 per cent and 22 per cent respectively. Video recorders, radio/tapes recorders and car radios were the biggest contributors to consumer electronics exports. The United States and European Union became the main export destinations of consumer electronics, while Singapore, Thailand and Taiwan were the main export destinations for components. Singapore

¹ When a firm obtains EPE status, it does not have to go through customs or pay import tariffs for its imported inputs. Moreover, a firm can obtain this status without being located in existing bonded zones. The firm can also sell up to 25 per cent of its products to the domestic market after paying tariffs on the inputs and the value added tax on the product (Pangestu, 1997).

² In 1985–86, foreign-ownership restrictions and divestment requirements were relaxed for export-oriented investments and those located in bonded zones. In 1992, full foreign ownership was allowed for investments greater than US\$ 50 millions and for those located in Eastern Indonesia and in bonded zones. In addition, to encourage small and medium-sized foreign investments in electronic components and parts, full foreign ownership was extended to investments with a minimum investment of US\$ 2 million in 1993. Finally, in 1994, full foreign ownership was allowed for most sectors and the divestment requirements were abolished (Pangestu, 1997)

played an important role in developing Indonesian electronics exports due to its *entrepot* status which enabled most of the products to be re-exported to third countries with or without further processing (Thee & Pangestu, 1998).

Table 5.7 Electronic production and export (US\$ millions)

	1985		1992	
	Production	Export	Production	Export
Consumer electronics	224.7	39.0	779.6	377.3
Industrial electronics	87.9	0.2	454.5	197.3
Electronic components	104.2	79.0	344.0	290.8
Total	416.9	118.3	1,578.2	865.5

Source: adapted from Table 5.6 (Thee & Pangestu, 1998: 225)

Aligning with tariff reduction under the export-oriented policies, import tariffs were cut further after the GOI signed up to the ASEAN Free Trade Area (AFTA)³. Import tariffs on electronic finished products traded within the ASEAN was set at a maximum of 5 per cent in 2003. By signing the agreement, the Indonesian electronics industry was driven to improve its competitiveness, since foreign electronics firms might rationalise and restructure their affiliates and subsidiaries within the ASEAN. Foreign electronics firms were likely to distribute their product mix across the ASEAN, according to the comparative advantages of particular countries, in order to achieve economies of scale globally.

During the Asian Crisis of 1997/1998, a number of electronics manufacturers in Indonesia closed down, but most were able to stay alive. The latter group included export-oriented manufacturers, which suffered less during the Crisis. In addition, most foreign affiliates in Indonesia obtained full support from their parent companies by taking over the domestic ownership of their joint ventures and transforming them into fully foreign-owned companies or subsidiaries.

³ In 1992, members of ASEAN agreed to implement the AFTA by reducing import tariffs on manufactured and processed agricultural products to 0-5 per cent and within 15 years to abolish non-tariff barriers that restricted trade among members (1993-2008). Electronic products were among 15 products included in a fast track scheme which sought to lower import tariffs within 7-10 years instead of 15 years. In 2003, in response to the Crisis in 1997, the members agreed to speed up the realisation of the AFTA agreement (www.aseansec.org).

The emergence of China in global electronics production in 1990s also affected the development of the Indonesian electronics sector. In contrast to the electronics industry from Japan or the East Asian NIEs, the Chinese consumer electronics industry entered the Indonesian market by selling products under brand names of Indonesian buyers. These manufacturing services offered by the Chinese electronics industry were mostly utilised by Indonesian distribution firms or retailers. Thus Chinese electronics manufacturers did not establish production facilities in Indonesia; instead they exported unbranded products to Indonesia. The entry of made-in-China products led to a remarkable expansion of brand names, mostly under Indonesian private brand names. Some local brand names were created to imitate Japanese brand names such as *Wega* that was associated with *Sony Wega* or *Dramatic* which was related to *Toshiba Dramatic Vision* (the author's interview with GABEL, 2008)..

5.2.2 Current situation

As Indonesian macroeconomic conditions stabilised in the 2000s, the electronics sector recovered. The implementation of AFTA in 2003 brought about a consolidation of global lead electronics firms in the ASEAN region. Some global electronics firms moved their production facilities out of Indonesia, including the relocation of *Sony Corporation* to Malaysia in 2002. Most foreign electronics affiliates, however, stayed on in Indonesia but restructured their activities. These global lead electronics firms designated their affiliates in Indonesia as production centres for specific electronic products (e.g. refrigerators) based on the competitive advantages of Indonesia. Furthermore, China's influence on the Indonesian electronics industry entered a new phase, since Chinese lead electronics firms such as *TCL* and *Changhong* have established technical cooperation agreements with domestic-owned manufacturers they use as suppliers.

The consumer electronics industry in Indonesia is still dominated by large manufacturing firms which were mostly established in the 1970s. During the period of 2005-2007, electronics became the largest contributor to Indonesian manufactured exports. In 2007, exports of Indonesian electronics were made up of 33 per cent consumer electronics, 19 per cent industrial electronics and 48 per cent electronic

components. In consumer electronics, audio and video equipment (e.g. radios and televisions) are the largest elements.

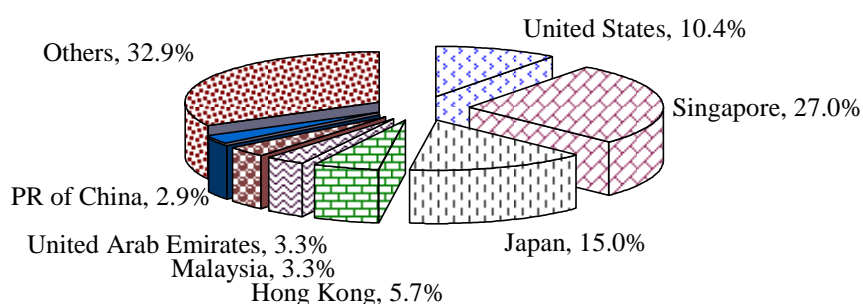
Table 5.8 Export and import of electronics

	Export (US\$ millions)			Import (US\$ millions)		
	2005	2006	2007	2005	2006	2007
Consumer electronics	3,203.9	3,021.0	2,988.3	830.6	738.4	975.7
Industrial electronics	2,616.3	2,514.7	1,708.7	1,600.6	1,544.5	2,751.5
Electronic components	4,230.0	3,885.9	4,279.7	1,117.0	1,083.3	1,567.0
Total	10,050.2	9,421.6	8,976.7	3,548.2	3,366.2	5,294.2

Source: UN Comtrade (comtrade.un.org)

Major destinations for Indonesian electronics exports were Singapore, Japan and United States. Singapore played an important role in the export of Indonesian electronics since it acted as the port for re-exporting to third countries. Meanwhile, Japan became the second main export destination. Japanese electronics firms imported mature consumer electronics from their affiliates in Indonesia to Japan. For instance, Panasonic's affiliate in Indonesia exported refrigerators to Japan. The United States was also an important market for Indonesian electronics exports (See Figure 5.2).

Figure 5.2 Main export destinations of Indonesian electronics in 2007



Source: comtrade.un.org

However, Indonesian electronics exports have not had any significant impact at the global level. For instance, in 2006, Indonesia accounted for a mere 0.7 per cent of US

electronics imports, ranking 14th and the lowest among the ASEAN-4 (i.e. Malaysia, Thailand, Philippines and Indonesia) countries exporting electronics to the US. China (28.6 per cent), Mexico (20.3 per cent) and Japan (9.7 per cent) were among the largest exporters of electronics to the US. In the US, Indonesia obtained a relatively high market share in video recording equipment (HS No. 8521), magnetic tape (HS No. 852311, 852491, 852499) as well as electronic components, including fuses (HS No. 853630) and insulators (HS No. 8546) (comtrade.un.org). The relatively small and stagnant share of Indonesian electronics in the US market indicates that the sector is not as competitive as some of its regional rivals.

By using a high level of disaggregation on US electronics import statistics for 2005-2006, it became apparent that the numbers of electronics categories experiencing falls and increases in their market share are relatively similar. Sixty (60) categories of Indonesian electronics exports have experienced a decline in their market share, while sixty three (63) categories have achieved an increase in their market share. Furthermore, forty seven (47) categories of electronics achieved a combination of increase in market share and unit price, which indicates product upgrading. Meanwhile sixteen (16) categories show process competition, their market share increasing, but unit value decreasing (see Table 5.9).

Table 5.9 Upgrading indicators for Indonesian electronics in the US market 2005-2006

	Market share decrease	Market share increase
Unit value rises	42 categories	47 categories
Unit value falls	18 categories	16 categories
	60 categories	63 categories

The data analysis of the US market demonstrated that Indonesian consumer electronics have achieved very little upgrading. This is indicated by the finding that only 13 categories of consumer electronics experienced product upgrading. Moreover, 6 categories of consumer electronics (e.g. VCRs, CRT televisions) have suffered downgrading, indicated by a combination of declining market share accompanied by unit price. This downgrading may be explained by the fact that Indonesia focused on producing mature consumer electronics (e.g. CRT televisions) which have been superseded by new technologies, especially in advanced export markets.

Table 5.10 Indonesian consumer electronics market

Consumer electronics	2007		2008	
	Unit	Value (Rp millions)	Unit	Value (Rp millions)
Colour Television	4,108,785	6,437,777	4,679,362	6,757,766
Video player and camcorder	922,107	496,045	1,140,391	626,471
Radio cassette and Hifi	568,162	471,356	521,384	420,739
Refrigerator and freezer	2,126,199	3,133,119	2,325,424	3,599,892
Air conditioner	926,694	2,423,414	1,059,715	2,826,562
Washing machine	919,614	1,176,963	1,159,816	1,611,578
Water pump	1,782,846	510,254	1,801,463	546,728
Vacuum cleaner	43,858	27,647	59,047	36,382
Microwave oven	44,570	46,827	48,021	51,831
Rice cooker	1,461,874	236,064	1,266,736	235,197
Gas stove	386,263	103,874	154,389	50,251
Small appliances	998,702	188,534	902,186	208,789
Total		15,251,873		16,972,187

Source: Electronics Marketer Club, 2009

Domestic value chains are also important for the Indonesian consumer electronics sector. Data from 2007 indicated that the market value of consumer electronics in Indonesia reached Rp. 15,3 trillions or equivalent US\$ 1,605.5 millions (US\$ 1 = Rp. 9,500), to which colour televisions, refrigerators, air conditioners and washing machines were the largest contributors.

5.3 Institutional development: Government strategies and regulations

Insertion of the Indonesian garment and electronics sectors into global value chains is also influenced by institutional change. While garment and electronics manufacturing firms are the 'players', institutions provide the 'rules-of-the-game'. Therefore, supports and constraints imposed by institutional frameworks affect opportunities and challenges encountered by manufacturing firms (North, 1987). This section highlights adjustments in government strategies and regulations which have supported the insertion of Indonesian garment and electronics sectors into global value chains.

5.3.1 Development of government policies and regulations

The engagement of the Indonesian garment and electronics industries in export-driven global value chains has, since the 1980s, been influenced by a series of GOI policies and regulations. In the mid 1980s, the GOI switched its policies from the import substitution applied during the 1970s to export-oriented strategies which have supported the insertion of the Indonesian garment and electronics sectors into global value chains.

5.3.1a) Period 1985-1997

During Soeharto's administration (1969-1998), development strategies followed the 'Five Year Development Plan' (*Repelita*). Each *Repelita* focused on different aspects of development, based on the achievements of the previous *Repelita* and conditions at the beginning of each five year period. Soeharto's administration also set up the 'Long-term Development Plan' (PJP), which constituted the development vision for the next 25 years. The first PJP was to run from 1969/1970 to 1994/1995, while the second PJP covered 1994/1995 to 2019/2020.

Most of the substantial reforms, begun in the mid-1980s (i.e. *Repelita IV*, starting from 1984/1985) and continuing throughout the mid 1990s (*Repelita V* and *VI*), reflected a new orientation to market-led economic development. In the *Repelita IV*, the GOI provided industrial policy guidelines to build a robust and more balanced national economic structure and to give high priority to increasing exports of manufactured goods (Government of Indonesia, 1984). The GOI especially promoted exports of non oil and gas sectors, such as manufacturing, mining, agriculture, forestry and services. In line with these efforts, investment was directed at sectors which used domestic raw materials, and products which could be exported, and aimed at increasing export volume and value conducted through market and product diversification, and increasing competitiveness of export products. The GOI would simplify licensing procedures and other export procedures, provide training for exporters and develop export supporting institutions.

The Plaza Accord of 1985 had an important effect on the export oriented industrialisation process in Indonesia. Many Japanese firms which produced durable

consumer goods, such as electronics and motor vehicles, shifted their production base from Japan to other developing countries, including Indonesia. In the late 1990s, the East Asian NIEs followed Japan in relocating labour-intensive industrial sectors including garment and footwear to Indonesia, as a result of higher current account surplus, appreciation in the value of currencies and rising labour and production costs (Dhanani, 2000). To speed up the paradigm shift declared in 1986, the GOI issued several policy bundles called 'packages', each of which was identified by the date of issue. The package of May 1986 was considered the most influential in terms of policy reforms on trade and investment, and included (1) abolition of non-tariff barriers (e.g. sole importer) and promotion of export competitiveness; (2) implementation of an import duty drawback system, by reimbursing companies for payments of import duties on intermediate goods meant for re-export from Indonesia; (3) setting up bonded zones which allowed goods to enter the country without paying any import duties or value added tax; (4) reducing tariffs; (5) increasing foreign equity by allowing 95 percent foreign ownership for export oriented firms which exported at least 85 percent of their products; (6) expanding access to finance for foreign joint ventures, which would be treated the same as domestic firms and allowed to borrow from state owned banks and participate in government credit schemes; (7) extending duration of permits for foreign firms to 30 years and (8) implementing value added tax (VAT) exemption; all direct investments were exempted from VAT on imported capital goods (Prawiro, 1998).

To create a more favourable investment climate, administration of foreign investment was simplified, and the Investment Coordinating Board (BKPM) was required to approve projects within six weeks of initial application. BKPM also adopted a policy of listing only those economic sectors in which investment was restricted; the Negative Investment List (DNI) replaced a complex Priority Scale List (DSP) that had controlled investment in virtually all sectors.

Under the *Repelita V* (1989/1990 to 1993/1994), industrial policy was directed particularly toward development of export-oriented industries in order to increase foreign exchange earnings and to promote diversification of manufacturing products. In continuing to support export-oriented industrial policy through *Repelita V*,

international trade policy was directed toward enhancing trade efficiency to improve flow of goods and services, promote price determination and fair competition climate, support production efficiency, promote exports, expand business opportunities and employment and equalise income distribution and strengthen economic stability.

In this period, ten industrial sectors were designed as strategic industries; aerospace, ship-building, railways, steel, telecommunications, heavy machinery, arms and defence and the electronics industry. The Minister of Research and Technology, on behalf of the GOI, argued that Indonesia could not rely on labour-intensive industries to reach high economic growth in the long run. For this reason, Indonesia should invest in advanced technology and industries with high value added. The GOI established the Strategic Industries Management Board (BPIS) in 1989 to manage these ten strategic industries. A huge flow of state revenue was poured into the BPIS and the GOI continued to protect these industries. However, this protection was ineffective because the protected industries did not make a substantial contribution to Indonesia's industrial and export growth during this period. The major contributors to rapid industrial and export growth until the late 1990s were the labour-intensive industries, such as textiles, garments and footwear and also natural resource intensive industries such as sawmills and plywood, which were less protected.

Repelita VI was more significant since it not only outlined the sixth *Repelita*, but also the second PJP. Under the second PJP, industrial development was to be improved and the manufacturing sector was designated to become a prime mover in an efficient economy, achieve high competitiveness, and build a more solid structure by changing production patterns from productive labour intensive and natural resource-intensive, to higher quality, value added and skill-intensive products. In this way, industrial policy of the *Repelita* VI focused on developing a broad spectrum of industries which were oriented to international markets, embracing the use of natural resources, using advanced technology and creating more skilled, labour-intensive and technology-intensive industries. In addition, it aimed to develop industries which would speed up technology capability in order to produce more sophisticated products. Trade policies were directed at supporting production, to increase and improve the flow of distribution in order to improve equality, and strengthen competitiveness through

capability development for predicting and benefiting from global economic development. Moreover, international trade policy aimed at improving export product competitiveness, developing non oil and gas export structures, expanding export destinations, improving business information, increasing export credit facilities, enhancing international trade cooperation, improving the capability and position of small and medium enterprises and controlling imports (Government of Indonesia, 1994).

Table 5.11 Summary of Indonesia's industrial objectives and policies through Repelita

Repelita	I	II	III	IV	V	VI
Period	1969/1970 -1973/1974	1974/1975-1978/1979	1979/1980-1983/1984	1984/1985-1989/1990	1989/1990-1993/1994	1994/1995-1998/1999
Objective	Developing industry to support agriculture	Developing industry to transform raw materials to basic products	Developing industry to transform basic products to finished products	Developing industry to build balanced national economic structure	Developing industry to produce export products	Developing high value added and skill-intensive products
Policy	Rehabilitating and increasing industrial capacity utilisation	Encouraging private sector to industrialise and use foreign capital, technology and expertise	Industry classification by politic-strategic manufacture, traditional skilled and rural industry	Encourage small and medium industries and their linkages with large industries	developing export-oriented industries to increase foreign exchange earnings and to promote diversification of manufactured products	developing broad spectrum industries, oriented to international market, embracing natural resources, intensive, using advanced technology and more skilled, labour-intensive as well as technology-intensive industry, developing industries which speed up technology capability in order to produce more sophisticated products

Source: Government of Indonesia

5.3.1b) Period 1998-2005

Following the Asian Crisis in 1997/1998 and Soeharto's resignation in 1999, Indonesia's economic policy actually came under the direction and supervision of the International Monetary Fund (the Fund).

The Fund's involvement in Indonesia's economic policy started in October 1997, when the GOI requested its support due to the Crisis. At the time, the GOI signed its first Memorandum on Economic and Financial Policies (i.e. Letter of Intent/LOI) with the Fund which called for a three year economic stabilisation and recovery programme, supported by loans from the Fund, the World Bank and the Asian Development Bank. These international financial institutions also offered detailed technical assistance to the GOI. In the end, the programme did not last for three years, but was extended until 2006 under the Post Programme Monitoring framework.

Practically, there was very little intervention by the GOI during the period of the Fund's supervision since the programme focused more on macroeconomic policies (e.g. fiscal policy, monetary and exchange rate policy, deficit financing) and financial sector restructuring. The programme aimed at recovering and restoring consumer and business confidence to Indonesian economics. Within the real sector, the focus was on trade and investment liberalisation. The Fund urged the GOI to reduce tariffs from 0–40 per cent to 0–10 per cent, to reduce export taxes and restrictions and to lift non tariff barriers. Over the programme period, any remaining import restrictions might be justified on health, safety, environmental and security grounds. Moreover, the local content programme for motor vehicles, which gave preferential tariff rates to vehicle manufacturers using a high percentage of local parts, was phased out. In addition, the list of activities open to foreign investors was simplified and further expanded, especially in the retail sector.

In April 2001, under Abdurrahman Wahid's administration, the Ministry of Trade and Industry established the industrial and trade development policy. It focused on the improvement of capacity utilisation, efficiency and competitiveness, especially on metal, machinery, electronics industry, chemical and agro-industry and forest

products. In July 2001, Megawati Soekarnoputri was sworn in as the new president after the dismissal of her predecessor, President Abdurrahman Wahid. This change in government administration negatively affected the implementation of industrial and trade policies. During her presidency, Megawati tried to promote investment by declaring year 2003 the "Year of Investment." However, official appeals for investment were not matched by action on serious issues faced by investors, such as judicial reform and rampant corruption, and were unlikely to be successful in attracting foreign direct investment.

5.3.1c) Period 2005-2009

In 2005, under President Susilo Bambang Yudhoyono, the Ministry of Industry launched a new industrial policy. Medium-term industrial policy would be directed toward (Ministry of Industry of Indonesia, 2005:60): (1) strengthening the linkages at all value chain levels in supporting industries, related industries, infrastructure provision industries and other supporting service industries; (2) increasing value added along the value chain by building core competence; (3) increasing the productivity, efficiency of resources used in industry and focusing on the use of green products; and (4) developing small and medium enterprises. In addition, industrial development from 2004 to 2009 was to focus on the development of clusters for priority industries: food and beverages, marine product processing, textiles and apparel, footwear, palm oil, wood products, rubber and rubber products, pulp and paper, electric machinery and equipment and petrochemicals.

Moreover, the GOI continued to encourage FDI by replacing Investment Laws enacted in 1967 (foreign investment) and 1968 (domestic investment) with a new investment law. The new investment law provided equal treatment for domestic and foreign investors, as well as a range of incentives, including tax holidays. It also created a 'one-stop shop', concentrating investment approvals for all sectors within the Capital Investment Coordinating Board (BKPM).

The GOI has supported the Indonesian garment and electronics sectors' efforts to engage in global value chains by seeking to create a more favourable domestic

investment climate and business environment. The effectiveness of the GOI's actions from 2004 to 2009 is questionable, as can be seen from the World Bank's *Doing Business* publications. Since 2004, the World Bank has published this annual report which examines policies and regulations that improve or constrain business activity across countries. Countries are ranked on their ease of doing business, with a high ranking on doing business meaning that the regulatory environment is conducive to business activity. The index covers several topics, including employing workers, trading across borders and dealing with permits and licences (www.doingbusiness.org). Although some scholars challenge conceptual and methodological aspects of *Doing Business*, as well as the policy implications (McLeod, 2006; Berg and Cazes, 2007; Arrunada, 2007), the publication does provide information on the current business environment in Indonesia in comparison with other countries. The *Doing Business* reports demonstrate that Indonesia remains a difficult place for doing business since the regulatory environment is unfavourable. For instance, in 2009 Indonesia was ranked a disappointing 129th among a total of 181 surveyed countries: two positions lower than in 2008. Furthermore, the report indicated that regulatory reforms in Indonesia made it more difficult rather than easier to do business (World Bank, 2008). This low ranking sends a message that although the GOI continues to try to enhance the business environment through deregulation, there is still a lot to be done in terms of improving business environment and competitiveness in order to keep pace with other countries.

5.3.2 Labour standards and social compliance

Labour standards and social compliance particularly affect the behaviour of labour-intensive sectors, including the garment industry. Labour and working conditions in the Indonesian garment sector have been targeted for improvement since the 1990s. At the macro-level the GOI was driven by the US government to improve labour market conditions in Indonesia, particularly through trade sanctions under the Generalised System of Preference (GSP). Meanwhile at the firm-level, a number of Indonesian garment factories became the objects of anti-sweatshop campaigns waged by international organisations (Harrison & Scorse, 2006).

In 1992, certain US organisations submitted petitions to the United States Trade Representative, claiming that labour rights practices in Indonesia were far below international standards, thus Indonesia's preferential trade status (e.g. lower or no import duties) under the GSP had to be reviewed. The petitions focused on several violations of labour rights: the right to organise, the right to strike, restrictions on civil servants, military intervention in labour disputes, restriction on workers' access to appeal, limited sanctions against employers and unfair restrictions on the right to work (Harrison & Scorse, 2006). To avoid the cancellation of their GSP status, the GOI took action to improve labour rights by granting more freedom of association and setting minimum wages. Accordingly, the Workers Union of Indonesia (i.e SPSI) was established in 1994 and the average daily minimum wage rose significantly (Harrison & Scorse, 2006).

At the same time, labour conditions in Indonesia attracted media attention, particularly in the US. The anti-sweatshop campaign emerged in 1991 when the US branded marketers and manufacturers, *Nike* and *Levi's*, were accused of benefiting from labour exploitation perpetrated by several shoe and garment suppliers in Indonesia. Workers for these suppliers earned low wages and worked long hours under poor working conditions. For instance, a worker obtained a daily wage of US\$ 2, which was too low for her/his basic needs. In addition, workers were often forced to work more than 60 hours per week (Morey, 2000). In 1992, *Nike* adopted a Memorandum of Understanding and Codes of Conduct for its Indonesian suppliers by which the suppliers had to comply with local laws regulating wages and working conditions. Furthermore, the US branded marketers required their suppliers to maintain documentation of compliance for inspection (Shaw, 1999).

Post Asian Crisis, Indonesia has undergone political changes in which the country has evolved from a dictatorship into a more democratic state. Recently enacted labour laws and regulations have been more democratic and the GOI ratified the ILO Core Labour Conventions on issues including freedom of association, forced labour, non discrimination, child labour, minimum age, working hours and job security. As a result, Indonesia's standing on the ILO Labour Conventions is much better than that

of other Asian countries (Kuhl, 2003; Van der Meulen Rodgers & Berik, 2006). Indonesian labour law is frequently renewed to regulate the core labour standards, and various programmes and initiatives on labour and social standards have been put into operation (Kuhl, 2003). Furthermore, corporate social responsibility (CSR) has been made compulsory by laws for firms operating in Indonesia to ensure good corporate conduct and environmental standards. CSR was mandated in Law No. 25/2007 on Investment and the Law No. 40/2007 on Limited Liability Companies. This made Indonesia a unique case (Nugroho et al., forthcoming).

Theoretically, improvements in wage and labour conditions have an adverse effect on employment: since it makes labour more costly and thereby reduces the demand from employers. The implementation of minimum wages within the Indonesia garment industry was even more problematic. The Indonesian garment industry encountered severe competition both in domestic and global markets, which led to a squeeze on profit margins. In addition, the garment industry employed a high proportion of low skilled labour with low productivity. These two factors resulted in wages in the Indonesian garment industry being relatively low (Manning, 2004). Some scholars argued that the implementation of minimum wages within the Indonesian garment industry became burdensome for the industry since the increase in wages was not reflected in growth of labour productivity. Instead, the minimum wages were set by the GOI, based on minimum physical needs (William et al., 2002, Suryahadi et al., 2003; Aswicahyono & Mairid, 2003). Moreover, a new labour regulation concerning job security, enacted in 2001, makes it more costly to hire permanent workers. Indonesian firms have to provide severance pay when terminating their workers' employment for whatever reason (William et al., 2002; Aswicahyono & Mairid, 2003). The arguments on the adverse effects of minimum wage and improvement of working conditions on competitiveness of the Indonesian garment industry may be valid. However, some scholars also point out the social benefits and productivity-enhancing effects of the improvements. For instance, better job security may lower costs by reducing employee turnover, or the increase in workers unions' rights may lead to less conflict and more stability: which in turn attract investment and create new jobs (Van der Meulen Rodgers & Berik, 2006).

Many improvements have been implemented in Indonesia in order to comply with international labour standards; however, some reports indicate that there is still a lot of work to be done. A number of violations have been committed against the ILO Labour Conventions, including forced overtime and imposition of long working hours (SUDWIND Institut, 2007; ITUC, 2007). In the garment sector, these violations are more apparent due to the requirement for shorter time to market, which is typical of the current global supply chain practice. In addition, the elimination of the quota system and implementation of lean retailing even intensifies the requirement. Meanwhile, the cost of implementing codes of conduct cannot be shifted to global firms, and that proves to be a challenge for the Indonesian garment industry. International labour standard compliance, which is imposed by the global firms, actually creates a level playing field. Thus the Indonesian garment manufacturers are able to compete fairly in the global market. Furthermore, compliance will lead the Indonesian garment manufacturers to a 'high road' of competition, in which the competition is based on better labour standards, higher wages and higher productivity. Considering all the benefits mentioned above, compliance to international labour standards is a way for the Indonesian garment manufacturers to sustain their global competitiveness. However, the Indonesian manufacturers have to link higher wages and better labour standards to higher labour productivity. There are strategies that should be put in place, such as setting the increase of wages alongside an output target per worker, and individual performance should be recognised in providing incentives for productivity enhancement (Manning, 2004).

5.4 Conclusion

Having examined the historical trajectories of the Indonesian garment and electronics sectors and the changes in the domestic institutional setting over time, this chapter has identified certain issues relevant to the research questions. There is an indication that the Indonesian garment and electronics sectors have engaged in global value chains through export activities and FDI. The inflow of FDI to Indonesia is due to the relocation strategy of global garment and electronics firms to access lower production costs and to benefit from the institutional changes in Indonesia. The quota system in

the international garment trade also drove the inflow of FDI into the garment industry. They established foreign affiliates to exploit unutilised quotas of Indonesia. The export activities of the Indonesian garment and electronics sectors, to some extent, are linked to FDI through the establishment in Indonesia of export-based facilities by foreign garment and electronics firms.

Moreover, the chapter identifies differences in upgrading outcomes between the Indonesian garment and electronics sectors at the global level. While the Indonesian garment sector does engage in upgrading: particularly process and product upgrading, evidence of upgrading in the Indonesian electronics sector is more uneven. The upgrading processes of the Indonesian garment sector have taken place not only in the recent period, but also during the period under the MFA. The quota system drove the Indonesian garment sector to undertake process and product upgrading as indicated by higher unit values of garment exports.

The new challenge associated with labour standards has been responded to by the Government of Indonesia through a ratification of the ILO Core Labour Conventions. Compliance with labour standards affects the Indonesian garment sector more than the consumer electronics industry, since the garment sector employs a higher proportion of low skilled labour with low productivity than the electronics industry.

The emergence of modern retailing businesses in Indonesia has increased domestic demand for garments and consumer electronics. Consequently, both the domestic and global value chains are important for the Indonesian garment and consumer electronics manufacturing firms. This particularly applies to the Indonesian consumer electronics sector.

The macro overview of the Indonesian garment and electronics sectors has provided a snapshot of their insertion into domestic and global value chains, as well as their upgrading outcomes, but some issues remain untouched. The macro-level analysis has shown the insertion of the Indonesian garment and electronics industry into a hierarchical governance structure as indicated by the FDI. However, the macro-level

analysis does not reveal information about other forms of value chain governance, either at the domestic or global level. The Indonesian garment and consumer electronics manufacturers may join domestic and global value chains through other modes than FDI. They may take supplier roles (i.e. captive, relational and modular value chains) for domestic and global buyers and lead firms or they may become leaders of their own value chains (i.e. market-based governance structure). Furthermore, although the macro-level analysis has identified process and product upgrading of the Indonesian garment sector and downgrading processes within the Indonesian consumer electronics sector, it has not provided information on the more crucial area of functional upgrading. Functional upgrading cannot be observed through market share and unit value indicators. The main concern is that macro-level analysis does not give in-depth insights into the processes and mechanisms by which the Indonesian garment and electronics manufacturing firms are inserted into value chains and undertake upgrading. Without understanding the process, we remain uncertain whether the increase of unit value of garments and electronics is due to process upgrading or not. It may be due to lower input prices or lower labour costs. These issues require further investigation at the firm-level which will be conducted in the following chapters.

Chapter 6

Value Chain Governance and Upgrading Processes amongst Indonesian Garment Manufacturers

Evidence from the field

As demonstrated in chapter five, the Indonesian garment sector has already become engaged in global value chains through its export activities and FDI. As the chapter detailed this engagement has implication for the competitiveness of the Indonesian garment sector, and its ability to upgrade. At an aggregate level, there is evidence that Indonesia has managed to enhance its competitive position in global garment markets, with market share increasing in the US following the phase out of the MFA in 2005. However, the discussion in chapter five provided little insights into how upgrading is experienced by Indonesian garment manufacturing firms, or the ways in which global value chain governance and local technological capabilities affect the upgrading processes. Indonesian garment manufacturers gain insertion not only into global value chains but also into domestic chains through diverse forms of value chain ties and value chain governance.

This chapter addresses the following questions: how are Indonesian garment manufacturers inserted in global and domestic value chains? What impacts might different forms of value chain governance exercised by global lead firms and domestic actors have on the upgrading processes of Indonesian garment suppliers? And, what consequences might arise from this for the trajectory of upgrading? The answers to these questions will provide an understanding on how value chain ties at both the global and domestic level effect upgrading processes of Indonesian garment manufacturers. In order to address these questions, this chapter (i) provides a descriptive overview of Indonesian garment manufacturers drawn from the sample of 22 garment manufacturing firms that were surveyed for this study; (ii) drawing on more detailed case study analysis it investigates the mechanisms for insertion of the Indonesian garment manufacturers into different value chain governance at the domestic and global levels; and (iii) it assesses upgrading processes and trajectories of

the Indonesian garment manufacturers in the context of domestic and global value chains.

The following sections discuss the issues in more detail and are organised as follows: section 6.1 provides a descriptive overview of the Indonesian garment manufacturer sample collected through the survey. Subsequently five (5) out of the 22 garment sample manufacturers are selected for detailed analysis. Section 6.2 explores the mechanisms for insertion of the Indonesian garment manufacturers into the domestic and global value chains. This section provides insights into the distinctive value chain governance structures at the global and domestic level in which the Indonesian garment manufacturers are engaged. In addition, the section examines the nature of transaction complexity and information codifiability within the Indonesian garment manufacturers. Section 6.3 examines the attempts undertaken by the Indonesian garment manufacturers to upgrade in the context of distinct domestic and global value chain ties. Finally, the last section (section 6.4) summarises and draws conclusion on the governance of value chains at the global and domestic level and the upgrading processes and paths undertaken by the Indonesian garment manufacturers.

6.1 Descriptive overview

6.1.1 Overview of buying practices

Since functional relationships within value chains are determined by reciprocal interactions between Indonesian garment manufacturers and their buyers, this section explores the nature of buying practices of domestic and global buyers. Understanding the various buying practices may provide a clear starting point in analysing governance of domestic and global value chains.

Global buyers, particularly branded marketers and retailers, interact with Indonesian garment manufacturing firms in two ways: through their liaison offices (e.g. *Nike, Adidas, Gap* and *Target Sourcing Services*) or via independent trading agents. Both the local liaison offices and trading agents are mostly concerned with ensuring that the garment suppliers in Indonesia meet the requirements of global buyers on quality, price and delivery, and also comply with their codes of conduct. Therefore, a typical

organisational structure of the liaison offices and trading agents includes a *Quality Assurance (QA)* division which assesses technical issues of the Indonesian garment manufacturers: such as skills of operator, availability and quality of machinery and equipment; and a *Social Accountability (SA)* division that monitors compliance of the manufacturers with codes of conduct on issues such as working hours and wages. However, despite the presence of the local liaison offices, sourcing decisions (e.g. price quotation and quantity of purchase orders) are still made in sourcing offices of global buyers, mostly located in Singapore, Hong Kong and South Korea (i.e. in the East Asian NIEs).

The independent trading agents operating in Indonesia consist of both domestic and foreign agents. Foreign trading agents are branch offices of global independent trading agents which mostly originate from the East Asian NIEs (e.g. *Li & Fung* and *Mondial Orient*); whereas domestic agents are owned by Indonesian professionals in garment businesses (e.g. *Asmara Karya Abadi* and *SOT Indo Sourcing*). The independent agents act as an intermediary between global buyers and the Indonesian garment manufacturers.

Domestic buyers consist of department stores, independent retailers and branded manufacturers. Department stores, including *Matahari*, *Ramayana* and *Rimo*, usually operate chain stores on a national scale, while independent retailers tend to manage a single store. Branded manufacturers are Indonesian garment manufacturers who outsource some of the production activities for their own brand to other garment producers. The department stores typically sell their own brands as well as other domestic and global brand names. As an illustration, *SDS*, the largest department store in Indonesia, has 80 outlets around Indonesia that sell its own brands alongside the domestic brand names (e.g. *Rodeo*, *Cardinal*, *Woods*, *the Executive*); in addition to the global brands (e.g. *Arrow*, *Savile Row*, *Van Heusen*, *Kenzo*, *Lee*). To supply its own brands, *SDS* does not produce garments itself, but sources them from domestic garment manufacturers. *SDS* purchases garments which meet its specifications (e.g. style, quality, price, delivery) and pays cash to garment producers. For branded merchandise (other than its own-brands), *SDS* provides space in its outlets to be utilised by branded manufacturers or marketers. Thus branded manufacturers or

marketers have to manage (i.e. decorate, furnish and staff) the space allocated to them by *SDS*. *SDS* does not purchase garments from branded manufacturers or marketers; rather, it operates on a consignment basis by which the garments are owned by branded manufacturers or marketers until they are sold to the customers. *SDS* pays only for garments purchased by customers. Thus, all inventory costs are borne by branded manufacturers or marketers. *SDS* determines the value of sales targets for every branded manufacturer or marketer, which subsequently becomes a basis for profit sharing. When the value of the sales target is not reached, branded manufacturers or marketers have to pay the difference out of their own resources. As a result, branded manufacturers or marketers bear all the business risks (i.e. production and sales risks), while *SDS* faces no risk at all. Therefore, only branded manufacturers or marketers which are financially secure can sell their products through *SDS*'s outlets (author's interview with *SDS*, *Lestari Garmenindo* and *Cipta Garmenindo*, 2008). .

Independent retailers tend to purchase garments from garment manufacturers on a cash basis. The retailers place an order on garments that manufacturers are already producing, without any product customisation. Garment manufacturers provide a manufacturing price which is marked up by the retailers to set their retail price. Hence, garment manufacturers only bear the production risk, while independent retailers incur the sales risk (author's interview with *Lestari Garmenindo* and *Jaya Garmenindo*, 2008).

6.1.2 Survey of garment manufacturers

The sample of 22 garment manufacturers surveyed is not aimed to provide a statistical generalisation that represents the entire population of Indonesian garment firms. Nevertheless, the survey result provides a useful overview of a broad range of distinct characteristics and variations within the Indonesian garment sector.

Table 6.1 Garment sample profile (total sample = 22)

Size of manufacturers	Medium-sized	Large-sized
Descriptive		
No. of manufacturers	12	10
Age of manufacturers (years, average)	20	20
No. of employment (people, average)	278	2,855
No. of manufacturers supplying 100% for domestic market	2	0
No. of manufacturers supplying for domestic and export markets	5	1
No. of manufacturers supplying 100% for export market	5	9
Dynamics		
Annual sales growth (% , average)	12	14
Value added activities		
Design (no. of manufacturers)	10	5
Input sourcing (no. of manufacturers)	8	3
Cutting and sewing (no. of manufacturers)	12	10
Quality control (no. of manufacturers)	12	10
Packing (no. of manufacturers)	12	10
Own branding (no. of manufacturers)	6	1
Global value chains		
Export share (% , average)	54	92
No. of foreign buyers (average)	6	9
Foreign buyers from advanced countries (no. of manufacturers)	3	9

Source: Author own survey 2008

Note: *) AQL in garment 1.5 -2.5%

Size of garment manufacturers. As stated in chapter three, this study focuses on investigation of medium-sized and large-sized garment manufacturers. From a total of 22 garment manufacturers surveyed, 12 were medium-sized manufacturers employing on average 278 workers (standard deviation = 148), while the rest were large-sized garment manufacturers employing on average 2,855 workers (standard deviation = 1,389). Production capacity within the garment industry is highly correlated with numbers of workers. Thus the production capacity of large-sized manufacturers was much greater than that of medium-sized firms.

Market orientation. Of the 12 medium-sized garment manufacturers, 2 were making and supplying garments entirely for the domestic market, 5 were fully supplying the export market and 5 were supplying both domestic and export markets. Meanwhile, from 10 large-sized manufacturers, 1 was supplying both domestic and export markets, 9 were supplying garments only to the export market, while none supplied solely to the domestic market. Large manufacturers on average exported 92 per cent

(standard deviation = 43) of their products, while medium-sized manufacturers on average exported 54 per cent (standard deviation = 24) of their products, thus large-sized manufacturers exported a greater share of their output than medium-sized manufacturers. Consequently, survey data suggests that in Indonesia it is the large-sized garment manufacturers that are more likely to be export-oriented.

Global value chains. 9 out of 10 large-sized garment manufacturers were able to form relationships with global buyers from advanced markets (e.g. the United States and the European Union), while only 3 out of 12 medium-sized garment manufacturers established relationships with global buyers. A majority of medium-sized manufacturers created relationships with buyers from domestic and emerging export markets (e.g. the Middle East). Moreover, large-sized manufacturers were able to supply more foreign buyers (on average 9 buyers) than medium-sized manufacturers. In addition, large-sized garment manufacturers had been involved in the export market for a longer period of time (on average 14 years) than medium-sized manufacturers (on average 11 years). It appeared that since large-sized manufacturers had relatively high production capability and capacity, they were able to meet the requirements set by global buyers from advanced countries. The high production capability and capacity might also relate to the high sales growth achieved by large-sized manufacturers. Large-sized garment manufacturers achieved higher sales growth (on average 11-20 per cent per year) than medium-sized firms (on average up to 10 per cent per year). Large-sized manufacturers may have more resources (e.g. financial and human resources) to improve production efficiency and product quality than medium-sized firms, and are more likely to invest in automatic machinery or to apply information and communication technology (ICT) to enhance productivity and efficiency of their production systems. In addition, they may have the resources to invest in quality management systems for achieving and sustaining high product quality.

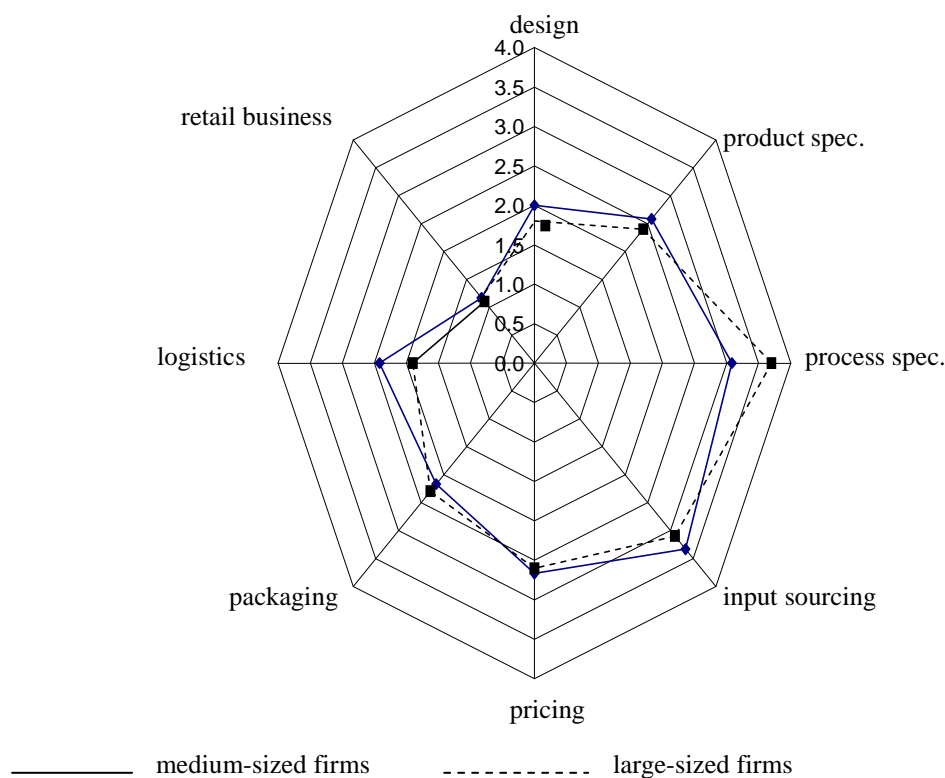
Value chain activities. All garment manufacturers surveyed carried out assembly operations (e.g. cutting and sewing) and finishing (e.g. packing). However, while 8 out of 12 medium-sized manufacturers engaged in input (e.g. fabrics, thread and buttons) sourcing, only 3 out 10 large-sized manufacturers conducted input sourcing.

Apparently, medium-sized manufacturers tended to operate under the original equipment manufacture (OEM) arrangement, while large-sized manufacturers were more likely merely to perform assembly operations for their buyers. Furthermore, 10 out of 12 medium-sized manufacturers involved in design activity and 6 had own brand names (OBM). Meanwhile 5 out of 10 large-sized manufacturers were involved in design activity but just 1 had its own brand name. This indicated that medium-sized garment manufacturers undertaken more extensive activities than large-sized manufacturers.

Power relationships. Figure 6.1 illustrates a radar diagram of the decision making process on value added activities. This is important since it reflects a division of value chains between garment manufacturers and their buyers. It also indicates direct control of buyers over different value added activities. Decisions on a particular activity made solely by buyers are indicated by 1; while those made independently by the Indonesian garment manufacturers are denoted by 4¹. In general, buyers retained control of design, product specification, logistics and retail business, with little involvement from the Indonesian garment manufacturers. Meanwhile, on other value added activities, including production process, input sourcing, pricing and packaging, buyers tended to involve the Indonesian garment manufacturers in their decision making.

¹ The garment firm respondents were asked to indicate who made decisions on activities in: product design, product specification, process specification, input and material sourcing, price setting, packaging, logistics and retail. Each variable was measured using a four-point interval scale, with value 1: if the activity was decided exclusively by buyers, value 2: if the activity was decided by buyers after consulting with garment manufacturers, value 3: if the activity was decided by garment manufacturers but subject to approval by buyers and value 4: if the activity was decided independently by manufacturers. Subsequently, the average value was calculated and was classified between medium-sized and large-sized garment manufacturers. The average value was put into a radar diagram.

Figure 6.1 Decision making process within garment manufacturers



The survey data, while not seeking to be representative, give a useful picture of the broad characteristics of the Indonesian garment sector. Most substantively, it shows that it is large garment manufacturing firms in Indonesia that have the production capacity and the firm level capability to engage in global markets through links with leading global buyers. Medium sized firms tend to be more focused towards domestic, regional and emerging markets and are less likely to be inserted in the GVC ties of leading global brand marketers and retailers. In terms of value chain activities, the global brands clearly exert greater control over their supply chains, often limiting the value chain activities that the Indonesian garment suppliers can undertake. However, the survey results do little to answer the core questions of this chapter: how are Indonesian garment manufacturers inserted into domestic and global value chains, and how does this affect their ability to undertake upgrading processes? For this reason, from the sample of 22 surveyed garment manufacturers, 5 firms were purposively selected for detailed case study analysis, primarily to give more in-depth insights. These particular manufacturers were selected because of the differences in the nature

of their value chain governance, firm size and market orientation. *Tunggal Garmenindo* represented large-sized garment manufacturers which supply entirely for the export market. The manufacturer specialised in making high value garments for the United States branded marketers. *Busana Garmenindo* represented medium-sized garment manufacturers, and had switched from supplying domestic buyers to global buyers from the United Kingdom by acting as a subcontractor of larger garment manufacturers in Indonesia. Thus, a closer look into *Tunggal Garmenindo* and *Busana Garmenindo* provided an understanding of the governance structure and upgrading processes within Indonesian manufacturers that supply global lead buyers from advanced markets. *Jaya Garmenindo* and *Lestari Garmenindo* represented large-sized and medium-sized manufacturers, respectively, which were engaged simultaneously in domestic, regional and global garment value chains. While *Lestari Garmenindo* supplied retailers from domestic and emerging export markets (the United Arab Emirates), *Jaya Garmenindo* supplied retailers from domestic and emerging export markets as well as branded marketers from advanced markets; thereby insights were provided into the upgrading processes and governance structures in both regional and global value chains. Meanwhile *Cipta Garmenindo* represented medium-sized manufacturers which served only the domestic market and provided information on the upgrading processes within domestic rather than global value chains.

Table 6.2 Case studies in the context of garment sample characteristics

	Medium-sized				Large-sized		
	Total Medium- sized Sample	Case study*			Total Large sized Sample	Case study*	
		<i>Busana Garmenindo</i>	<i>Lestari Garmenindo</i>	<i>Cipta Garmenindo</i>		<i>Tunggal Garmenindo</i>	<i>Jaya Garmenindo</i>
Descriptive							
No. of manufacturers	12	--	--	--	10	--	--
Age of manufacturers (years, average)	20	6	22	23	20	16	34
No. of employment (average people)	278	150	350	300	2,855	4,500	2,000
No. of manufacturers supplying 100% for domestic market	2	No	No	Yes	0	No	No
No. of manufacturers supplying for domestic and export markets	5	No	Yes	No	1	No	Yes
No. of manufacturers supplying 100% for export market	5	Yes	No	No	9	Yes	No
Export share (average %)	54	100	35	0	92	100	20
Value Chains							
Original design (no. of manufacturers)	10	No	Yes	Yes	5	No	Yes
Input sourcing (no. of manufacturers)	7	No	Yes	Yes	2	No	Yes
Assembly (no. of manufacturers)	12	Yes	Yes	Yes	10	Yes	Yes
Quality control (no. of manufacturers)	12	Yes	Yes	Yes	10	Yes	Yes
Packing (no. of manufacturers)	12	Yes	Yes	Yes	10	Yes	Yes
Branding (no. of manufacturers)	5	No	Yes	No	1	No	Yes

Source: Author's own survey 2008

Note: *) all manufacturer names have been anonymised

6.2 Mechanisms for insertion into value chains

6.2.1 Process of engagement in value chains

Engagement in global garment value chains is likely to be a two-way evaluation process; that is, global buyers and the Indonesian garment manufacturers are searching for partners with whom they can expand their business and replacements for poor manufacturers and buyers. Global buyers are looking for Indonesian garment manufacturers who have the production capacity and capability to meet their requirements (e.g. order quantity, garment style, quality consistency, competitive price, timely delivery and social compliance). For instance, a US retailer often offered US\$ 1-5 millions per purchase order with reservations that its order did not account for more than 30 per cent of an individual manufacturer's production capacity or sales turnover. Therefore the retailer would not consider Indonesian garment manufacturers with annual sales turnover of less than US\$ 5 millions (author's interview with *TDS*, 2008). In the same way, the Indonesian garment manufacturers also search for global buyers who can provide feasible job orders (e.g. garment style, minimum order quantity, payment system) and who are willing to transfer the knowledge to improve their capability.

Various means are available for global buyers and Indonesian garment manufacturers to form relationships with each other. Global buyers may utilise independent trading agents to search for potential garment manufacturers that meet their requirements. Independent trading agents not only undertake sourcing activities but also offer services on garment design and development and management of supply chain activities. Some global branded marketers and retailers establish their own liaison offices in Indonesia rather than utilising independent agents. The offices assess the technical capability of potential garment suppliers in Indonesia. Initially, global buyers may look at lists of Indonesian garment manufacturers who are making garments for other equivalent buyers. For instance, *Adidas* may source from garment manufacturers who have already produced garments for *Nike*. In a world with open access to information, global buyers are likely to identify suppliers of their competitors. For instance, *Nike* publishes a full list of its global suppliers on its website (http://nikeresponsibility.com/pdfs/Nike_CRR_Factory_List_C.pdf) in a

document titled *Contract Firm Disclosure List*. Indonesian manufacturers who supply garments for equivalent global buyers provide assurance that they have met the technical and social compliance required by global branded marketers or retailers. Furthermore, buyers may reap the benefit of other buyers' efforts in improving capability of the Indonesian suppliers. Global buyers will assess product samples and current clients of potential garment manufacturers in Indonesia to identify their capability to comply with a particular set of technical and social requirements. This was confirmed by a statement given by one of the global branded retailers from the United States.

*"... When a firm wants to do business with us, before the business agreement is signed, we will visit the firm to assess **whether the firm meets our [quality] standard**. After completing this process, there are two options: accept or reject. If [the firm is] accepted, the next process is to develop the firm continuously in order to increase the achievement of quality standards over time, so that the firm achieves our minimum standard or even exceeds the minimum standard ... We determine the minimum quality [to be achieved by the firm]" (GIC, 15 February 2008).*

In the same way, the Indonesian garment manufacturers may approach liaison offices of global buyers or independent trading agents in Indonesia to obtain job orders and expand their business. Again, the Indonesian garment manufacturers play a role in establishing relationships by identifying global buyers whose requirements they can meet in terms of production capacity and capability. The Indonesian manufacturers are least likely to take job orders from global buyers which are beyond their production capacity and capability.

*"We have to look at our operators' skill and we have to know our capability. We cannot just take every order. We ask them [the buyer] what kind of garment product is to be made. If we cannot do the product then we will look for orders from others [buyers]. Thus first, **the garment style [of buyer] has to suit our capability, then our production capacity, and the last is payment system** ... In the same way the buyer will ask what garments we made previously and ask whether we can do the buyer's styles or not ... Since the [independent trading] agent may represent about 3 or 4 brand [names] thus we take the order for the brand which suits our profile. We cannot take all orders. When we take an order we have to know whether we can 'chew' it or not, if we cannot*

'chew' it we will get 'stomach ache'. 'Stomach ache' means a mess in our production activity.' (Busana Garmenindo, 15 March 2008).

In approaching potential global buyers, particularly in emerging export markets (e.g. the Middle East), the Indonesian garment manufacturers are likely to participate in international fairs and exhibitions. The Government of Indonesia established a national agency for export development (i.e. *Badan Pengembangan Ekspor Nasional*) to support the Indonesian firms in identifying and penetrating potential international markets. To promote Indonesian products in such markets, the agency selects international trade exhibitions or fairs to attend, or invites Indonesian manufacturers to take part in trade missions to certain countries. In most cases, the agency provides assistance in handling space reservation, stand design and construction, publicity, travel arrangements and meetings with potential buyers during the course of the exhibition. For the Indonesian firms with most potential (e.g. small and medium-sized enterprises or export-oriented firms), the agency pays for the space handling and rent. In addition, Indonesian firms may be selected to participate in trade missions abroad, led by the Indonesian trade minister or senior officials (author interview with *Jaya Garmenindo*, 2008).

Similar insertion mechanisms are applied in the domestic market. Large department stores have a division responsible for seeking potential suppliers. Their personnel visit domestic textile and garment exhibitions and fairs to find local garment manufacturers who are able to meet their requirements. They encourage potential garment manufacturers to cooperate with them. Domestic buyers will visit garment manufacturers' sites to check on the manufacturers' existence and operations as well as their capacity to meet the buyers' requirements (author's interview with *SDS and Cipta Garmenindo*, 2008).

6.2.2 Patterns of value chain governance

In the following discussion, the governance of the value chains in which the Indonesian garment manufacturers were inserted will be examined on the basis of the detailed information gathered across the five case studies. The power relationships

between the Indonesian garment manufacturers and their buyers within the domestic and global value chains are also investigated.

Table 6.3 Forms of governance of the Indonesian garment manufacturers

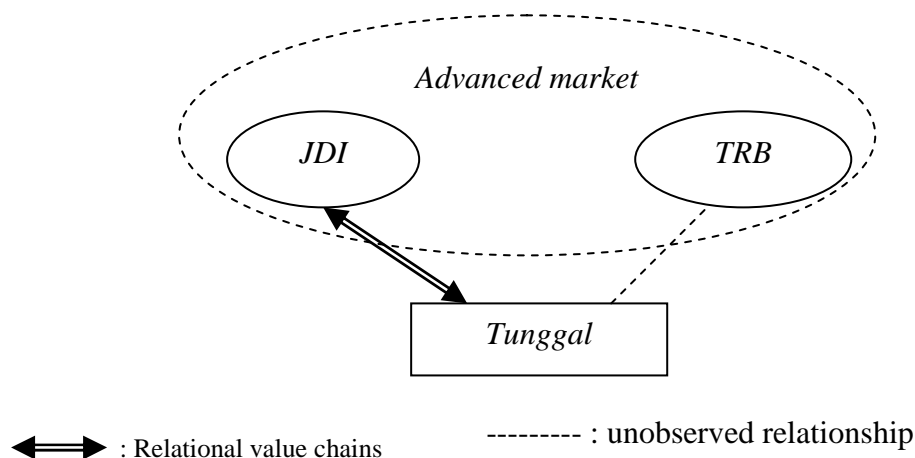
	Market destination and share	market	modular	relational	captive	hierarchical
<i>Tunggal</i>	Advanced market (100%)			x		
<i>Busana</i>	Advanced market (100%)				x	
<i>Jaya</i>	Advanced market (5%)				x	
	Emerging export market (35%)	x				
	Domestic market (60%)	x				
<i>Lestari</i>	Emerging export market (65%)		x			
	Domestic market (35%)	x				
<i>Cipta</i>	Domestic market (100%)		x			

Source: reconstructed from interview results

The evidence demonstrates a diversity of value chain governance across the five cases study and within individual garment manufacturers.

6.2.2a) Case of *Tunggal Garmenindo*: Relational ties with global branded marketers

Figure 6.2 Inter-firm relationships of *Tunggal Garmenindo*



Tunggal Garmenindo illustrated a large-sized Indonesian garment manufacturer inserted in global value chains through making and supplying garments mainly for a global branded marketer from the United States (i.e. *JDI*). Within the relationships,

Tunggal Garmenindo formed relational value chains with *JDI* as indicated by the authorisation given by *JDI* to *Tunggal Garmenindo* to carry out the final quality inspection that was normally performed by *JDI*'s liaison office in Indonesia. Furthermore, *Tunggal Garmenindo* provided office for *JDI* at its premises in order to expedite information exchange on garment development and speed up the decision making process.

Tunggal Garmenindo was established in 1992 and was a subsidiary of a large Indonesian business group which concentrated on the textile and garment business. Starting with about 900 workers, *Tunggal Garmenindo* focused on making garments for global branded marketers. The manufacturer had one factory in West Java which employed about 4,500 workers. *Tunggal Garmenindo* was expanding its production facilities by building a new factory in Central Java which would absorb about 4,000 additional workers. *Tunggal Garmenindo* was focusing on production of jackets and sportswear, mainly for *JDI*, who maintained contact through its liaison office in Jakarta. *JDI*'s office monitored and evaluated *Tunggal Garmenindo* to ensure that the manufacturer met the technical requirements and complied with codes of conduct. *Tunggal Garmenindo* was expected to produce quality garments at a reasonable cost and deliver garments in a timely fashion as specified by *JDI*. Furthermore, the manufacturer was also required to implement codes of conduct set by *JDI*. *JDI* paid most attention to social compliance in assessing its relationship with the manufacturer: since misconduct in this area posed a greater risk than failure in manufacturing activities.

JDI transferred knowledge on technical improvement of production management to *Tunggal Garmenindo*. For instance, *JDI* provided a consultancy to the manufacturer to implement lean production. *JDI* was also assisting *Tunggal Garmenindo* in the application of supply chain management in order to shorten delivery time and to improve materials management. *JDI* benefited from *Tunggal Garmenindo*'s technical improvement since the manufacturer was able to increase its productivity and lower its production costs. Therefore the knowledge flow between *Tunggal Garmenindo* and *JDI* had proven to be advantageous to both the US branded marketer and the manufacturer.

Although *JDI* controlled most of the relationships, the US branded marketer had decentralised and handed some authority to *Tunggal Garmenindo* over time. For example, *Tunggal Garmenindo* was given by *JDI* a task of final quality inspection which was previously carried out by the *JDI*'s liaison office or by an agency assigned by *JDI*. Thus *JDI* trained and certified *Tunggal Garmenindo*'s personnel to conduct their own final quality inspection of garments before delivery. This had speeded up production time at *Tunggal Garmenindo*.

*“In the past the QC [quality controller] from the buyer would come to our firm [for final quality inspection], but nowadays the buyer creates a CA [stands for] certified factory auditor. The CA is on our staff, thus we pay the staff trained by the buyer [JDI] to follow the buyer inspection standards and they have been given a certificate. **We do not need to wait for the QC of the buyer** [to conduct the inspection] otherwise how much longer do we have to wait?” (Tunggal Garmenindo, 13 March 2008)*

Furthermore, *JDI* exchanged other tacit information and knowledge with *Tunggal Garmenindo*, particularly in the process of garment development. *JDI* created design of garments in-house; however, *Tunggal Garmenindo* was allowed to give feedback on the design when interpreting it into garment patterns and proto samples.

*“In my opinion, maintaining a relationship with the buyer is dependent on the [firm's capability in] product development. Thus if a buyer asks us to make a proto-sample of design A, we are not only making a sample based on A but also providing option B. **We are trying to be more proactive in this process.** Even when the buyer is saying A, we can say it is wrong or that we cannot make it. If we explain the reasons, the buyer will accept it. In general, designers are crazy persons who are drawing designs based on their own imagination and do not understand how difficult they are to produce ... Design is provided by the buyer; however, how could we know whether the design is easy or hard to make? By making a proto sample ... “(Tunggal Garmenindo, 13 March 2008)*

To exchange tacit information, *Tunggal Garmenindo* was constructing a new office building within its premises to be occupied by *JDI*.

“Even email cannot solve all problems in communicating with the buyer. For instance, I ask a buyer about a problem of [fabrics] colour shading,

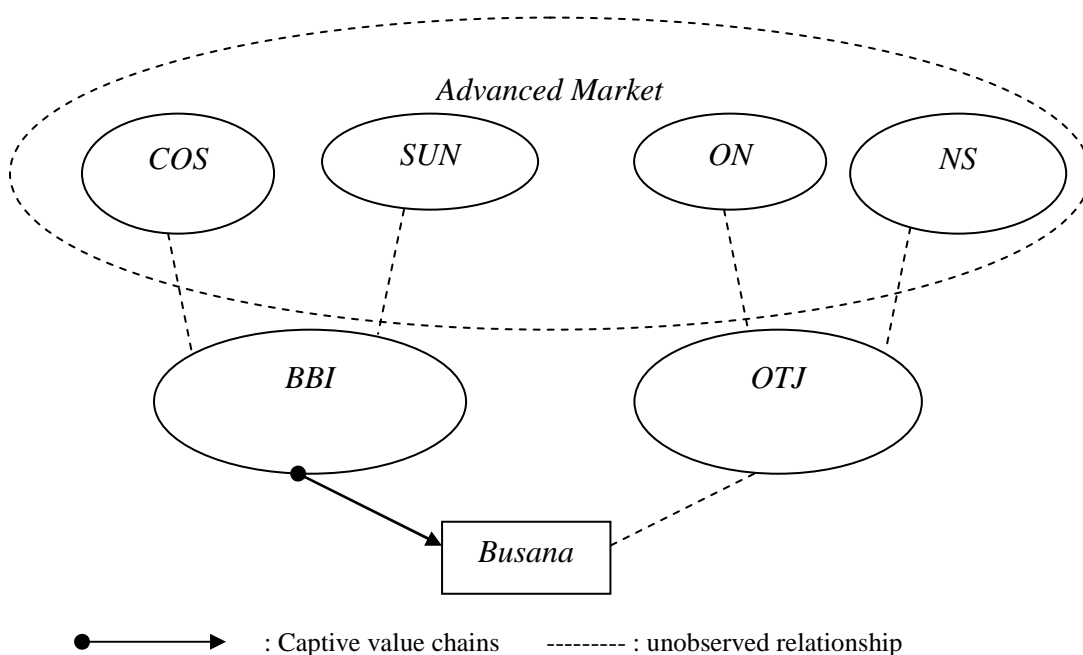
*how to explain whether a colour is slightly lighter or darker. How can I get the approval? Even photos sometimes cannot solve the problem. Thus **for better communication, the buyer is likely to move its office to the factory.** We are still moving toward this, since our office building has not been finished yet. We are constructing a 3-storey office in which buyer will set up its operations” (Tunggal Garmenindo,, 13 March 2008)*

The case of *Tunggal Garmenindo* demonstrates that governance of global buyers may evolve over time. Within the relationship with *JDI*, the manufacturer tends to move toward relational ties rather than staying in captive value chains since *JDI* is lessening its explicit control over product and process specifications. Capability development of *Tunggal Garmenindo* is most likely to effect the establishment of closer relationships.

6.2.2b) Case of Busana Garmenindo: Captive relationships with global branded marketers

Global lead buyers are more likely to create business relationships with large-sized Indonesian garment manufacturers than small-sized and medium-sized suppliers. This is because of the large-sized garment manufacturers possess a relatively high production capacity and capability to meet requirements of global lead buyers. However, small-sized and medium-sized garment manufacturers may also be inserted into value chains led by global buyers by acting as subcontractors to large-sized garment manufacturers. The case of *Busana Garmenindo* demonstrated this point in which the manufacturer acting as a subcontractor to larger Indonesian garment firms (i.e. *BBI* and *OTJ*). In the relationships with *BBI*, *Busana Garmenindo* operated under captive value chains since *BBI* provided detailed garment patterns and production operations to be followed by *Busana Garmenindo*. *BBI* placed its sample maker and quality controller within *Busana Garmenindo*'s premises. In addition, *BBI* supplied materials to be made up directly by the manufacturer.

Figure 6.3 Inter-firm relationships of *Busana Garmenindo*



Busana Garmenindo was established in 2002, when it employed 30 operators (i.e. one production line) and 10 supporting workers in a small workshop in Jakarta. Soon after its establishment the manufacturer began making garments for a domestic branded marketer. In mid 2007, with its business growing, *Busana Garmenindo* moved to its current premises in West Java, expanding to three production lines and employing about 150 workers. As the service fee paid by the domestic branded marketer was becoming less competitive, in late 2007, *Busana Garmenindo* started to focus on making garments for the export market. For this purpose, *Busana Garmenindo* took job orders from Indonesian large-sized garment firms (i.e. *BBI* and *OTJ*) rather than establishing direct relationships with global buyers. *Busana Garmenindo* utilised 75 per cent of its production capacity to make workwear and uniforms for UK buyers (i.e. *COS* and *SUN*) through *BBI*.

As the subcontractor, *Busana Garmenindo* followed precisely the product and process specifications provided by *BBI*. *BBI* supplied garment patterns and garment construction manuals, fabrics and accessories as well as time study. *BBI* also provided technical assistance on sample making and production and quality control to be adopted by *Busana Garmenindo*, by placing its sample maker and

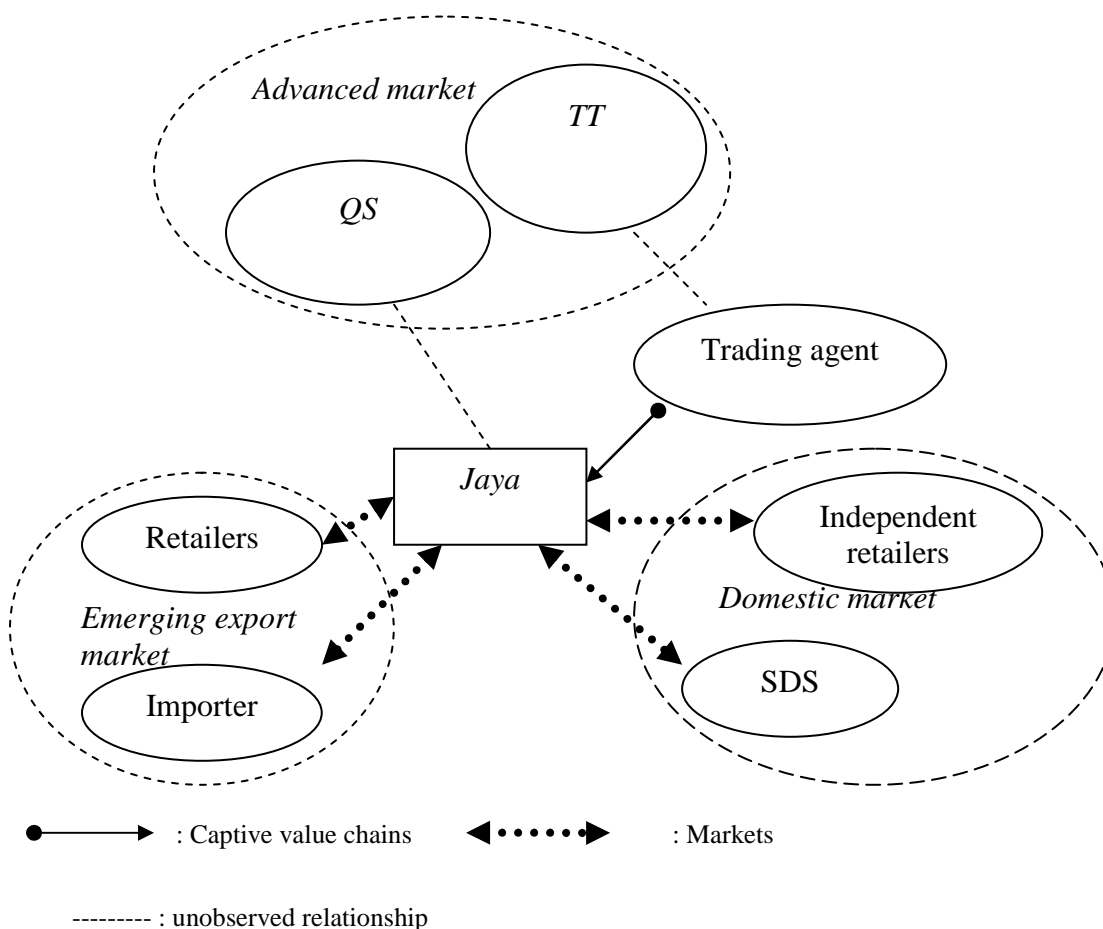
production/quality controller within *Busana Garmenindo*'s premises. These people assisted the manufacturer in making garment samples from the garment patterns and monitored the quality of garments during production operation and at final inspection. In addition, *BBI* also lent its automatic machinery (e.g. button or bar-tack machines) to *Busana Garmenindo* in order to speed up the production process. As a medium-sized manufacturer, *Busana Garmenindo* was not likely to purchase relatively expensive automatic machinery. Since *BBI* provided full technical assistance to *Busana Garmenindo*, in return the manufacturer had to commit to use 2/3 of its production capacity to make garments for *BBI*.

In this relationship, *Busana Garmenindo* has been inserted into captive value chains in which the manufacturer and *BBI* are engaged in a lock-in commitment to interdependence to accomplish the transaction. *BBI* transfers technical knowledge to improve production capability of *Busana Garmenindo* and reaps benefit from this initiative.

6.2.2c) Case of Jaya Garmenindo: Market-based governance structure in domestic and emerging export markets

The case of *Jaya Garmenindo* represented a distinct governance structure within the Indonesian garment sector. *Jaya Garmenindo* produced own branded garments and sold the garments in the domestic and emerging export markets, particularly in the Middle East. In the export market, *Jaya Garmenindo* established a market-based governance structure whereby retailers relied on quality-price-delivery without providing explicit product and process specifications to the manufacturer. Thus *Jaya Garmenindo* led the value chains by controlling most of activities. Furthermore, the insertion into global value chains was not the whole story of *Jaya Garmenindo* since the manufacturer also engaged in domestic value chains. In the domestic market, *Jaya Garmenindo* also formed a market-based governance structure in which the manufacturer retained most of the control over the value chains. Thus the case of *Jaya Garmenindo* illustrated the complex nature of individual garment manufacturers which engaged in various value chains at the same time.

Figure 6.4 Inter-firm relationships of *Jaya Garmenindo*



Jaya Garmenindo was established in 1974 and started as a small-sized enterprise which produced and sold menswear solely for the domestic market. Since its establishment, *Jaya Garmenindo* has introduced and developed its own brand names rather than making garments under buyers' brand names. Since 1988 *Jaya Garmenindo* had been expanding its business, engaging in the export market by selling its own branded garments in the Middle East. *Jaya Garmenindo* also entered into global value chains by making garments for global branded marketers. The manufacturer had three production facilities scattered across West Java and employed about 2,200 workers in these factories. In addition, *Jaya Garmenindo* established partnerships with small-sized garment producers to which *Jaya Garmenindo* provided capital and job orders under subcontract arrangements. On

account of these efforts, *Jaya Garmenindo* received the *Upakarti Award*² from the Government of Indonesia in 1996 for its success in developing small- and medium-sized enterprises. In addition, in 1997 and 2005, *Jaya Garmenindo* obtained the *Primaniyarta Award*³ from the Government of Indonesia for its export performance and its international brand recognition. *Jaya Garmenindo* sold about 60 per cent of its total production in the domestic market, with the rest intended for the global market.

Jaya Garmenindo's entry into the emerging export market with its own brand name in 1988 was due to an unstable domestic market environment which was highly sensitive to festive celebrations (i.e. Eid ul-Fitr, Christmas and New Year). At the beginning, *Jaya Garmenindo* exported to the United States and subsequently expanded to the Middle Eastern countries (e.g. United Arab Emirates, Saudi Arabia and Egypt). In 1994, the manufacturer started exporting its own brand garments to Africa (e.g. Morocco and Ethiopia) and in 1998 to Eastern Europe (e.g. Poland, Rumania and Hungary). Hence, during the 1990s *Jaya Garmenindo* was able to export 90 per cent of its products to international destinations. In the Middle East, *Jaya Garmenindo* claimed that its own brand name became a market leader and its garments were easily found in many department stores. *Jaya Garmenindo*'s brand name was reported by the manufacturer as becoming a generic name for denim or jeans in the Middle East.

*“... We had managed to be a single player in the Middle East during the Gulf War when other people stopped their exports to the Middle East. During that time, **our own brand became the market leader**, thus I can say that in the past [Indonesian] people who undertook a pilgrimage [to Mecca] brought home our own-brand as a present and we smiled at them.*

² The *Upakarti Award* is given annually by the Government of Indonesia to persons or firms who are successful in constructing and developing small and medium sized industry. The Award has been given by the Government of Indonesia since 1985 and up to 2007 the Award had been given to about 488 recipients. The Award has 5 categories: dedication, pioneering, conserving, caring and modern small and medium enterprise (Ministry of Industry, www.depperin.go.id)

³ The *Primaniyarta Award* is the highest award from the Government of Indonesia given to exporters for their achievements in increasing non-oil and gas exports. The Award has been given by the Government of Indonesia since 1992 to motivate exporters to develop and improve their export competence and capability continuously (Ministry of Trade, www.nafed.go.id)

The product was made here [Indonesia] but they thought it was made there [Saudi Arabia]. The customers of the Middle East when buying jeans used our own brand name which is similar to 'Levi's' for jeans [a generic name] here” (Jaya Garmenindo, 6 March 2008).

In order to become involved in the Middle East, *Jaya Garmenindo* formed market-based governance structures with importing agents and retailers. These buyers did not provide garment specifications, which were fully under *Jaya Garmenindo*'s control. Neither did the buyers intervene in the manufacturer's production operations or management, which included labour standards and social compliance. The buyers purchased garments from *Jaya Garmenindo* as long as design, quality and price of garments were acceptable. For this reason, *Jaya Garmenindo* was able to outsource a fraction of its production activity to other small-sized garment producers.

As mentioned above, *Jaya Garmenindo* exported only 40 per cent of its production, while the remaining 60 per cent was for the domestic market. In the domestic market, *Jaya Garmenindo* sold garments under its own brand names across Indonesia through independent retailers and department stores, including *SDS*. While the independent retailers purchased garments from *Jaya Garmenindo* on a cash basis, *SDS* purchased garments from the manufacturer on a consignment basis. Although the domestic buyers had different payment systems, neither of these domestic buyers provided their own garment and process specifications. They purchased garments which were produced under *Jaya Garmenindo*'s own specifications, and thereby, *Jaya Garmenindo* formed market linkages with domestic buyers. Again, since domestic buyers did not intervene in production operation and social compliance, *Jaya Garmenindo* was able to outsource its production activities to other garment producers.

“We use internal production capacity as long as we can still utilise it, otherwise we are likely to outsource. If we are talking about production cost, making basics [garment] is better in-house. Basics [garment], such as mens' shirts, are simple, thus basics [garment] will be more efficient and effective if produced in-house. In contrast, fashion [garment] has many details which required longer working processes, thus it is better to outsource. An exception is for European buyers, although the order is fashion [garment] still it is produced in-house. Frankly speaking, controlling the quality of outsourced products is not an easy job. We send

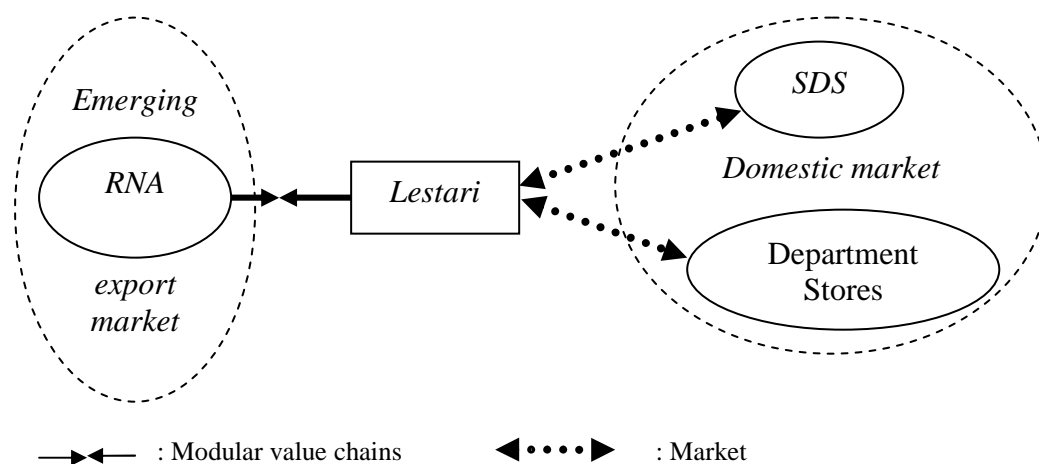
cut fabrics and ask them to sew them into garments but they sometimes merely pursue quantity [rather than quality] since it is the important thing, to get more pay. To meet European [quality] standards we cannot do that. We are not confident enough [to give the order to them], thus we haven't trusted them fully yet" (Jaya Garmenindo, 6 March 2008).

Since 1998, *Jaya Garmenindo* had been facing more severe competition in the export market, particularly from China. As a result, *Jaya Garmenindo* exported about 40 per cent of its production, which was much lower than the performance during the 1990s. For this reason, *Jaya Garmenindo* also took orders to make garments for global retailers from the United States (i.e. *QS*) and Germany (i.e. *TT*). Under the terms of these relationships, *Jaya Garmenindo*, had to follow detailed garment patterns and process specifications provided by the global branded marketers through their trading agent in Indonesia. In addition, *Jaya Garmenindo* was also supplied by the trading agent with fabrics and accessories to be sewn up. Furthermore, the final quality inspection was carried out by the trading agent. Therefore, within these relationships, *Jaya Garmenindo* engaged in captive value chains.

6.2.2d) Case of Lestari Garmenindo: Modular value chains in the emerging export market and market-based governance in the domestic market

Similarly to *Jaya Garmenindo*, *Lestari Garmenindo* engaged simultaneously in both domestic and export markets; however, the case of *Lestari Garmenindo* illustrated a distinct governance structure within the export market. *Lestari Garmenindo* became inserted into modular value chains by making garments for a retailer from the United Arab Emirates. The retailer (i.e. *RNA*) had little control over garment design and development as well as production operations; thus *RNA* provided less direct control and monitoring of the manufacturer. However, *RNA* still made final decisions on product design and developments proposed by *Lestari Garmenindo*. In the domestic market *Lestari Garmenindo* established a market-based structure with some department stores, including *SDS*. Within the relationship with *SDS*, transaction was based on price, quality and profit sharing. *SDS* did not provide product specifications and did not intervene in production operations, which were fully under *Lestari Garmenindo's* control.

Figure 6.5 Inter-firm relationships of *Lestari Garmenindo*



Lestari Garmenindo was established in West Java in 1986 and started as a small-sized enterprise, employing 14-20 workers. Initially, *Lestari Garmenindo* was producing knitted garments (e.g. t-shirts and polo shirts) under its own brand name merely to supply the domestic market. Later, in 1997, *Lestari Garmenindo* began producing garments for a large retailer from the United Arab Emirates, employing about 180 workers and producing knitted garments (50 per cent), denim and woven garments (30 per cent) and accessories including headwear and belts (20 per cent). About 65 per cent of *Lestari Garmenindo*'s production was exported while the rest was for supplying the domestic market.

In the domestic market, *Lestari Garmenindo* produced and sold its own branded garments through department stores, mainly *SDS*, on a consignment basis. Thus *Lestari Garmenindo* managed its own sales counters/booths in *SDS* outlets by providing sales assistants and equipment. In this relationship, *Lestari Garmenindo* provided a discount to *SDS* of about 35 per cent of retail price, thus *SDS* was concerned more with *Lestari Garmenindo*'s sales turnover than with product specifications. *Lestari Garmenindo* signed a business agreement with *SDS* which was renewed every year. The agreement consisted of sales targets and a profit sharing agreement which generated minimum income for *SDS*. *SDS* compared *Lestari Garmenindo*'s actual sales turnover with the agreement and imposed penalties on the manufacturer when the actual sales turnover was less than the target set out in the

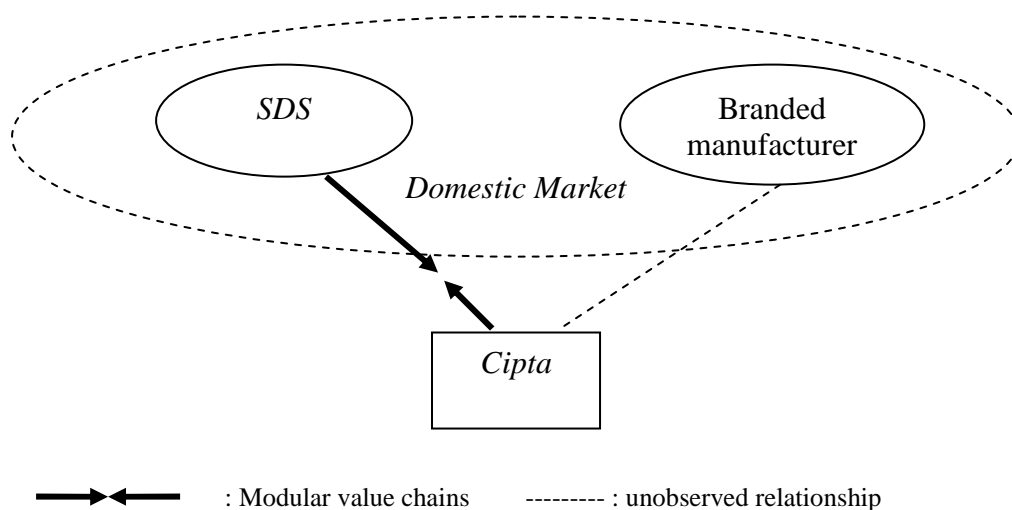
annual agreement. Within this arrangement *SDS* focused on retailing with no intervention in product and process specifications. Thus, *Lestari Garmenindo* controlled most of the value chains. Since the relationship between *Lestari Garmenindo* and *SDS* was based on price, this was a market-based governance structure.

Lestari Garmenindo started exporting its garments in 1997 when a large retailer and distributor from the United Arab Emirates (i.e. *RNA*) contacted the manufacturer after viewing garments of *Lestari Garmenindo* displayed in an *SDS* outlet. *RNA* asked *Lestari Garmenindo* to make garments under *RNA*'s brand names rather than *Lestari Garmenindo*'s own brand name. Despite owning the brand name, *RNA* did not provide explicit product and process specifications for *Lestari Garmenindo* to follow. Instead *Lestari Garmenindo* proposed design and materials to be selected by *RNA* and took full responsibility for garment development and production. Thereby *RNA* did not intervene in production operations or even in final quality inspection. Consequently, *Lestari Garmenindo* engaged in modular value chains with *RNA*.

6.2.2e) Case of Cipta Garmenindo: Modular value chains in the domestic market

The last case, of *Cipta Garmenindo*, demonstrated a distinct governance structure within the domestic market, particularly in its relationship with *SDS*. The relationship between *SDS* and *Cipta Garmenindo* differed from the cases of *Jaya Garmenindo* and *Lestari Garmenindo*. *Cipta Garmenindo* made garments under the *SDS*'s own brand names rather than its own brand name. Within the relationship, *SDS* provided garment designs or guidelines to be followed by *Cipta Garmenindo*; however, the manufacturer was given opportunity by *SDS* to propose its own designs and development as long as they fitted in with the guidelines.

Figure 6.6 Inter-firm relationships of *Cipta Garmenindo*



Although *SDS* was not concerned with production operation, the buyer still exerted strict control over the quality of garments produced by *Cipta Garmenindo*. *SDS* appointed an international QC agency to carry out the final quality inspection of the manufacturer's work. In this case, *Cipta Garmenindo* was inserted into modular ties with *SDS* since the domestic buyer exercised less control over process and product specifications.

Cipta Garmenindo was established in 1985 in Central Java. The manufacturer started out as a small-sized enterprise which produced garments for the domestic market. *Cipta Garmenindo* established an office in Jakarta to manage its relationships with domestic retailers and branded manufacturers and to carry out product design and development. *Cipta Garmenindo* employed about 300 workers in its factory and made ladies wear and menswear solely for domestic buyers, with 90 per cent of production going to *SDS*. In addition, *Cipta Garmenindo* established partnerships with about 20 small-sized garment producers which provided 'cutting and making' services. On account of these partnerships, *Cipta Garmenindo* obtained the *Upakarti Award* from the Government of Indonesia for its efforts to support small and medium garment producers.

The relationship with *SDS* started in 1990, when *Cipta Garmenindo* took part in the Indonesian production exhibition (i.e. *Pameran Produksi Indonesia*) in Jakarta.

During that time *SDS* was searching for garment suppliers and was interested in garment samples displayed in the *Cipta Garmenindo* booth. *Cipta Garmenindo* made garments mostly for *SDS*'s own brand names. Within this relationship, the payment system was based on cash rather than consignment. In conducting their business, *SDS* provided a general design guideline rather than detailed garment and process specifications. *SDS* occasionally asked *Cipta Garmenindo* to generate new designs and styles based on garment samples purchased by *SDS* from abroad.

“SDS has its own specifications, particularly in design. Thus SDS classifies its garment products for different genders [i.e. male and female], following gender classification there is age categorisation and ultimately brand differentiation. The brand differentiation is based on garment style characteristics ...” (*Cipta Garmenindo*, 29 January 2008).

Since *Cipta Garmenindo* already had a long standing relationship with *SDS*, the manufacturer had a good understanding of the design guidelines of *SDS*; thus *SDS* provided a freedom for *Cipta Garmenindo* to be more creative.

*“We propose the design [to SDS]. Suppliers who have graduated from the ‘University of SDS’ usually **have a better understanding of fashion style and trend** ...”* (*Cipta Garmenindo*, 29 January 2008).

*“We may provide design but **our suppliers frequently have their own ideas** since they are also travelling abroad ... **We do not nominate input suppliers** ... if our [garment] suppliers ask, we can only suggest ... it [nomination of input suppliers] will make people less creative. They may have own channelling [to input suppliers] ... so far they have proven to be clever, more clever than us”* (*SDS*, 19 February 2008).

Despite the fact that *SDS* has little involvement in garment development and production operation, nonetheless, *SDS* still controls the chains through its role in making final decisions. *SDS* provides feedback and selects garment designs which meet its guidelines. In addition, since *SDS* is more concerned with quality of product, it assigns an international QC agency to test the materials and to conduct final inspection of *Cipta Garmenindo*. Within the relationship, *Cipta Garmenindo* and *SDS* form modular ties: since *SDS* provides less explicit control over *Cipta Garmenindo* in accomplishing the transaction.

6.2.3 Closing remarks: How are the Indonesian garment manufacturing firms inserted into value chains?

The insertion into value chains is a process of two-way assessment; that is, domestic and global buyers and the Indonesian garment manufacturers are searching for partners with whom they can expand their business, or seeking replacements for poor garment manufacturers and buyers. Buyers are looking for Indonesian garment manufacturers who have the production capacity and capability to meet their requirements. In the same way, the Indonesian garment manufacturers search for buyers who can provide reasonable job orders in areas such as garment style, minimum order quantity and payment system. In addition, the Indonesian garment manufacturers also look for buyers who are willing to pass on knowledge and capability to them.

Different forms of value chains governance have been discovered among the Indonesian garment manufacturers. *Tunggal Garmenindo* and *Busana Garmenindo* clearly illustrate the archetypal forms of captive and relational value chains which are also found within global garment value chains, as suggested by the GVC literature (Gereffi et al., 2005). They abide by product and process specifications which are determined by the global branded marketers from the United States and the United Kingdom respectively. Furthermore, the case of *Tunggal Garmenindo* also illustrates the dynamics of governance structure within global value chains through its formation of a more intensive relationship with the branded marketer from the United States (i.e. *JDI*) over time. On the other hand, *Lestari Garmenindo* and *Jaya Garmenindo* demonstrate atypical forms of modular and market-based governance structures within the Indonesian garment sector. With these cases, the relationships between the Indonesian garment manufacturers and retailers from the United Arab Emirates rely more on factors of price-quality-delivery (PQD). The retailers do not dictate to the Indonesian garment manufacturers overtly by providing product and process specifications. The modular tie is also confirmed by *Cipta Garmenindo*, which supplies garments for a retailer from the domestic market.

The governance structure of the Indonesian garment manufacturers tends to differ across markets, regardless of the firm's size. In the domestic and emerging export markets (e.g. the United Arab Emirates) the Indonesian garment manufacturers establish looser ties than in the advanced markets (e.g. the United States and European Union). Buyers from the domestic and emerging export markets do not control the value chains strictly and allow the Indonesian garment manufacturers control over more functions. Consequently, the Indonesian garment manufacturers are involved in design and product development (e.g. input sourcing) activities and make their own decisions on production operations and management (e.g. production outsourcing). Furthermore, the diversity of governance structures is discovered not only among the five cases of garment manufacturers, but also within individual garment manufacturers. Thus a garment manufacturer in Indonesia is able to be involved in various types of value chain governance at the same time. For instance, *Jaya Garmenindo* has established a market-based governance structure in the domestic and the emerging export markets, whilst also being engaged in captive value chains in advanced markets. Similarly, *Lestari Garmenindo* simultaneously forms modular value chains and market-based ties in the emerging export and domestic markets respectively.

In explaining the different forms and dynamics, the theory of value chain governance emphasises the complexity of transactions and the need for codification of transactions and supplier capability. The garment sector is characterised by captive or relational value chains, which indicate that the complexity of product and process specifications is high but can be codified in the form of detailed instruction, while supplier capability may be low (in case of captive type) or high (in case of relational type), as suggested by the GVC literature (Gereffi et al., 2005). These captive and relational forms of value chain governance are discovered within the Indonesian garment sector. Global buyers demand that garments and production processes meet their own specifications; however, these customised specifications can be codified into detailed garment construction manuals. Therefore the Indonesian garment manufacturers are able to make garments by meticulously following these detailed instructions. The Indonesian garment manufacturers are not required to invest assets specifically to serve particular global buyers. Thus captive and relational governance

structures within the Indonesian garment sector may well be explained by the GVC framework. However, evidence reveals other forms of governance of value chains (i.e. market and modular structures) within the Indonesian garment firms and some individual garment manufacturers are even simultaneously engaged in different forms of value chain governance. These facts have not been sufficiently explored by the GVC framework and thus require further examination.

6.3 Strategies to upgrade

The GVC framework distinguishes between process, product, functional and inter-sectoral/chain upgrading. In this study, upgrading processes are determined by firm's capability acquisition. This section examines upgrading processes undertaken by the Indonesian garment manufacturers based on the detailed information across the five case studies.

6.3.1 Upgrading patterns and paths

Table 6.4 shows different upgrading processes undertaken among Indonesian garment manufacturers and also within individual manufacturers.

Table 6.4 Upgrading patterns of the Indonesian garment manufacturers

	<i>Tunggal</i>	<i>Busana</i>	<i>Jaya</i>	<i>Lestari</i>	<i>Cipta</i>
Process upgrading	x	x	-	-	-
Product upgrading	x	-	x	x	x
Functional upgrading	-	-	x	x	x
Chain upgrading	-	-	-	-	-

Source: reconstructed from interview results

6.3.1a) Case of Tunggal Garmenindo: Process and product upgrading through production efficiency and diversification

Since its establishment, *Tunggal Garmenindo* had been making a variety of knitted garments, particularly sportswear. In the early 2000s, *Tunggal Garmenindo* entered the 'hi-tech' garments category, such as the 3-in-1 ski jacket, to obtain a higher unit value in compensating for an increase of minimum wage.

*“The hi-tech garment is something which is uncommon in Indonesia, because it is complicated to make. People rarely enter [this category]. For instance a Speedo suit [swimwear] consists of 12 garment panels [to be stitched]. **Our garment consists of 176 panels** excluding the interlining and so on ... the basic problem of the labour-intensive industry [garment] is always the wages. If you want to survive in Jakarta [city with the highest minimum wage rate] you have to move toward complicated garments” (Tunggal Garmenindo, 13 March 2008).*

Furthermore, to deal with the increase in labour wages, *Tunggal Garmenindo* had put extra effort into improving production efficiency and productivity. This was achieved by implementing lean production in order to achieve the shortest cycle time possible by eliminating waste in the form of: work in process, repair, delay, line production changeover, operator's motion and material transportation.

*“Our buyer monitors 2 aspects; social compliance and manufacturing technique. For manufacturing technique, the buyer tends to focus on the implementation of lean [manufacturing] concept in order to **improve our productivity** ... To improve production we have to know about the 7 wastes of garment industry which are usually overlooked by the management ... who would calculate cycle time and waste? In our company we have the Industrial Engineering which focuses on searching for all potential loss within our company ... do you know how many [garment] firms have an Industrial Engineering department? I can say that there are only a few firms. The industrial engineering department is the basis for production improvement, since this department deals with productivity, Kaizen and so on” (Tunggal Garmenindo, 13 March 2008).*

In addition, the manufacturer installed new automatic equipments and employed multi-skilled operators to improve production productivity.

“We do not think of merely cost. We always have a principle that whatever we invest should be based on good calculations or payback. That is the most important thing. For instance, we bought an automated Velcro application machine ... the price of that machine was expensive, lets say US\$ 8,000. Other people may think that it is better to use the money for paying operators, but they forget that the wage of the operator is Rp. 1 million per month while the machine is able to replace 8 operators ...” (Tunggal Garmenindo, 13 March 2008).

The case of *Tunggal Garmenindo* demonstrated that the manufacturer approached product and process upgrading by diversifying product range and improving

production management. *Tunggal Garmenindo* established an industrial engineering department that was responsible for the improvement of production management. The experience of *Tunggal Garmenindo* explains the phenomenon of product upgrading of Indonesian knitted garments in the US market as indicated by macro-level data analysis in chapter five. Unit value of garments is determined by nature of production complexity and brand recognition regardless of types of fabrics. Since *Tunggal Garmenindo* was able to make 'hi-tech' knitted items for a top global branded marketer (i.e. *JDI*), the manufacturer obtained a relatively high unit value. Therefore *Tunggal Garmenindo* was quite satisfied with its upgrading achievement and had no intention of moving toward functional upgrading by involving in design, product development, branding and marketing activities.

*"... Most people are entering the garment business because they get buyers, thus they get job orders. People are least likely to establish a garment firm because they want to create a market. That is the basic problem. In Indonesia, it is a rare case that when a garment firm gets a job order from buyers, it starts to think about creating a new market ... they have no strong marketing capability. Do they want to open a store? We had an idea [to create own brand name] but how much money should be spent on opening a store? How much for advertisements? **It is better for us to focus on production.** Thus in my opinion if we want to establish a garment factory we should focus on the factory, otherwise we will be distracted. Otherwise garment factory owners may transform into buying agents. **If I had a market, production activity would be outsourced and I would not make my own garments, to avoid an additional 'headache'**"*
(*Tunggal Garmenindo*, 13 March 2008).

6.3.1b) Case of Busana Garmenindo: Process upgrading through production efficiency

The case of *Busana Garmenindo* illustrated a garment manufacturer which focused on process upgrading to meet requirements of global buyers. By switching from supplying domestic buyers to global buyers, *Busana Garmenindo* obtained a higher unit value, although the manufacturer had to alter its products from fashion to 'basic' garments (i.e. workwear).

"CM [cutting and making] cost for local [buyer] was Rp. 24,000 per dozen, thus Rp. 2,000 [equivalent GBP 0.09, GBP 1 = Rp. 18,000] per piece ... while the cost for export is Rp. 5,000 – Rp. 6,000 per piece,

although export [quality] standards are more strict [than local] ... “ (Busana Garmenindo, 15 March 2008).

The manufacturer was practising Toyota Production to improve its production efficiency and productivity.

“ I am trying to apply the Toyota Production System here, but I will implement it gradually, otherwise our operators will be shocked. For instance, I asked operators to put everything in its place, not to put bottled drinking water just anywhere, but put it in a certain place. I also do not allow operators to receive phone calls or to eat while they are working ... “ (Busana Garmenindo, 15 March 2008)

Since *Busana Garmenindo* was a subcontractor for a large-sized garment manufacturer (i.e. *BBI*) in Indonesia, it was highly dependent on *BBI* in undertaking process upgrading. For instance, *Busana Garmenindo* obtained the cycle time from *BBI* and borrowed automatic machinery from *BBI* to improve its line productivity.

”We do not have automatic machinery, but if we need any automatic machinery we borrow it from BBI since we do not want to buy it. For instance, the automatic button hole application machine or the bar-tack machine which are expensive ... the price of this automatic machinery is similar to the price of a car ... “ (Busana Garmenindo, 15 March 2008).

In contrast to *Tunggal Garmenindo*, *Busana Garmenindo* had a plan to move toward functional upgrading by generating original designs and developing its own brand name and market in the future.

*“ ... My wife is **developing our own-brand name, particularly for the domestic market**. We got the inspiration from *Jaya Garmenindo*, whose own brand name is strong in the Middle East... We realise that brand development is not easy. If we want to develop an own brand name we have to know where we should start. Shall we start from *Matahari Dept. Store* or *Ramayana Dept Store* or *Mangga Dua* or *Tanah Abang*? Thus we have to choose the right outlet for our product. And then which market segment will we penetrate? Is it the low, middle or high market segment? ... For instance, the price of a piece of garment in *Tanah Abang* is Rp. 40,000 while in *Mangga Dua* it is Rp. 400,000” (Busana Garmenindo, 15 March 2008).*

6.3.1c) Case of Lestari Garmenindo: Functional upgrading through design and product development

The case of *Lestari Garmenindo* illustrated a garment manufacturer which undertook functional upgrading within its relationships with the retailer from the United Arab Emirates. In contrast to *Tunggal Garmenindo* and *Busana Garmenindo*, *Lestari Garmenindo* focused on design and material sourcing activities to improve its competitiveness and profitability. The manufacturer proposed original designs and garment developments which were chosen by the retailer.

“Our export sales are dependent on product design. If we are able to come up with well designed garments, our foreign buyer will put in many purchase orders ... for the domestic market, I have a person who handles the product development, assisted by a designer ... For the export market I am likely to develop products on my own. I am often travelling abroad to visit department stores and buy garment samples. Based on these samples I create new designs. Furthermore, I may buy a single garment, for instance a pair of trousers, and then based on this pair of trousers I will create a design for the top garment and so on ...” (Lestari Garmenindo, 4 February 2008).

Since *Lestari Garmenindo* concentrated on functional upgrading, the manufacturer was not interested in improving its production capacity and capability. Instead *Lestari Garmenindo* established cooperation with other garment producers and relied more on them for manufacturing activity.

*“If I get a purchase order, I will put the order in to the in-house facility and also subcontract it to other producers. Our internal production capacity is not large, thus **larger purchase orders are carried out by subcontractors**. The proportion between in-house and subcontractor is 1:2” (Lestari Garmenindo, 4 February 2008).*

6.3.1d) Case of Cipta Garmenindo: Functional upgrading through design and product development

The case of *Cipta Garmenindo* also demonstrated a garment manufacturer that undertook functional upgrading by focusing on design and material sourcing activities to maintain its relationship with the domestic retailer.

“We focus on creativity by proposing our design and product development to SDS ... We order materials and accessories from my agents in Mangga Dua or Tanah Abang, Jakarta. For accessories, including buttons, the agents import them from China since the domestic product is more expensive. Most fabrics are also imported since the price is cheaper ... “ (Cipta Garmenindo, 29 January 2008).

Since *Cipta Garmenindo* focused more on design and product development activities, it also outsourced production activity to subcontractors.

“In Solo [Central Java] we have 20-30 subcontractors and we provide job orders to small garment producers which have 10-15 sewing machines ... our factory in Solo will decide which purchase order will be carried out in-house and which order will be outsourced to subcontractors ...” (Cipta Garmenindo, 29 January 2008).

In the future, *Cipta Garmenindo* intended to continue with production operation and product development by searching for new buyers rather than developing its own brand name and market.

*“We have 300 operators ... thus we have to search for new clients in addition to SDS. We had thought once of creating our own-brand name but after some calculations we found that **brand development was not a cheap investment** ...” (Cipta Garmenindo, 29 January 2008).*

6.3.1e) Case of Jaya Garmenindo: Functional and product upgrading through design, product development and diversification, branding as well as marketing

The last case, that of *Jaya Garmenindo*, demonstrated the garment manufacturer that achieved functional and product upgrading within its relationships with the retailers from the domestic and the Middle East market. In order to upgrade, *Jaya Garmenindo* had established a division which undertook marketing activity and product development. This division was responsible for generating original design and marketing strategies.

” ... We have MCD, Marketer and Product Development which consists of staff with functional expertise, and their main duty is travelling to understand [fashion] trends, competitors or our position in the market. Based on this information we are trying to find ways to improve in the

future. Thus they are performing an [market] intelligence function” (Jaya Garmenindo, 6 March 2008).

In addition, the division was also responsible for diversifying products and markets by generating new brand names and communication channels to customers.

*“ ... In addition we also extend our garment categories. Nowadays, we are not only making menswear but also ladies wear ... Also, we are not only making formal wear but also casual wear and denim ... We also make kids wear ... Thus we have extended over time from men's formal wear into casual and denim wears for men, women, youngsters and kids ... we also create a new brand name for each new product category by creating new initials based on our brand name of 'C'; for instance, for youngsters we created CDL or for ladies we created CL ... or we **can create new brand name for instance 'S' for higher market segments of our ladies wear** ... “ (Jaya Garmenindo, 6 March 2008).*

Jaya Garmenindo also achieved product upgrading by producing higher value garments to compensate for high production cost. For this purpose, the manufacturer established cooperation with innovative domestic textile manufacturers.

*“... Our overhead costs are high because our firm is large, thus it is not easy to reduce our retail price by US\$ 1 per piece [of garment]. For this reason, we are trying to innovate, particularly in fabric development ... **We apply special fabrics or materials which are still rare in the market** which is actually in huge demand from the consumers. For instance Teflon coated [fabrics] ... thus when coffee or water is spilled on our garment, it will not be wet ... or we apply easy care fabrics which do not need ironing ... or cotton rich to make garment cooleror fabrics which produce fragrance ...or anti bacteria ... thus we go into product development. We make garments which are not produced by any other firms. We are trying to develop products which provide uniqueness by applying unique fabrics” (Jaya Garmenindo, 6 March 2008).*

6.3.2 Closing remarks: To what extent is upgrading potential of the Indonesian garment manufacturing firms constrained or promoted through the governance of domestic and global actors?

The five Indonesian garment manufacturers in the case studies follow various upgrading processes in order to improve competitiveness and increase unit value of their products. *Busana Garmenindo* illustrates the garment manufacturer which undertakes process upgrading by improving its production efficiency and product

quality. *Tunggal Garmenindo* indicates the manufacturer which engages in process and product upgrading to increase its unit value of its garments. *Jaya Garmenindo*, *Lestari Garmenindo* and *Cipta Garmenindo* illustrate the garment manufacturers which achieve functional upgrading by getting involved in design, product development, branding and marketing activities. Thus these manufacturers tend to outsource their production activities to other garment producers.

By selecting purposively not only large-sized garment manufacturers but also medium-sized manufacturers, the evidence demonstrates that upgrading processes are undertaken by both large-sized and medium-sized garment manufacturers. Furthermore upgrading processes also take place within global, regional and domestic value chains. Global buyers may play a role in affecting upgrading processes of Indonesian garment manufacturers; *Tunggal Garmenindo* and *Busana Garmenindo* clearly illustrate upgrading within the relationships with global buyers from advanced markets in which these garment manufacturers undertake process and product upgrading. As they are inserted in captive and relational value chains, the results confirm the argument of the GVC literature that upgrading within captive value chains tends to be confined to process and product upgrading (Humphrey and Schmitz, 2002). In contrast, functional upgrading, undertaken by *Jaya Garmenindo*, *Lestari Garmenindo* and *Cipta Garmenindo*, takes place across their relationships with buyers from domestic and emerging export markets. Within the domestic and emerging export markets, those garment manufacturers engage in modular and market-based governance structures. Therefore functional upgrading tends to occur within modular and market-based governance structures, rather than in captive and relational value chains.

6.4 Conclusion

Through empirical evidence drawn from the survey of the Indonesian garment sector and the rich narrative across the five cases studies, this chapter has attempted to address questions on how the Indonesian garment manufacturing firms are inserted into value chains and to what extent their upgrading potential is constrained or promoted by the nature of value chain governance of domestic and global actors.

This chapter has discussed empirical accounts of different forms of value chain governance in which the Indonesian garment manufacturers are involved. Some of the Indonesian garment manufacturers are engaged in captive value chains, which are explicitly controlled by global buyers through detailed product and process specifications. Global buyers may lessen their control over time, thus the Indonesian garment manufacturers may move from captive to relational form of governance. Meanwhile, other garment manufacturers engage in modular and market-based governance structures, in which buyers do not provide design and garment pattern to the garment manufacturers and do not interfere in production activities. These forms of value chains governance are discovered within domestic and emerging export markets. Furthermore, different forms of value chains governance were not only found among the five case studies, but also within individual garment manufacturers. These Indonesian garment manufacturers are able to engage in diverse governance structures at the same time. As the atypical forms of value chain governance discovered within the Indonesian garment sector and within individual garment manufacturers have not been adequately investigated by the GVC framework, they require further exploration.

The cross-case analysis carried out within the Indonesia garment sector suggests that the extent of upgrading undertaken by the Indonesian garment manufacturers is linked to the governance of value chains in which the manufacturers are engaged. Therefore process and product upgrading is likely to take place within captive value chains. Meanwhile, functional upgrading tends to take place within modular value chains and market-based governance structures. Furthermore, since captive value chains are likely to be formed within global value chains, process upgrading takes place within global value chains. In contrast, functional upgrading tends to take place within the domestic and regional value chains. Since individual garment manufacturers are able to simultaneously engage in different forms of value chain governance thus they can undertake various upgrading processes.

Process and product upgrading undertaken by the Indonesian garment manufacturers within global captive value chains corroborates the findings of the GVC literature (Humphrey and Schmitz, 2002, Gereffi et. al., 2005). On the other hand, functional

upgrading on the part of Indonesian garment manufacturers within modular and market-based governance of domestic and regional buyers has not been widely explored by the GVC framework. The finding about functional upgrading within domestic and regional value chains is not new and is confirmed by similar evidence in other studies (Tewari, 1999, 2008; Bazan & Navas-Aleman, 2004). Moreover, the GVC framework pays little attention to the fact that individual garment manufacturers in Indonesia are able to insert into different governance forms and undertake divergent upgrading processes at the same time. The findings suggest that significant attention should be paid to the actions of Indonesian garment manufacturers in determining their upgrading processes and paths. This study proposes to examine technological capability of the Indonesian garment manufacturers in more detail. The GVC framework has identified that capability of suppliers determines governance of value chains; however, the framework has not explored the roles of suppliers thoroughly. Therefore, to explore the capability of the Indonesian garment manufacturers, this study takes on the concepts developed by TC literature. Before assessing the capability within the Indonesian garment manufacturers and its linkage to upgrading processes, the next chapter will first address similar research questions on the nature of value chain governance and upgrading processes within the Indonesian consumer electronics firms. The distinctive characteristics of the Indonesian consumer electronics sector in term of value chain governance may bring about different impact on upgrading potential. The evidence within the Indonesian consumer electronics sector will be compared with findings in the Indonesian garment sector to obtain better understanding of the role played by governance in upgrading processes within the Indonesian manufacturing sector.

Chapter 7

Value Chain Governance and Upgrading Processes amongst Consumer Electronics Manufacturers in Indonesia

Evidence from the field

The previous chapter provided empirical evidence on value chain ties in Indonesian garment manufacturers, and the implications of these relationships with buyers from domestic, regional and global value chains for upgrading processes. This chapter considers the case of the consumer electronics manufacturers, a relatively more technologically advanced sector than garment production, and one that faces not only distinct challenges in global markets but may also involve different types of value chain insertion from that observed in the garment sector. It examines empirical evidence from within the Indonesian consumer electronics sector to address the question of how the consumer electronics manufacturing firms in Indonesia are inserted into value chains and to what extent their upgrading potential is constrained or promoted through the nature of value chain governance of domestic and global actors. Detailed analyses of value chain governance, upgrading processes and their relationships across multiple firm cases within the Indonesian consumer electronics sector will allow comparison of their unique and common patterns to the cases within the Indonesian garment sector. Following a similar procedure to the investigation of the Indonesian garment sector, this chapter (i) provides a descriptive overview of the survey of the Indonesian consumer electronics sector; (ii) investigates mechanisms for insertion of the consumer electronics manufacturers into domestic and global value chains and (iii) assesses upgrading processes of the consumer electronics manufacturers in the context of domestic and global value chains.

This chapter is organised to replicate the investigation within the Indonesian garment firms in chapter six. This layout will help the author to produce a straightforward comparative analysis in the subsequent chapter. Section 7.1 provides a descriptive overview of the sample gathered through the survey of the Indonesian electronics sector. From the sample of fifteen (15) consumer electronics manufacturers surveyed

in Indonesia, six (6) manufacturers are selected purposively for detailed analysis. Section 7.2 explores the mechanisms for insertion of the consumer electronics manufacturers into domestic, regional and global value chains. This section also demonstrates different forms of value chain governance in which the six cases are engaged. In addition, this section examines how the complexity of transactions and information codifiability may explain the nature of governance of value chains across the firm cases. Section 7.3 explores upgrading processes and dynamics undertaken by the consumer electronics manufacturers. Finally, section 7.4 summarises upgrading processes within the consumer electronics manufacturers in Indonesia and examines their relationships to value chain governance.

7.1 Descriptive overview

The sample of 15 manufacturers while again not seeking to be representative of the Indonesian electronics sector, can nevertheless provide useful insights into the broad range of structure and workings of the Indonesian consumer electronics sector.

Table 7.1 Consumer electronics sample profile (total sample = 15)

Ownership of manufacturers	100% FDI	Joint venture	100% Domestic
Descriptive			
No. of manufacturers	4	3	8
Age of manufacturers (years, average)	27	35	21
No. of employment (people, average)	1,605	1,883	1,288
No. of manufacturers supplying 100% for domestic market	0	0	6
No. of manufacturers supplying for domestic and export markets	4	3	2
No. of manufacturers supplying 100% for export market	0	0	0
Dynamics			
Annual sales growth (%)	11-20	11-20	≤ 10
Value added activities			
Design (no. of manufacturers)	2	3	6
Input sourcing (no. of manufacturers)	4	3	8
Assembly (no. of manufacturers)	4	3	8
Quality control (no. of manufacturers)	4	3	8
Packing (no. of manufacturers)	4	3	8
After sales service (no. of manufacturers)	4	3	8
Own branding (no. of manufacturers)	4	3	4
Global of value chains			
Export share (% , average)	55	37	3
Principals from advanced countries (no. of manufacturers)	4	3	1

Source: Author's own survey 2008

Ownership of manufacturers. As the discussion in chapter five indicated, foreign direct investment (FDI) plays an important role in the development of Indonesian electronics. Further analysis of the sample is classified according to ownership status. From a total of 15 consumer electronics manufacturers surveyed: eight (8) firms were 100 per cent domestic investment; four (4) were solely FDI or foreign subsidiaries; and three (3) were joint ventures. Domestic-owned manufacturers on average employed 1,288 workers (standard deviation = 1,084), foreign subsidiaries on average employed 1,605 workers (standard deviation = 773), while joint ventures on average employed 1,883 workers (standard deviation = 1,179).

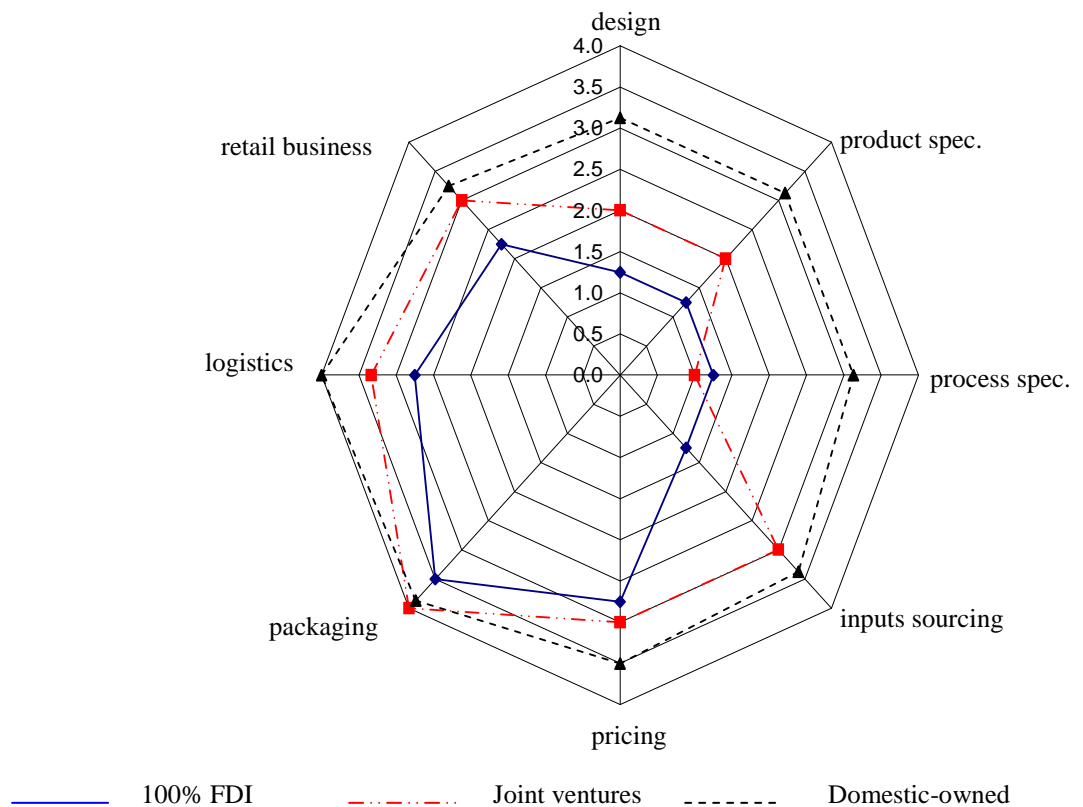
Annual sales growth of foreign affiliates (i.e. joint venture and foreign subsidiaries) in Indonesia was relatively high compared to that of domestic-owned manufacturers. This might relate to types of consumer electronics sold by the manufacturers. Chapter five had shown, for instance, the annual sales of LCD (liquid crystal display) televisions in the domestic market grew at 56.8 per cent, while the sales growth of CRT (cathode ray tube) televisions was -24.0 per cent per year. There was an indication that the domestic-owned manufacturers tended to focus on producing and selling mature consumer electronics (e.g. CRT televisions). Meanwhile, the foreign affiliates were able to sell both mature and high-tech consumer electronics. In addition, it should be noted that the overall lower sales growth of domestic-owned manufacturers was influenced by the negative sales growth of one domestic-owned manufacturer. However, if this outlier was taken out of the sample, there was little difference of sales growth between the domestic-owned manufacturers and the foreign affiliates.

Market orientation. Out of the 15 surveyed manufacturers, none of the consumer electronics manufacturers supplied products exclusively for the export market. All foreign subsidiaries and joint ventures supplied for both domestic and export markets, whilst only 2 out of 8 domestic-owned manufacturers supplied both markets. Consequently, most of the domestic-owned manufacturers (i.e. 6 out of 8) sold consumer electronics exclusively in the domestic market. It appeared that the domestic-owned consumer electronics manufacturers tended to be primarily geared to supplying the domestic market rather than the export market. This was supported by

the fact that the domestic-owned manufacturers exported on average just 3 per cent (standard deviation = 5) of their production. Export of consumer electronics from Indonesia was primarily conducted by the foreign subsidiaries and joint ventures, which exported 55 per cent (standard deviation = 25) and 37 per cent (standard deviation = 31) of their production respectively.

Value chain activities. All the consumer electronics manufacturers surveyed assembled electronic components into finished consumer electronics. Design activity was carried out by 6 out of 8 domestic-owned manufacturers, and by 5 out of 7 foreign affiliates. Furthermore, 4 out of 8 domestic-owned manufacturers sold electronic products under their own brand names which indicated that the manufacturers had achieved OBM status. The rest of the domestic-owned manufacturers produced consumer electronics under global brand names, acting as subcontractors of global lead electronics firms.

Figure 7.1 Decision making process within electronics manufacturers



Power relationships. Figure 7.1 illustrates a radar diagram of a decision making process on value added activities that reflects a division of value chains between the consumer electronics manufacturers in Indonesia and their buyers or, where applicable, global lead electronics firms. It also indicates direct control by global lead firms over different value added activities. Value 1 indicates that the decision on a particular aspect was made by the global lead firms, while the value 4 denotes that the decision was made by electronics manufacturers in Indonesia independently.¹ It appeared that within a decision making process, the domestic-owned manufacturers obtained greater control over most value added activities than the foreign affiliates. This was deduced from the fact that most domestic-owned manufacturers did not have any ties with global lead electronics firms, while the foreign affiliates were highly dependent on global strategy of their lead firms. The global lead firms strictly controlled product design, product specification and process specification of their foreign affiliates. For other value added activities, including pricing, packaging, and logistics, particularly in the domestic market, the global lead firms involved their affiliates in their decision making.

The evidence from the survey data provides a useful set of insights into the workings of the consumer electronics sector in Indonesia. FDI and joint venture units have not only particular kinds of engagements with global lead firms, but also appear to cater for different kinds of markets as compared to solely domestic owned firms. The domestic market matters for both domestic owned and for fully or partially foreign owned markets. However, it is primarily in the foreign invested consumer electronics sector that exports begin to emerge as an important activity. There is evidence of firm level upgrading across both segments of the consumer electronics industry, but in terms of functional activity it is, as seen in the overview of the garments sector, that

¹ The electronics firm respondents were asked to indicate who made decisions on activities in: product design, product specification, process specification, input and material sourcing, price setting, packaging, logistics and retail. Each variable was measured using a four-point interval scale, with value 1: if the activity was decided exclusively by buyers/global lead firms, value 2: if the activity was decided by buyers/global lead firms after consulting with electronics manufacturers, value 3: if the activity was decided by electronics manufacturers but subject to approval by buyers/global lead firms and value 4: if the activity was decided independently by manufacturers. Subsequently, the average value was calculated and was classified between domestic-owned manufacturers, foreign subsidiary and joint venture. The average value was put into a radar diagram.

domestic owned firms (in the case of garments medium sized producers) tend to engage in a wider range of value chain functions.

While throwing some light on the core characteristics of the Indonesian consumer electronics sector, the data from the survey cannot provide the detailed insights required to address the research questions mentioned above on the mechanisms for insertion of the consumer electronics manufacturers into various value chains and its implications for their strategies of upgrading. For this reason, from the total 15 manufacturers surveyed, a subset of 6 cases was purposively selected, to provide in-depth understanding on the insertion mechanisms, upgrading processes and trajectory within the Indonesian consumer electronics firms. These particular firm cases indicated different governance structures and also capturing the different characteristics of firm-ownership and nature of business. *Pusaka Elektrindo* represented Japanese joint ventures in the Indonesian consumer electronics sector. *Suara Elektrindo*, which received the *Primaniryata Award* for its export performance, represented South Korean subsidiaries in Indonesia. Both *Pusaka Elektrindo* and *Suara Elektrindo* provided insights of upgrading processes within the global hierarchical governance structure. *Cahaya Elektrindo* was an Indonesian domestic-owned manufacturer whose role had shifted from that of sales and distribution outlet to subcontractor of a Japanese lead electronics firm. *Berdikari Elektrindo* was an Indonesian domestic-owned manufacturer which had expanded from supplying plastic components to assembly of consumer electronics for a Chinese lead electronics firm. Therefore *Berdikari Elektrindo* and *Cahaya Elektrindo* provided understanding of upgrading processes under subcontract arrangements. The last two cases, of *Harapan Elektrindo* and *Buana Elektrindo*, represented the Indonesian domestic-owned manufacturers which had not established any relationships with global lead electronics firms. Both manufacturers provided distinct insights of upgrading processes within the Indonesian consumer electronics industry.

7.2 Mechanisms for insertion into value chains

As chapter five has outlined, foreign direct investment, particularly from Japan, plays a significant role in the development of the Indonesian electronics industry. In dealing

with the low level of manufacturing capability of the Indonesian firms in the early development stage, many Japanese lead electronics firms established joint ventures or technical cooperation agreements with such firms. In the joint ventures, both domestic and Japanese investors established new firms in which the domestic and foreign partners shared contributions and control. This was in contrast to the technical cooperation agreements, by which domestic investors established assembly facilities and controlled product distribution channels in the domestic market, while foreign partners provided technical assistance in production operations and quality control, and supplied designs and product specifications along with the parts and components. Thus technical cooperation arrangements are much less rigid than joint ventures. Similarly to the Japanese lead electronics firms, the South Korean lead electronics firms entered Indonesia by establishing joint ventures with the Indonesian investors, to produce and sell consumer electronics in Indonesia.

Over time some Indonesian share-holders and partners terminated their business relationships with the Japanese and the Korean lead electronics firms, and fully moved away from supplier roles to become leaders of their own value chains. Interviews with these Indonesian lead consumer electronics manufacturers suggested that foreign partners moved their business out of Indonesia or invested in production facilities in Indonesia directly. As the lead electronics manufacturers, these domestic-owned firms managed not only production activities but also design and product development as well as branding and marketing functions. The transformation from suppliers to lead manufacturers did not take place instantaneously: it took a long time to acquire the full range of production, design and marketing capabilities. In more recent years, the Chinese lead electronics firms had focused on establishing technical cooperation arrangements as a means to entering the Indonesian market. Thus some domestic-owned electronics manufacturers acted as subcontractors to these Chinese lead electronics firms.

Table 7.2 Case studies in the context of consumer electronics sample characteristics

	100% FDI		Joint Venture		100% Domestic				
		Case study*		Case study*		Case study*			
		<i>Suara Elektrindo</i>		<i>Pusaka Elektrindo</i>		<i>Cahaya Elektrindo</i>	<i>Berdikari Elektrindo</i>	<i>Harapan Elektrindo</i>	<i>Buana Elektrindo</i>
Descriptive									
No. of manufacturers	4	--	3	--	8	--	--	--	--
Age of manufacturers (years, average)	27	17	35	38	21	23	7	33	38
No. of employment (people, average)	1,605	2,500	1,883	2,000	1,288	500	2,000	3,500	1,400
Export share (% , average)	48	65	37	30	3	0	0	15	0
Value added activities									
Design (no. of manufacturers)	2	Yes	3	Yes	6	Yes	Yes	Yes	Yes
Input sourcing (no. of manufacturers)	4	Yes	3	Yes	8	Yes	Yes	Yes	Yes
Assembly (no. of manufacturers)	4	Yes	3	Yes	8	Yes	Yes	Yes	Yes
Quality control (no. of manufacturers)	4	Yes	3	Yes	8	Yes	Yes	Yes	Yes
Packing (no of manufacturers)	4	Yes	3	Yes	8	Yes	Yes	Yes	Yes
After sales service (no. of manufacturers)	4	Yes	3	Yes	8	Yes	Yes	Yes	Yes
Own branding (no. of manufacturers)	4	Yes	3	Yes	4	No	No	Yes	Yes

Source: Author's own survey 2008

Note: *) all manufacturer names have been anonymised

7.2.1 Patterns of value chain governance

In the subsequent discussion of this section, the study investigates forms of value chain governance in which the consumer electronics manufacturing firms are inserted. This is done through a detailed assessment of the six case studies. The section also investigates power relationships between the consumer electronics manufacturers and buyers as well as global lead electronics firms at the domestic and global level.

Table 7.3 Governance of consumer electronics manufacturers in Indonesia

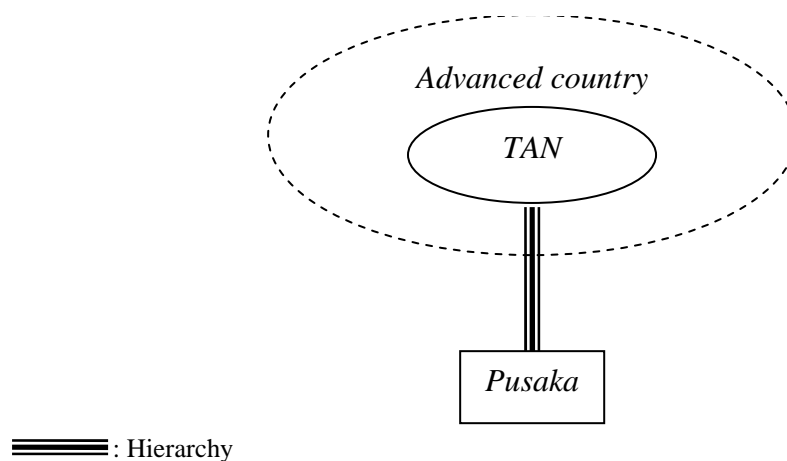
Firm	Market destination and share	Modular	Captive	Hierarchy	No linkage
<i>Pusaka</i>	Emerging export market (30%) Domestic market (70%)			x	
<i>Suara</i>	Advanced market (65%) Domestic market (35%)			x	
<i>Berdikari</i>	Domestic market (100%)		x		
<i>Buana</i>	Domestic market (100%)				x
<i>Cahaya</i>	Domestic market (100%)		x		
<i>Harapan</i>	Emerging export market (15%) Domestic market (85%)				x

Source: reconstructed from interview results

Table 7.3 demonstrates divergent forms of value chain governance observed within the Indonesian consumer electronics sector.

7.2.1a) Case of *Pusaka Elektrindo*: Joint venture of Japanese lead firm in Indonesia

Figure 7.2 Inter-firm relationships of *Pusaka Elektrindo*



Pusaka Elektrindo started as a domestic-owned electronics manufacturer in 1954, assembling radio transistors. In 1962, the manufacturer established technical cooperation with a Japanese lead electronics firm, *TAN*, to assemble black and white televisions to be sold in Indonesia. Within the collaboration, *TAN* provided technical assistance and supplied electronic parts and components to the manufacturer. In the 1970s, the manufacturer and *TAN* developed their cooperation further by separating their manufacturing and trading activities through two new joint ventures. In the 2000s, the joint ventures evolved into *Pusaka Elektrindo* which focused on manufacturing electronic products. The shares of *Pusaka Elektrindo* were owned by both domestic investors (40 per cent) and *TAN* (60 per cent) and the manufacturer employed around 2,000 workers.

Within the relationships, *TAN* had direct control over *Pusaka Elektrindo*'s value added activities. For instance, *TAN* designated *Pusaka Elektrindo* to produce particular consumer electronics including televisions, audio products, refrigerators, air conditioners, washing machines, electric fans, water pumps and electric irons, to be sold in domestic and export markets under *TAN*'s brand name. Export destinations of *Pusaka Elektrindo* were also directed by *TAN*.

"Not all of our products are produced domestically. For example, we import two-door refrigerators [large capacity refrigerator] from other countries ... Global electronics principals are likely to have a production centre for a certain product in a particular region. Our principal has refrigerator factories in Taiwan, Thailand, Philippines, Indonesia, Vietnam and so on. Each production centre obtains a quota. For instance, we are assigned to make and supply refrigerators with a (volume) capacity of up to 300 liters for domestic market and export markets. Thus we export and supply refrigerators to the Malaysian market. [Consequently] refrigerators with a capacity of more than 300 liters are imported from Thailand or Taiwan. Our principal has arranged it ... Export destination is determined by the principal. They [the principal] have a sales department [and offices] which look for potential markets in every country. Next, they will look at who [factories] produces the particular products ..." (*Pusaka Elektrindo*, 07 April 2008).

Furthermore, *TAN* set product and process specifications to be followed by *Pusaka Elektrindo* in order to achieve similar technical standards (e.g. quality, safety, reliability and durability) globally. For production operation and management as well

as product development management, *Pusaka Elektrindo* even fully replicated management systems of *TAN*. Furthermore, since *TAN* was the major share holder of *Pusaka Elektrindo*, *TAN* has a managerial control by placing Japanese expatriates in *Pusaka Elektrindo*'s organisational structure to make strategic decisions.

“ ... Of course we apply a certain quality system which is called the 'passport system'; thus a new product's development stages are strictly controlled, and the development stages are similar to those conducted [by the parent company] in Japan ... our system is similar to the system which is applied in Japan, in order to achieve a similar level of quality, reliability and safety ... (Pusaka Elektrindo, 07 April 2008).

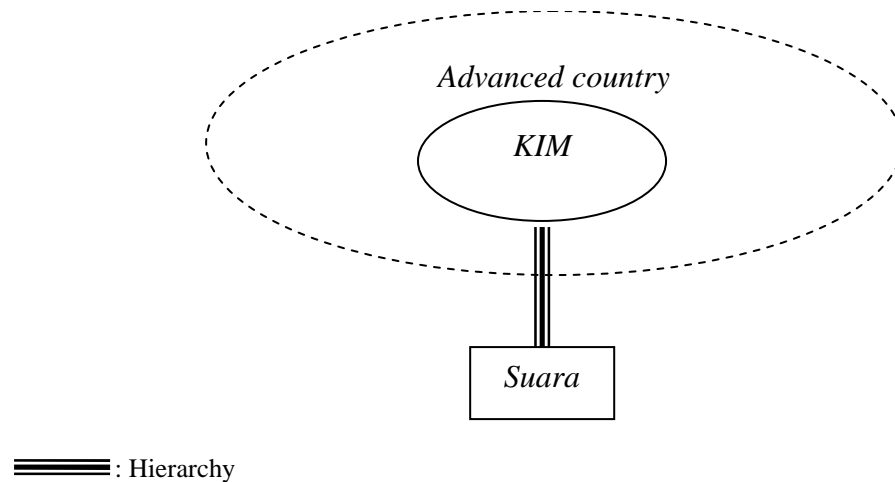
As a joint venture, *TAN* considered *Pusaka Elektrindo* as an independent business unit and the manufacturer was expected to run by generating its own income. In addition, *Pusaka Elektrindo* contributed income for *TAN* in terms of a licence fee and royalties.

7.2.1b) Case of Suara Elektrindo: Subsidiary of South Korean lead firm in Indonesia

In contrast to *Pusaka Elektrindo*, *Suara Elektrindo* was a fully owned subsidiary of *KIM* from South Korea. Initially, *KIM* entered Indonesia by establishing a joint venture and a technical cooperation arrangement with two different Indonesian partners. In 1992, *KIM* established a joint venture to produce audiovisual products (e.g. televisions, tape players/recorders) to be sold in Indonesia and export markets under the *KIM* brand name. In addition, *KIM* formed a technical cooperation arrangement with another domestic-owned electronics manufacturer (which was included in the sample of this investigation) to produce refrigerators for the domestic market. In 1997, *KIM* took over all shares of the domestic investor in the joint venture and changed the name of the firm to *Suara Elektrindo* which from then on became a fully foreign-owned subsidiary. In addition, *KIM* terminated its cooperation with the domestic-owned manufacturer and left the refrigerator business behind. *Suara Elektrindo* employed about 2,500 workers and produced only audiovisual products (e.g. televisions, computer monitors, MP3 players and home theatre systems). *Suara Elektrindo* exported 65 per cent of the total production to the global market, while the rest of production was for supplying the domestic market. In addition, *Suara Elektrindo* imported consumer electronics other than audiovisual

products through *KIM*'s subsidiaries in other countries. For instance, *Suara Elektrindo* imported washing machines, refrigerators and air conditioners from *KIM*'s subsidiary in Thailand.

Figure 7.3 Inter-firm relationships of *Suara Elektrindo*



The relationships was similar to that of *Pusaka Elektrindo* and *TAN* in that *KIM* designated which subsidiaries would produce particular electronic products and for which market destinations. Again, by establishing production centres and sale offices around the globe, *KIM* was able simultaneously to achieve economies of scale and economies of scope to enhance its global competitiveness. Instead of producing a wide range of consumer electronics, each subsidiary focused on the mass production of particular product lines to be exchanged with other subsidiaries across the globe, which concentrated on different products.

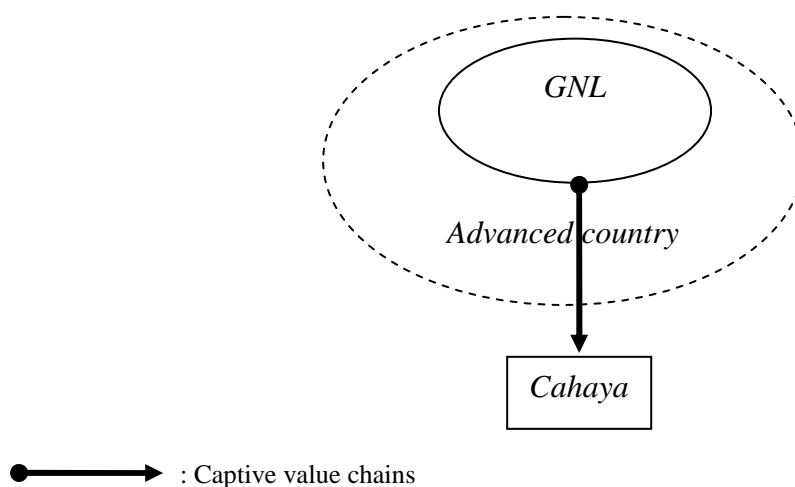
As a foreign subsidiary, *Suara Elektrindo* was simply an offshore production facility owned by *KIM*, and had to follow the decisions made by the head office in South Korea.

" ... We are a subsidiary, thus our financial management is integrated [into the parent company in South Korea]. We calculated our profit margin as an integral part of the principal [financial reports]. They back up our factory financially, for instance when we carry out brand promotion and marketing activities [in Indonesia] we get finance not only from local funds, which are generated from our business, but also from GMO [Global Marketing Operations] fund" (Suara Elektrindo, 29 March 2008).

7.2.1c) Case of *Cahaya Elektrindo*: Domestic subcontractor of Japanese lead firm

Cahaya Elektrindo is an Indonesian domestic-owned consumer electronics manufacturer which was established in 1982 in Jakarta. In its early development phase, *Cahaya Elektrindo* produced and sold satellite dishes under its own brand name. In addition, *Cahaya Elektrindo* was a sole agent of a Japanese lead electronics firm, selling and distributing its air conditioners in Indonesia. When the business of satellite dishes began to slow down, *Cahaya Elektrindo* utilised its distribution network to sell air conditioners under its own brand name. However, since *Cahaya Elektrindo* did not have any production facilities for air conditioners, it was made and supplied by a contract manufacturer in China. Furthermore, *Cahaya Elektrindo* also became a sole agent of a Chinese lead electronics firm to sell its air conditioners in Indonesia. In 2002 *Cahaya Elektrindo* purchased a refrigerator production facility which had once been run by a Japanese joint venture in Indonesia. The production facility was closed down when the Asian Crisis hit Indonesia in 1997/1998. Subsequently, *Cahaya Elektrindo* re-opened the facility and entered into the refrigerator business. In order to acquire the domestic market recognition of high quality Japanese brand names, *Cahaya Elektrindo* licensed a brand name of a Japanese electronics firm (i.e. *GNL*) rather than using its own brand name. *Cahaya Elektrindo* employed about 500 workers, of whom about 200 worked within the refrigerator factory.

Figure 7.4 Inter-firm relationships of *Cahaya Elektrindo*



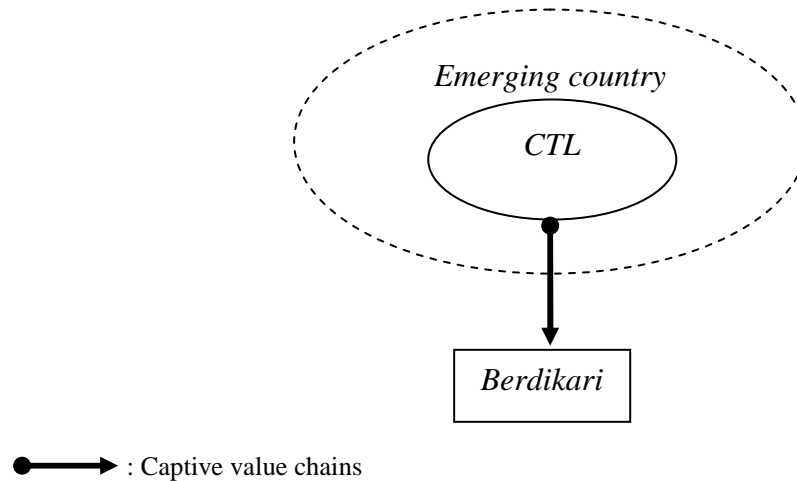
Since *GNL* had no production facilities for refrigerators, *Cahaya Elektrindo* carried out not only production activities but also the design and input sourcing. However, *GNL* retained a direct control over *Cahaya Elektrindo* by placing a Japanese supervisor in *Cahaya Elektrindo*'s factory to monitor production activities. For this reason, *Cahaya Elektrindo* tended to engage in captive value chains by acting as a subcontractor for the Japanese lead electronics firm.

“We took over the office and factory owned by a Japanese joint venture ... This firm once made refrigerators under [the license of] a leading Japanese brand. Our principal [GNL] has no refrigerator factory ... There was a Japanese person who was placed by the Japanese principal in the joint venture, when the factory closed down our principal re-employed and placed the person in our factory as a supervisor ... We bought the factory and its machineries and we did not change the composition of the machineries. Thus they [GNL] know the ‘inside’ [of the factory] and this is only a matter of ‘changing clothes’ [ownership] but the ‘inside’ is still the same. We produce refrigerators under the brand name of our [Japanese] principal ...” (Cahaya Elektrindo , 02 April 2008).

7.2.1d) Case of Berdikari Elektrindo: Domestic subcontractor of Chinese lead firm

Berdikari Elektrindo illustrated the case of the Indonesian domestic-owned electronics firm that had entered into captive relationships with a Chinese lead electronics firm. *Berdikari Elektrindo* was established in 1992 and located in Central Java as a producer of plastic injection and mould maker for electronic components and packaging products. When a Chinese lead electronics firm (i.e. *CTL*) expanded into the Indonesian market in 2000, *Berdikari Elektrindo* was selected by *CTL* to assemble televisions, air conditioners and washing machines, to be sold in Indonesia under the OEM arrangement. During that period, sales and marketing activities were carried out directly by *CTL* through its sales office in Jakarta. In 2007, *CTL* handed over its sale and distribution activities to *Berdikari Elektrindo*. Thus *Berdikari Elektrindo* managed not only production but also distribution and after sales service activities in Indonesia. *CTL* had control over most of the value chains, including design and product specifications, technical standards, marketing strategy and supply of parts and components. *Berdikari Elektrindo* employed about 2,000 workers and produced not only electronic products, but also electronic components and plastic products (e.g. house wares, cosmetic packaging).

Figure 7.5 Inter-firm relationships of *Berdikari Elektrindo*



As an OEM subcontractor, *Berdikari Elektrindo* simply assembled electronic components and parts which were supplied by *CTL*. In addition, *CTL* provided product and process specifications to be met by *Berdikari Elektrindo*. *CTL* also placed its Chinese expatriates at the firm's factory to monitor production operations of *Berdikari Elektrindo*.

"Our product design or specification is similar [to other CTL's factory and affiliates] ... Everything is determined from the principal HQ [headquarters]. Hence our factory is just assembling components into the finished products ... We have to follow their standard requirements, such as the thickness of the plastics to be used and so on. They set quality standards and product specifications. Therefore the electronic products which are made in Mexico, China, Philippines, Vietnam, Thailand or Indonesia have similar quality standards ... We have the principal's representatives here, thus they can provide support. They provide QC [quality control], since quality standards have to be similar all over the world" (*Berdikari Elektrindo*, 02 April 2008).

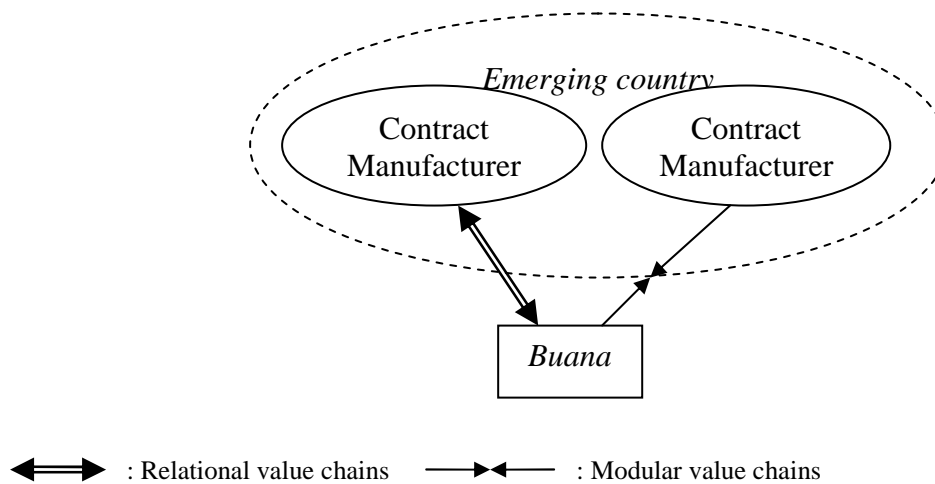
CTL also determined export market destinations to be served by *Berdikari Elektrindo*.

" ... We once produced ACs [air conditioner] for supplying the Vietnamese market ... We got this order from our principal in China since the products are re-exported through Singapore or Malaysia which is close [to Indonesia] ... " (*Berdikari Elektrindo*, 02 April 2008).

7.2.1e) Case of Buana Elektrindo: Domestic lead consumer electronics firm

In contrast to *Cahaya Elektrindo* and *Berdikari Elektrindo*, *Buana Elektrindo* illustrated the case of the Indonesian domestic-owned consumer electronics manufacturer which no longer had any link with global lead electronics firms. *Buana Elektrindo* was established in 1970 in East Java and acted as a sole agent for magnetic tape, speakers and electronics of various Japanese lead electronics firms in Indonesia. In the mid 1970s, *Buana Elektrindo* expanded its business relationships with the Japanese lead electronics firm to establish a technical cooperation by investing in a production facility to assemble CRT televisions, cassette players and recorders to be sold under the Japanese own brand name in the domestic market. In the 1980s, the Japanese lead electronics firm was hit by the appreciation of the Japanese yen (i.e. *Yendaka*), and terminated the cooperation with *Buana Elektrindo*. *Buana Elektrindo* continued the electronics business by introducing its original designs, product development and own brand name. For this purpose, *Buana Elektrindo* established its own in-house research and development (R&D) in 1986. Over time, *Buana Elektrindo* expanded its consumer electronics business by selling washing machines, air conditioners, DVD players and water dispensers. However, the consumer electronics were not produced by *Buana Elektrindo* in-house, but were made and supplied by contract manufacturers in China. *Buana Elektrindo* employed about 1,400 workers and managed 4 business sectors, namely, storage media (i.e. magnetic tape and CD/DVD replication), electronics (i.e. televisions, audio products, air conditioners, washing machines, DVD players and water dispensers), furniture (i.e. TV wooden racks) and plastic injection and moulding.

Figure 7.6 Inter-firm relationships of *Buana Elektrindo*



According to the history of *Buana Elektrindo*, since its early development phase, the manufacturer had engaged in global value chains by making and supplying consumer electronics for the Japanese lead electronics firm. Within the relationships, the Japanese lead electronics firm supplied designs and product specifications, electronic parts and components and set technical standards to be met by *Buana Elektrindo*. Thus *Buana Elektrindo* was simply involved in production and distribution activities. The direct control of the Japanese lead firm over the most activities of *Buana Elektrindo* indicated captive value chains.

After terminating the business cooperation with the Japanese lead firm in 1986, *Buana Elektrindo* became a lead firm on its own by incorporating activities, which earlier had been conducted by the Japanese lead firm. Therefore *Buana Elektrindo* carried out not only production activities, but also the design, product development, branding and marketing activities. *Buana Elektrindo* basically had production facilities to make only televisions and audio products and sold the products under its own brand name. The emergence of China in global electronics production during the 1990s opened up new opportunities for *Buana Elektrindo* to expand its consumer electronics ranges beyond televisions and audio products. *Buana Elektrindo* did not invest in a new production facility to make the additional products; instead it relied on Chinese contract manufacturers to produce washing machines, air conditioners and water dispensers to be sold in Indonesia under *Buana Elektrindo*'s own brand

name. Consequently, *Buana Elektrindo* was able to develop its electronics business without expanding its internal production facilities. The manufacturer utilised its in-house production facilities only to make televisions and audio products.

"Our washing machines are imported [from China] in the form of finished goods or CBU [completely built-up], but we still inspect the quality of the product. Thus a washing machine will come to our factory in the form of finished goods, even with our brand name written on its cardboard box ... This sticker is also from there [China], if we have additional information or a note which is required by our marketing department, we can put a [additional] sticker on ourselves. A sticker, which contains general information for every product, will be put on. However, if there is a specific request from the marketing department, for instance, to sell a product in certain stores which require particular information, then we can add [a sticker] ourselves" (*Buana Elektrindo*, 25 March 2008).

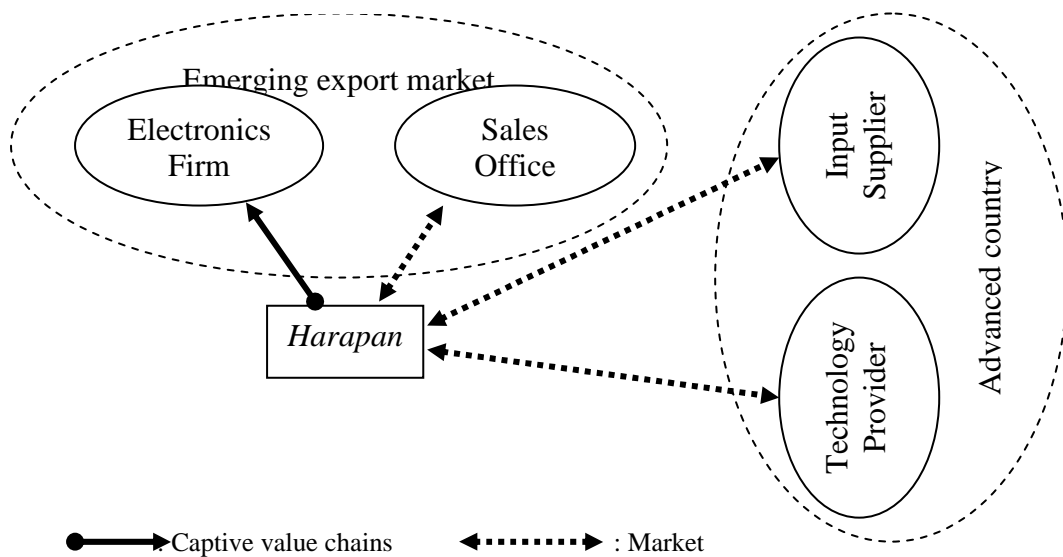
Furthermore, *Buana Elektrindo* created a strategic collaboration with another Chinese contract manufacturer to develop televisions. Within the collaboration, *Buana Elektrindo* designed and made prototypes of televisions as well as carried out final assembly operations while the Chinese contract manufacturer made mouldings, injection and component sourcing. In addition, *Buana Elektrindo* agreed to sell the televisions in the domestic and some export markets under its own brand name, while the Chinese contract manufacturer was allowed to sell the televisions in other markets. By establishing this collaboration, both parties were able to share the development costs and market risk.

*" ... A business process consists of [product] development, manufacture or assembly and distribution, which are very difficult to handle if we take care of all of those processes. We had created collaboration in which this and that [activities] are delegated away to them, but **the brand name is still under our control**. For example, we make televisions but **we are focusing only on [product] design and final assembly**, while cabinets and [printed circuit] boards are made in China, although we are able to make the board or cabinet ... We made a collaboration with Chinese partners, thus we develop the product while our partners invest in tooling and die ... We also made an agreement that we will sell the product in Indonesia and certain [export] countries, while our partner is permitted and free to sell the product elsewhere "* (*Buana Elektrindo*, 16 February 2008).

7.2.1f) Case of *Harapan Elektrindo*: Domestic lead consumer electronics firm

The case of *Harapan Elektrindo* also demonstrated an Indonesian domestic-owned consumer electronics manufacturer which did not have any linkage with global lead firms. In contrast to *Buana Elektrindo*, *Harapan Elektrindo* decided in the very beginning to operate on its own as a lead firm. *Harapan Elektrindo* was established in 1975 and located in Central Java, with the initial intention of creating business cooperation with global lead electronics firms. *Harapan Elektrindo* was looking for global lead electronics firms who needed an agent to sell and distribute their products in Indonesia. However, since most of the global lead electronics firms already had sole agents in Indonesia, *Harapan Elektrindo* then decided to create and develop its own brand name by conducting most of the value chain activities in-house. Consequently, *Harapan Elektrindo* was highly dependent on its own capability, particularly in research and development (R&D), to compete in the domestic market. *Harapan Elektrindo* had two factory plants and 11 representative offices which employed about 3,500 workers and produced a wide range of consumer electronics, including audio systems (i.e. MP3 and MP4 players, mini compos, home theatres, speakers), video products (i.e. CRT-TV, DVD players, LCD-TV) and home appliances (i.e. refrigerators, air conditioners, washing machines, water dispensers, freezers, showcases, water pumps).

Figure 7.7 Inter-firm relationships of *Harapan Elektrindo*



Since its establishment, *Harapan Elektrindo* had been highly dependent on its own capability to carry out most of the activities. For this reason, *Harapan Elektrindo* established links with various foreign firms, in order to acquire manufacturing knowledge and develop its capability.

*“ ... We get new knowledge from various sources. We usually get it from the IC supplier; for instance, we use IC [integrated circuit] for signal or audio processing thus **the IC supplier will provide us with application notes**. We will try to put this application note into use and when we find deficiencies, we will sort it out by ourselves ... (Harapan Elektrindo, 23 January 2008).*

In addition, *Harapan Elektrindo* established relationships with international firms to access foreign markets. After gaining competitiveness in the domestic market, *Harapan Elektrindo* diversified its market destinations by exporting not only electronic products but also its proprietary technology and capability. In Thailand, *Harapan Elektrindo* established its own sales office to import and distribute *Harapan Elektrindo*'s original designs and products under its own brand name within the country. In other countries, such as Pakistan and Sri Lanka, *Harapan Elektrindo* provided product designs and specifications, technical assistance as well as supplied electronic components, to be assembled by local electronics manufacturers into finished goods.

*”We have exported to 26 countries ... Electronics industries in Pakistan and Sri Lanka are similar to Indonesia in the past, since they prohibit imports of built-up sets [CBU] thus **we export electronic kit and also provide technical assistance** to the factories in Pakistan and Sri Lanka. We have a high market share in the Philippines and Thailand and we export the built-up sets since we are ASEAN countries which have applied AFTA [ASEAN Free Trade Area]. **We established our own import and distribution company** in Thailand ... “ (Harapan Elektrindo, 23 January 2008).*

7.2.2 Closing remarks: How are the consumer electronics manufacturing firms in Indonesia inserted into value chains?

Divergent value chain governance structures are revealed within the Indonesian consumer electronics sector. *Pusaka Elektrindo* and *Suara Elektrindo* illustrate hierarchical structures of global lead electronics firms in which the Japanese and

Korean lead firms established a joint venture and a subsidiary respectively in Indonesia. The cases of *Berdikari Elektrindo* and *Cahaya Elektrindo* demonstrate domestic-owned subcontractors, which make and supply consumer electronics for Chinese and Japanese lead electronics firms within captive value chains. Within the chains, the Chinese and the Japanese lead firms directly control the Indonesian electronics manufacturers by imposing product and process specifications. In contrast to the previous four cases, *Buana Elektrindo* and *Harapan Elektrindo* do not establish any linkage with global lead electronics firms; instead, both the Indonesian consumer electronics manufacturers lead their own value chains by undertaking or directly controlling most of the activities.

Consequently, the insertion of the Indonesian manufacturers into consumer electronics value chains follows various routes. Domestic-owned manufacturers establish joint ventures in which global lead electronics firms have the managerial control. Meanwhile, others take the supplier roles under technical cooperation arrangements whereby global lead electronics firms explicitly monitor and control production activities of the Indonesian manufacturers. Furthermore, domestic-owned manufacturers may develop into lead firms on their own without any linkage to global lead electronics firms.

Theory of value chain governance suggests that the form of governance structure is determined by the complexity of transactions, codification of transactions and capability of supplier. The GVC literature suggests that the electronics sector is characterised by a hierarchical structure (Gereffi et al., 2005). Hierarchical structure indicates that the complexity of products and process specifications is high and it cannot be codified in the form of detailed instructions, while supplier capability is low. Hierarchical forms of value chain governance may be detected within the Indonesian consumer electronics sector. Consumer electronics, including CRT televisions, refrigerators and washing machines are considered mature products, thus the Indonesian manufacturers are able to manufacture them. Nevertheless, since global lead electronics firms are intent on maintaining the highest standards for their brand names globally, they demand complex product specifications and production processes that the Indonesian manufacturers must abide by. In addition, these product

and process specifications are difficult to codify, unless the Indonesian manufacturers invest assets specifically to serve these purposes. Thus hierarchical governance structure in the Indonesian consumer electronics sector may be well explained by the GVC literature. However, evidence of captive value chains that are also found within the Indonesian consumer electronics firms and consumer electronics manufacturers which do not have any ties with global lead electronics firms has not been adequately explored by the GVC framework and requires further investigation.

7.3 Strategies to upgrade

Consumer electronics manufacturing firms may undertake different types of upgrading (i.e. process, product and functional upgrading) through capability acquisition. This subsection investigates upgrading processes undertaken by the consumer electronics manufacturers in Indonesia through an assessment of detailed information across the six case studies.

7.3.1 Upgrading processes and trajectory

Using the six cases of the consumer electronics manufacturers, the study explores the details of upgrading processes within the Indonesian consumer electronics sector. Table 7.4 demonstrates that divergent upgrading processes are undertaken by the consumer electronics manufacturers in Indonesia across the six firm cases.

Table 7.4 Upgrading patterns of the consumer electronics manufacturers in Indonesia

	<i>Pusaka</i>	<i>Suara</i>	<i>Cahaya</i>	<i>Berdikari</i>	<i>Harapan</i>	<i>Buana</i>
Process upgrading	x	x	x	x	x	x
Product upgrading					x	
Functional upgrading	x ^{*)}		x		x	x

Source: reconstructed from interview results

^{*)} product-specific

7.3.1a) Case of Suara Elektrindo: Process upgrading through production efficiency

The case of *Suara Elektrindo* demonstrated a foreign subsidiary of a South Korean electronics lead firm in Indonesia, which was established to improve its parent company's global competitiveness by reaping the benefits of Indonesian cost

competitiveness. *Suara Elektrindo* was simply the extension of the production operation of *KIM* in Indonesia. In addition, *Suara Elektrindo* was designated as the base for export of particular consumer electronics to other countries. Consequently, *Suara Elektrindo* was expected to improve its production efficiency and to lower production costs in enhancing *KIM*'s global competitiveness.

To some extent, *Suara Elektrindo* was allowed to adapt certain mature consumer electronics to the needs of the Indonesian market, and was, for instance, involved in design and development of slim CRT televisions with powerful sound systems to be sold in the Indonesian market only. However, since research and development functions were centralised, design and product development processes were decided by *KIM*'s head office rather than *Suara Elektrindo*.

*“Product design and specification is dependent on whether the product is for global destination under GMO [global marketing operations] or not. When the products are for global destinations, the design and specifications have to be similar, since we want to achieve consistency globally. However, **when a product is made to supply the domestic market, we can adapt the product by inserting local insights.** For instance we will produce a slim TV with a powerful sound system. This product will be sold only in the Indonesian market ...”* (*Suara Elektrindo*, 29 March 2008).

Furthermore, *Suara Elektrindo* was least likely to undertake product upgrading toward hi-tech products since the hi-tech consumer electronics were produced by *KIM* production facilities in other countries.

7.3.1b) Case of Berdikari Elektrindo: Process upgrading through production efficiency

In the case of *Berdikari Elektrindo*, the manufacturer carried out production operations by assembling electronic parts and components that followed product and process specifications supplied by *CTL*. To assemble high volume consumer electronic products, *Berdikari Elektrindo* utilised the just-in-time (JIT) practice to lower production costs. In addition, *Berdikari Elektrindo* applied flexible human resources management to adapt to any type of product order from *CTL*.

Since 2007 *Berdikari Elektrindo* has also been authorized by the *CTL* to perform sales, distribution and after sales services within the Indonesian market. *CTL* simply moved its sales office and staff to *Berdikari Elektrindo*'s premises.

“ ... Since we have just started [sales and distribution activity] less than a year ago, thus we are still searching for the best [sales and distribution] system. At present, sales and distribution function are centralised in Jakarta's office, while the other branch offices act as service centres” (Berdikari Elektrindo, 2 April 2008)

Furthermore, *Berdikari Elektrindo* had a plan for future diversification of its product ranges (e.g. DVD players) but the products would be sold under *Berdikari Elektrindo*'s own-brand name, rather than using *CTL*'s brand name.

7.3.1c) Case of Pusaka Elektrindo: Functional upgrading through design and product development

The case of *Pusaka Elektrindo* illustrated that foreign affiliates in Indonesia were required not only to improve production efficiency and to lower production costs, but also to carry out design and product development. *Pusaka Elektrindo* was assigned by *TAN* to produce mature consumer electronics, including refrigerators, tape recorders and washing machines. For refrigerators, *Pusaka Elektrindo* was designated to concentrate on producing small capacity machines (i.e. less than 300 litres) since these were most in demand in the Indonesian market. Furthermore, *Pusaka Elektrindo* was authorised by *TAN* not only to undertake assembly, but also design and development of refrigerators. By adapting refrigerators to domestic needs, *Pusaka Elektrindo* was able to improve its competitiveness in the Indonesian market and contribute to *TAN*'s profitability.

*“We have a product [research and] development [department]. We employ many engineers in that department. I can even say that **we carry out not only minor changes [of product] but also make new products.** Our parent company allowed us to do that. Of course we apply a certain quality system which is known as the 'passport system', thus new product development stages are strictly controlled, and they have to be similar to what is done [by parent company] in Japan ... our system is similar to the system which is applied in Japan, in order to achieve a similar level of quality, reliability and safety ... We design our products. Our products*

[design] may differ from similar products which are produced globally; however, we still keep the [original] design identity. Thus although our product designs are different, customised for the local market, generally, the products still have a similar identity” (Pusaka Elektrindo, 07 April 2008).

Pusaka Elektrindo also exported refrigerators to several emerging foreign markets and the Japanese market through *TAN*'s head office. The entry of refrigerators to the Japanese market indicated that their design and development by *Pusaka Elektrindo* was able to meet the Japanese market's stringent quality requirements.

7.3.1d) Case of Cahaya Elektrindo: Functional upgrading through design and component sourcing

Limited functional upgrading was undertaken by *Cahaya Elektrindo* in which the manufacturer undertook not only production operations for the Japanese lead electronics firm, but also other functions, including component sourcing and minor product improvements.

*“We carry out design and product development. We have our own-R&D [department]. We change the model to adapt to the market trend. In fact, **new design in refrigerators is only applied for the door, handle and colour while ‘the inside’ remains similar.** We also can attach optional features such as deodoriser. There are even companies which mould and produce the frame of the refrigerator ... We get the components from our suppliers, local and imported components. We do not make the piping system by ourselves ... We buy the materials and components for assembly. In this regard, we need machinery to bend and bond the door and also a plastic injection machine ... “ (Cahaya Elektrindo, 02 April 2008).*

Cahaya Elektrindo carried out minor product improvements by changing the appearance or features of its refrigerators, rather than making fundamental improvements of its functionality through product engineering. *Cahaya Elektrindo* was authorised to make minor changes to its refrigerators to adapt the product to the Indonesian market, in order to improve competitiveness in the domestic market and increase GNL's profitability.

7.3.1e) Case of Harapan Elektrindo: Process, product and functional upgrading through developing and marketing of original designs and products

In contrast to the previous cases, *Harapan Elektrindo* illustrated the Indonesian consumer electronics manufacturer that generated original products by engaging in design, product development, branding and marketing functions. Since *Harapan Elektrindo* did not have any ties with global lead electronics firms, it had the flexibility to develop original consumer electronics which fully met the Indonesian market's needs. *Harapan Elektrindo* was able to produce not only new designs, but also new functionality of products; for instance, audiovisual products that generated powerful sound. These products were supported by speaker technology which was developed and patented by *Harapan Elektrindo*. Another example of their innovation was the development of an antenna system for televisions which could receive a signal from every direction.

*“... It is a matter of fact that we have more advantages [than global brand names] since **we are able to adapt fully to Indonesian people's taste**. This is why we can beat the multinational [consumer electronics firms]. They sell products worldwide and they have to compromise [their product], thus they do not have a product which fully meets a particular country's needs. The winning key of our brand name is we provide products of similar price to our multinational competitors but with higher specifications, for instance, better sound quality ...” (Harapan Elektrindo, 23 January 2008).*

Furthermore, *Harapan Elektrindo* utilised its well-established design and product development capabilities not only to produce mature consumer electronics, including CRT televisions, radio and cassette players, but also high-tech and high value products, such as LCD televisions, MP3 players and digital video broadcast receivers or set-top boxes. This allowed *Harapan Elektrindo* to produce the widest range of electronic products within the consumer electronics sector in Indonesia, and its target was to launch 5-10 original improvements of its existing products every year.

“ ... If we have a high-technology product we will sell the product at a high price. For instance, a hand phone [mobile phone], is small and its material cost is nothing, then why is the price much higher than that of a TV? Because many manufacturers are able to make TVs while the technology of hand phones is owned by only a few firms which have

expertise in the software. A hand phone is a complex product which requires software, like a computer, for instance, the Symbian (operating system). It also requires radio technology to transmit and receive ... and then telecommunications protocol to access internet and so on, and camera technology as well. Besides, it requires high technology; designing a hand phone is complicated since it is more difficult to design smaller products ... By producing LCD TVs we have to move to the digital system which is our strength. We know that all electronic equipments will use digital systems since the system is easier and cheaper. We have to strengthen our capability in software and we are in the process of obtaining expertise in software. In fact we designed LCD-TVs in our R&D division” (Harapan Elektrindo, 23 January 2008).

Harapan Elektrindo also utilised marketing activities to boost its own brand name recognition and to increase market share, particularly in the domestic market. *Harapan Elektrindo* actively communicated its products and brand name to consumers through mass media (e.g. television, magazines and newspapers) and non-media (e.g. road shows, in-store promotion and events sponsorship).

7.3.1f) Case of Buana Elektrindo: Functional upgrading through design, product development, branding and marketing

The last case, *Buana Elektrindo*, illustrates an Indonesian consumer electronics manufacturer which undertakes functional upgrading by engaging in design, product development, branding and marketing activities. The manufacturer also diversified its business by entering the furniture business. Thus *Buana Elektrindo* managed different value chains at the same time. However, since the manufacturer moved toward a value chain (i.e. furniture) which was technically less demanding and where capital and labour productivity may be lower than in consumer electronics, this may be a case of chain downgrading rather than chain upgrading. The manufacturer was unable to compete in the consumer electronics sector and subsequently turned to the furniture sector.

*“ ... We develop LCD [TV] wooden racks, since LCD [TV] is growing. Thus it is better to produce the wooden rack rather than LCD TV. This production is also 90 per cent for export and 10 per cent for domestic. Our market is Japan, Europe and Australia. We have to choose what business we want to focus on. **In this business [wooden rack] we are less likely to compete with global companies.** Furthermore, this is a*

*complementary product which global companies are not interested in ...”
(Buana Elektrindo, 16 February 2008).*

Furthermore, the case of *Buana Elektrindo* also demonstrated the path of upgrading over time, as a response to changing conditions in the Indonesian and global consumer electronics value chains. The manufacturer moved up from process to product and functional upgrading within the consumer electronics sector and finally moved toward another sector. *Buana Elektrindo* undertook process upgrading during the 1970s when it was engaged in assembly of electronic products for the Japanese lead electronics firm. Subsequently, *Buana Elektrindo* underwent functional upgrading during the 1980s by designing, developing, producing and marketing original products under its own brand name. The emergence of China in the global electronics industry and modularisation in electronics production in the 1990s, drove *Buana Elektrindo* to outsource some of its production activities to contract manufacturers in China, and to focus on design and market development. Finally, reflecting on the emergence of global contract manufacturers (CM) and or electronic manufacturing service (EMS) business model, *Buana Elektrindo* downsized its consumer electronics business by offering its design, assembly and plastic injection facilities for use by other firms and concentrating more on businesses other than consumer electronics (i.e. furniture and magnetic tape).

“ ... In fact we began as the Japanese [electronics] principal's distributor [in Indonesia] ... Manufacturing know-how or assembly [knowledge] rather than product development was obtained from the Japanese principal and we paid for it ... In 1985-1986 ... in the end we decided to create our own brand name and set up R&D [research and development]. We started learning product development on our own In the past, our firm carried out the whole value chain [activities]; from product development, material and component purchasing, manufacturing and distribution. In 2002 we split sales, distribution and marketing activity to separate independent companies ... What is the objective of this split? The sales company is not obligated to purchase the product from our factory. If the [sales] company wants to buy products from other factories, it is fine. We do not have 'white' goods such as washing machines or AC, thus the sales company sources from other factories, but the product is sold under our own-brand. Our factory will help the [sales] company in evaluating the quality and safety of the products. Hence, the [sales] company pays a fee to us, thus our factory provides manufacturing services to the sales company ... We see that the

*electronics industry has shifted. We are able to develop electronics products from a blank paper as we did in the past. However, nowadays, if we develop a product by ourselves, how much money do we have to spend for instance in the mould construction? The mould construction costs hundreds of thousands of [US] dollars and we have to spread the cost by a unit of quantity, let's say at minimum 50,000 units and it has to be sold within 2 years ... Our market [share] is small, while global brands such as 'Sharp' or 'LG' can produce 500,000 units and sell the product here [Indonesia] or in other markets. I think the business is too risky and it is better if I look for factories in China which can make a good TV cabinet or chassis and ask them to give it to me, to market in Indonesia. We may ask them to modify the cabinet to meet our quality specifications and other requirements; thus we can work with less risk ... There is a shift in the global business thus **we are offering our [electronics] manufacturing facility** and transforming into Electronic Manufacturing Services ... "(Buana Elektrindo, 16 February 2008).*

7.3.2 Closing remarks: To what extent is the upgrading potential of the consumer electronics manufacturers in Indonesia constrained or promoted through the governance of domestic and global actors?

Divergent upgrading processes are discovered within the six cases of the consumer electronics manufacturers in Indonesia. *Suara Elektrindo* and *Berdikari Elektrindo* illustrate consumer electronics manufacturers which focus their efforts on improving production efficiency and product quality in order to meet requirements and strategies of global lead electronics firms. *Pusaka Elektrindo* and *Cahaya Elektrindo* illustrated consumer electronics manufacturers experienced not only in process upgrading, but to a lesser extent also in functional upgrading through involvement in design and product development. The four cases are not likely to demonstrate product upgrading, since production of high-tech and high-value products is carried out by global lead electronics firms. *Harapan Elektrindo* represents the Indonesian domestic-owned consumer electronics manufacturer which undertakes process, product and functional upgrading by producing original, both mature and hi-tech consumer electronics, and marketing them under its own brand name. Meanwhile, *Buana Elektrindo* demonstrates the domestic-owned manufacturer that performs functional upgrading by engaging in design, product development, branding and marketing activities. *Buana Elektrindo* may also indicate a manufacturer that is experiencing chain downgrading. The evidence suggests that upgrading processes

take place within the consumer electronics manufacturers in Indonesia regardless of the firm ownership.

The cases of *Suara Elektrindo*, *Berdikari Elektrindo*, *Pusaka Elektrindo* and *Cahaya Elektrindo* demonstrate upgrading processes within consumer electronics manufacturers inserted into captive and hierarchical governance structures with global lead electronics firms. It is obvious that the extent of upgrading of these manufacturers is determined by the global lead electronics firms. Global lead electronics firms tend to consider the nature of the product and market when deciding on the extent of upgrading of their suppliers in Indonesia. *Pusaka Elektrindo* and *Cahaya Elektrindo* are able to undertake not only process upgrading but also functional upgrading by getting involved in design, product development and component sourcing activities to develop refrigerators which are adapted to the Indonesian market.

To become engaged in inclusive design, product development, branding and marketing functions, the Indonesian consumer electronics manufacturers have, however, to step out completely from their roles as suppliers for global lead electronics firms and become leaders on their own. This is clearly shown by the case of *Buana Elektrindo*, which terminated its role as the supplier for the Japanese lead electronics principal, and subsequently achieved functional upgrading. Thus, more functional upgrading tends to take place within the Indonesian domestic-owned consumer electronics manufacturers which do not have any linkage to global lead electronics firms. To get involved in design, branding and marketing activities, the Indonesian consumer electronics manufacturers, including *Harapan Elektrindo* and *Buana Elektrindo*, have to put their own efforts to acquire capability beyond production functions, and invest in research and development (R&D).

7.4 Conclusion

Through empirical evidence drawn from the survey of the Indonesian electronics sector and the rich stories across the six case studies, this chapter has attempted to address the questions on how the Indonesian consumer electronics manufacturing

firms are inserted into value chains, and to what extent their upgrading potential is constrained or promoted through the nature of value chain governance of domestic and global actors. This chapter discovers that the consumer electronics manufacturers in Indonesia are inserted into different forms of value chains governance. Some of the consumer electronics manufacturers are foreign affiliates (i.e. joint venture and subsidiary) of global lead electronics firms. Global lead electronics firms have managerial control over their foreign affiliates in Indonesia. Most activities of the foreign affiliates in Indonesia are decided and controlled by global lead electronics firms. These consumer electronics firms are inserted into hierarchical governance of global lead firms. Meanwhile, some of the consumer electronics manufacturers in Indonesia take supplier roles for global lead electronics firms. These Indonesian domestic-owned consumer electronics engage in captive value chains whereby the global lead electronics firms control and monitor the Indonesian suppliers explicitly through product and process specifications. Furthermore, some domestic-owned consumer electronics manufacturers do not have any linkage to global lead electronics firms and become leaders on their own value chains, particularly in the domestic market. The chapter also identifies that the Indonesian lead consumer electronics manufacturers serve not only the domestic market, but also the emerging export market. These manufacturers market original electronic products under their own brand names. The atypical forms of captive value chains found within the Indonesian consumer electronics firms have not been widely explored by the GVC framework. Moreover, the framework pays little attention to the fact that some Indonesian consumer electronics manufacturers do not have any linkage to global value chains.

Analysis across the case studies suggests that the different upgrading undertaken by the consumer electronics manufacturers in Indonesia are related to the governance of value chains in which the manufacturers are inserted. Thus process upgrading tends to take place within captive value chains. In contrast, functional upgrading takes place to a lesser extent within hierarchical structure and to a greater extent among the Indonesian domestic-owned manufacturers which have no linkage to global lead electronics firms. Furthermore, since captive value chains are likely to be formed within global value chains, process upgrading is more likely to take place here. On

the other hand, functional upgrading tends to take place within the domestic and regional value chains.

Process upgrading undertaken by the Indonesian domestic-owned consumer electronics manufacturers within global captive value chains bears relation to the findings of GVC literature. However, functional upgrading within domestic and regional value chains have been little explored by the GVC framework although the finding was supported by similar evidence in other studies (Tewari, 1999, 2008; Bazan & Navas-Aleman, 2004). Nor does the GVC framework provide any detailed explanation of upgrading processes within the Indonesian domestic-owned consumer electronics manufacturers that have no ties to global lead electronics firms. The findings within the consumer electronics firms are, in some ways, similar to the results within the garment firms discussed in the previous chapter. This reinforces the need to comparatively investigate upgrading processes and paths of Indonesian manufacturing firms within domestic, regional and global value chains. The next chapter, drawing on the primary firm level case studies, directs the investigation toward the issue of technological capability. It examines in a comparative perspective both the nature of such capability and processes of capability acquisition across the Indonesian garment and consumer electronics firms.

Chapter 8

Technological Capabilities and Upgrading amongst Garment and Consumer Electronics Manufacturers

Evidence from the field

Chapters six and seven provided empirical evidence regarding the mechanisms for insertion of the garment and consumer electronics manufacturers in Indonesia into different value chains, and the implications that arose from distinct types of value chain governance for processes of upgrading. Within the Indonesian garment firms, different forms of value chain governance were discovered, not only across the five case studies but also within individual garment manufacturers. Furthermore, governance of value chains has an important influence on the extent to which upgrading processes take place within the garment and consumer electronics manufacturers in Indonesia. However, some questions remain unanswered, particularly on the importance of the role of the Indonesian garment and consumer electronics manufacturers themselves in achieving upgrading. This chapter proposes to systematically examine the technological capabilities of the garment and consumer electronics manufacturers in order to increase understanding of the nature of upgrading among Indonesian manufacturers. The chapter addresses the question: what role does technological capability play in value chain upgrading of the Indonesian garment and consumer electronics manufacturers at the domestic and global level? To that end, it (i) provides a descriptive overview of distinct types of capability possessed and exploited by the garment and consumer electronics manufacturers in Indonesia; and (ii) assesses learning processes involved in the acquisition of different types of capability. Having an understanding of capability acquisition among garment and consumer electronics manufacturers in Indonesia will help in answering related questions that emerged in chapters six and seven.

The garment and consumer electronics manufacturers in Indonesia possess and exploit different types of capability to accomplish value added activities. Some may utilise process operative and innovative capabilities to make products under specifications of

global buyers and lead firms, while others use not only process operative and innovative capabilities, but also product innovative capability. They generate original designs and products as well as developing their own market. Therefore, upgrading is highly dependent on the types of capability possessed and utilised by the garment and consumer electronics manufacturers in carrying out value added activities. Furthermore, the garment and consumer electronics manufacturers acquire process operative and innovative capabilities through their relationships with other actors, including global buyers and lead firms. On the other hand, they acquire product innovative capability through their own efforts in terms of investment and learning process. Apparently, global buyers and lead firms are not the only knowledge sources accessed by the Indonesian garment and consumer electronics manufacturers to develop their capability.

The structure of this chapter is as follows: section 8.1 discusses the capability of the Indonesian garment manufacturers. Section 8.1.1 reviews the capability of the Indonesian garment manufacturers as indicated by the survey, while section 8.1.2 examines different types of capability and capability acquisition processes of the Indonesian garment manufacturers in more detail through five case studies. Section 8.2 reviews the capability of the consumer electronics manufacturers in Indonesia. Section 8.2.1 focuses on relevant interpretation of the survey results, while section 8.2.2 explores different types of capability possessed by the consumer electronics manufacturers and how they acquire the capability based on detailed six case studies. Finally, section 8.3 concludes the discussion on capability among the garment and consumer electronics manufacturers in Indonesia and its role in affecting their upgrading processes.

8.1 Technological capability of the garment manufacturers in Indonesia

8.1.1 Descriptive overview of capability of the surveyed garment manufacturers

Table 8.1 Capability of the garment sample (total sample = 22)

Size of manufacturers	Medium-sized	Large-sized
Descriptive		
No. of manufacturers	12	10
Age of manufacturers (years, average)	20	20
No. of employees (people, average)	278	2,855
No. of manufacturers supplying 100% for domestic market	2	0
No. of manufacturers supplying for domestic and export markets	5	1
No. of manufacturers supplying 100% for export market	5	9
Dynamics		
Annual sales growth (% , average)	12	14
Capability		
Age of machinery (years, average)	8	7
ISO 9000 certification (no. of manufacturers)	0	4
ISO 14000 certification (no. of manufacturers)	0	0
OHSAS 18001 certification (no. of manufacturers)	0	1
Reject rate (%)*	< 5%	< 5%
ERP system application (no. of manufacturers)	1	3
CAD usage (no. of manufacturers)	9	10

Source: Author's own survey 2008

Note: *) AQL in garment 1.5 -2.5%

From a total of 10 large-sized garment manufacturers, 4 had adopted quality management systems (i.e. ISO 9000) while none of the medium-sized garment manufacturers had obtained ISO 9000 certification. Furthermore, 3 out of 10 large-sized manufacturers implemented enterprise resource planning systems (i.e. ERP¹) in enhancing productivity and efficiency, while only 1 out 12 medium-sized manufacturers applied the ERP in their production system. This suggests that large-sized garment manufacturers have better production capabilities than medium-sized manufacturers. Meanwhile, both medium-sized and large-sized garment

¹ "Enterprise Resource Planning system is a business management system that comprises integrated sets of comprehensive software which, when successfully implemented, can manage and integrate all the business functions within an organisation. These sets usually include a set of mature business applications and tools for financial and cost accounting, sales and distribution, materials management, human resources, production planning and computer integrated manufacturing, supply chain, and customer information. These packages have the ability to facilitate the flow of information among all supply chain processes (internal and external) in an organisation. In addition, an ERP system can be used as a tool to help improve the performance level of a supply chain network by reducing cycle times" (Shehab et al., 2004: 359).

manufacturers utilised computer-aided design (CAD) software and hardware in their design and product development processes. It appeared that since large-sized manufacturers had relatively high production capability and capacity, they were able to meet requirements set by global buyers from advanced countries. The high production capability and capacity might also contribute to the high sales growth achieved by large-sized manufacturers. Large-sized garment manufacturers achieved higher sales growth (on average 11 – 20 per cent per year) than medium-sized firms (on average up to 10 per cent per year). Large-sized manufacturers had more resources (e.g. financial and human resources) to improve production efficiency and product quality than medium-sized firms, and were able to invest in automatic machinery or to apply information and communication technologies (ICT) to enhance productivity and efficiency of their systems. In addition, they had the resources to implement quality management systems to achieve and sustain high product quality.

The fact that a greater proportion of large-sized garment manufacturers utilised CAD software and hardware contradicts the finding that only a few large-sized garment manufacturers were involved in design activity, as discussed in chapter six. Presumably, large-sized manufacturers do not utilise CAD to generate original designs for their buyers, or more specifically global brand buyers, who see design as one of their core competences, so not allow their Indonesian suppliers to take on the design functions. Having access to CAD hardware and software in itself may not be sufficient to acquire full design capabilities at this end of the market.

8.1.2 The nature of capability and capability acquisition processes among the Indonesian garment manufacturers

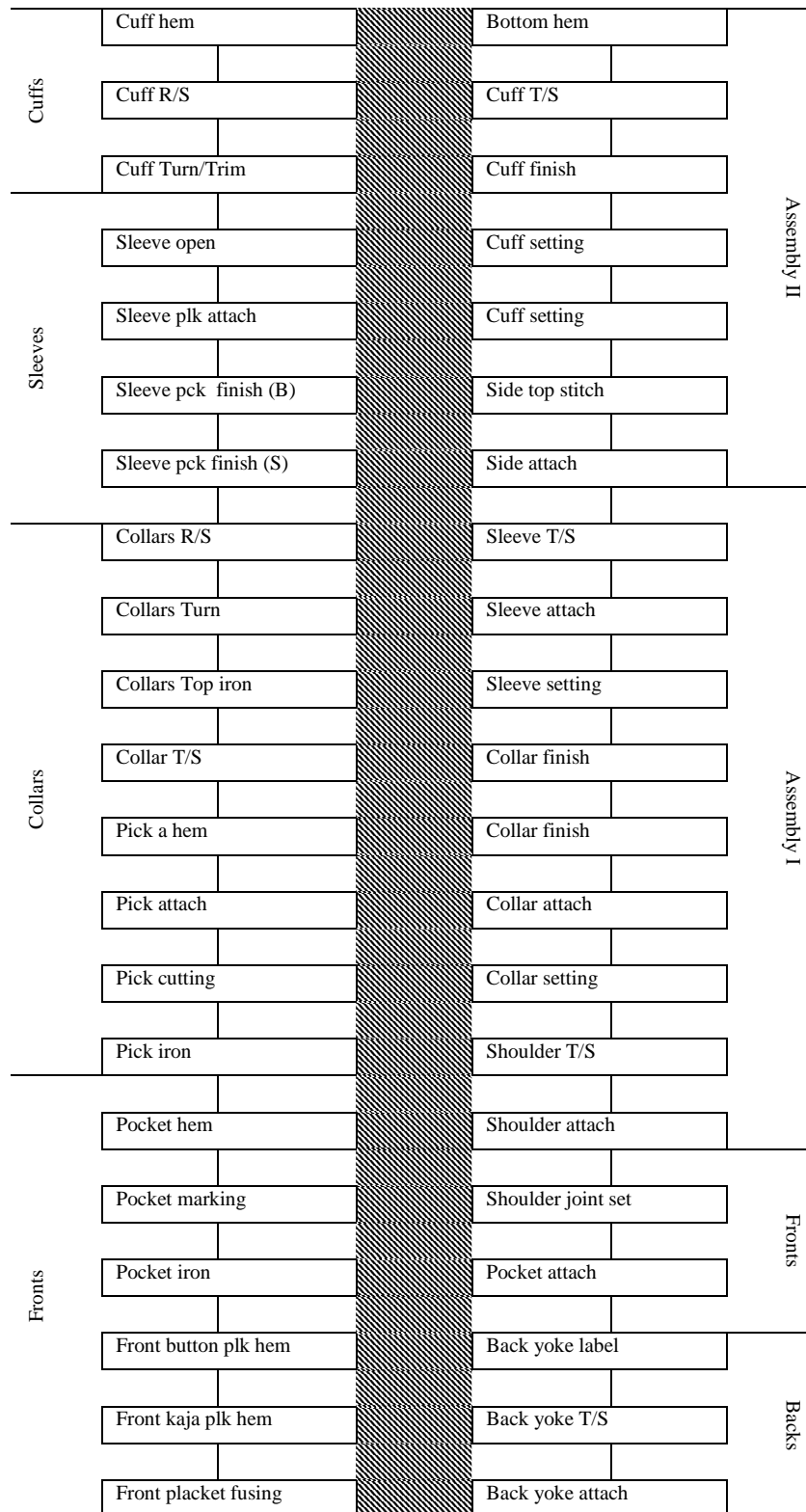
This subsection examines the different types of technological capability possessed and exploited by Indonesian garment manufacturers. It draws on insights gleaned from the same five firm cases discussed in chapter six. It also investigates the learning processes by which these garment manufacturers acquire different types of capability.

As discussed in chapter two, capabilities can be classified into basic categories of process operative, process innovative and product innovative capability. In the garment sector, process operative capability implies that garment manufacturers can

transform fabrics and accessories (e.g. buttons, zippers, thread) into garments and deliver the garments to buyers in a timely and cost-effective manner. Thus process operative capability refers to production functions. The nature of production complexity of a garment is determined by the number of fabrics panels to be stitched and number of working processes involved in making the garment. For instance, a basic men's shirt typically consists of about 40 panels and stitching processes (e.g. pocket, button, collar, sleeve, cuff, label). In contrast, a ski jacket consists of about 176 panels and stitching processes. Thus working processes may determine the nature of production systems of garment manufacturers. The layout of a production line is set according to a sequence of processes required to produce a particular component of a garment (e.g. pocket, sleeves, cuffs, collars) (author's interview with *Busana Garmenindo* and *Tunggal Garmenindo*, 2008).

In the production system based on working processes, the number of operators and/or skill of operators are crucial in determining performance of the production line. Thus more complex garments require more operators and often more higher skilled operators. Process operative capability is indicated by garment manufacturers which carry out production line balancing, cycle time, inventory and quality control effectively. The aim of line balancing is to control working flow within the line by allocating the number and skill of operators required, as well as sufficient machinery to minimise bottlenecks. To accomplish line balancing effectively, garment manufacturers have to calculate a cycle time to obtain information about standard sewing time plus allowances. Inventory control is applied by garment manufacturers to minimise the cost of holding stock, particularly in the form of materials; while quality control is aiming at ensuring that the garments produced meet or even exceed buyer requirements.

Figure 8.1 Garment production lay-out



Source: Babu (2006).

Process innovative capability is required by garment manufacturers in carrying out minor and major improvements of production activities. Product innovative capability

is an ability to generate original design and to market the product. Thus, while process operative capability refers to production techniques and control, process innovative capability relates to production and quality management. Moreover, product innovative capability refers to product and market development. Consequently, to improve quality assurance, innovative garment manufacturers may implement quality management systems, rather than just conducting final quality inspections, and may also conduct motion studies, rather than merely calculating cycle time, to improve productivity.

Table 8.2 Types of capability of the garment manufacturers

		Large-sized		Medium-sized		
		<i>Tunggal</i>	<i>Jaya</i>	<i>Lestari</i>	<i>Busana</i>	<i>Cipta</i>
Operative capability	<i>Production techniques and controls</i>					
	- line balancing	x	x	x	x	x
	- cycle time	x	x	x	x	x
	- final quality control	x	x	x	x	x
	- inventory control	x	x	x	x	x
Innovative capability	<i>Production management system</i>					
	- Labour cost saving	x	x	x	x	x
	- Productivity improvement	x	x	x	x	x
	- Quality improvement	x	x	x	x	x
	<i>Product and market development</i>					
	- In-house garment design	x	x	x		x
	- Brand promotion		x	x		
	- Product distribution		x	x		

Source: reconstructed from interview results

Table 8.2 shows different types of capability possessed and exploited by the five cases of Indonesian garment manufacturers.

8.1.2a) Case of Busana Garmenindo: Operative capability in production operation

Busana Garmenindo had 3 production lines, with each line consisting of about 30 operators. The layout of the production line was based on working processes required

to make the garments. Since individual operators carried out a single working process, the production line could only deal with garments which required less than 30 working processes. Therefore *Busana Garmenindo* made relatively simple garments, such as uniforms, rather than complex garments that required a greater number of working processes and more than 30 operators.

*“For instance, you can see here a men’s striped shirt sample, we could sew this shirt but we are pushing it over the limit since we only have 30 sewing operators in a single production line, thus a line is able make a garment which requires a maximum of 30 working processes. This men’s shirt requires 40 processes, thus we had to add 10 operators from the other lines, in which we actually utilised 2 production lines rather than only one ...when taking a job order, it is **highly dependent on how long our production line is**. If we have 30 operators within a single line we will not take an order to make a garment which requires more than 30 processes. Even making a garment which requires exactly 30 processes is also precarious. We are likely to make a garment which requires 25 working processes, since there are working processes which have to be handled by 2 operators. For instance, collar stitching is much slower than sleeve stitching. The speed of sleeve stitching may be 50 pieces per hour, while collar stitching is 25 pieces per hour, thus we use 2 operators who stitch collars in order to balance the flow of working processes within the line. **Without line balancing, production activity will face a bottleneck**” (Busana Garmenindo, 15 March 2008).*

To improve efficiency of their production processes, *Busana Garmenindo* carried out production line balancing and production planning by using the cycle time which was provided by *BBI*. Furthermore, to increase productivity, the firm reduced production costs by avoiding frequent line changeovers and by speeding up the learning process of their operators.

“ ... Buyers will inform us how much time is required to make a garment with 25 operators ... we get the time study from buyer, which shows output per hour and we will follow the buyer’s costing. However, we will lower the buyer’s output target since minimum wage in Bogor [location of Busana Garmenindo] is much lower than in Jakarta [location of job provider]; thus we lower the target by 80% or 90%. We cannot push our operators to perform the same and we have to be fair since their minimum wage is relatively low ... We take the style of garment, which does not vary too much. For instance, today we sewed a garment with 3 pockets, then tomorrow we can sew a garment with 4 pockets but the style and materials of the garment are fixed. Different materials require machinery

re-arrangement which will not be finished in 1 hour, while we still have to pay the wages of operators ... We also have to understand that operators are unlikely to produce much output at the beginning ... They need a learning process to reach top speed. For this reason, we do not take orders for small quantities, thus a single production line has to produce a minimum of 3,000 pieces. If the quantity of the order is less than 3,000 pieces, by the time the operators reach top speed, the order has run out. For a style which has been done before by the operators, 1,000 pieces is no problem since they have sewed the product before. They still remember how to sew the product. However, for a new style, a small order will cost us. The learning process of the operators is unlikely to take less than half a day ... “ (Busana Garmenindo, 15 March 2008).

Since *Busana Garmenindo* operated under subcontract arrangements, quality control on materials and final quality inspection were carried out by *BBI*. Furthermore, *Busana Garmenindo* had plenty of opportunity to learn process operative capability from *BBI* in attempting to improve production operations.

“At the beginning we almost ended the relationship with BBI since we worked on white coloured garments ... when the garment was finished, there was no quality problem; however, the garment was dirty. Then they sent a team to train and monitor us. We came to understand that to sew white coloured garments operators have to wear gloves and aprons. Our operators were also trained that sewing machines have to be cleaned before and after working, and covered after each use to reduce dust. They also trained us to keep the working premises clean and about garment transportation ... Even the steaming procedure was different. The first time, water dropped from the steamer, since the tap was rusty, and the drop caused a stain on the garment. Now we will use Aqua water [mineral water] for steaming white or light coloured garments ... “(Busana Garmenindo, 15 March 2008).

8.1.2b) Case of Tunggal Garmenindo: Innovative capability in production management

Production lines of *Tunggal Garmenindo* were designed to suit working processes required in transforming materials into garments. Thus before putting a proto-sample into the production line, *Tunggal Garmenindo* broke down working processes required to make the garments and subsequently calculated the cycle time of all the processes. Based on this cycle time, the manufacturer set the layout of production lines and balanced operators within the line, whilst also calculating targets for the production lines.

Tunggal Garmenindo established a quality assurance department to carry out quality control and inspection of both materials and garments, and incoming fabrics were tested in their in-house laboratory. The manufacturer carried out a formaldehyde test, yellowing test, colour fastness to water test, pH water test, dimensional stability and appearance after washing testing, colour fastness to crocking tests, snap testing, fabric weight and hydrostatic testing. Furthermore, *Tunggal Garmenindo* also conducted quality control during the production process (by taking random samples) and inspection of finished garments (by checking all garments).

Most production planning activities of *Tunggal Garmenindo* were carried out by the division of industrial engineering (IE), and involved conducting cycle time studies, production line setting and balancing. In addition, the IE division was responsible for analysing potential areas of loss within the manufacturer's production activities. For instance, the IE division found that the stock and size of the warehouse was increasing by almost 10-20 per cent annually. The excessive size of the warehouse made it difficult to find materials straight away and this subsequently created a delay in production and delivery. Because of the warehouse problem, *Tunggal Garmenindo* once suffered a loss of Rp. 162 millions [equivalent GBP 9,000] due to extra cost of shipping garments by air freight rather than sea freight to meet the tight time schedules set by global buyers. To avoid the occurrence of similar incidents in the future, *Tunggal Garmenindo* invested in a warehouse management system costing approximately Rp. 1.2 billions [equivalent GBP 66,700], developed under cooperation with a system provider in Jakarta, to control movement and storage of materials within the warehouse by handling activities such as receiving, storing and retrieval,

“ ... For every garment style, we have the items of material and accessories required and its location [in warehouse]. For instance 'L215' is on the second floor, shelf number 15, thus we know the exact location. When people ask for the item, we print out a pick up list which will be given to a picker who will locate the item in the warehouse ... ” (*Tunggal Garmenindo*, 13 March 2008).

To improve its manufacturing processes and reduce defects, *Tunggal Garmenindo* implemented the Six Sigma management strategy, basically applying the DMAIC (define, measure, analyse, improve and control) steps. *Tunggal Garmenindo* also

reduced the defect rate by implementing a quality management system through acquisition of ISO 1901:2000 certification, and adopted a lean manufacturing system to improve its production efficiency and productivity. By applying the lean system, *Tunggal Garmenindo* was able to reduce production costs by enhancing value added activities and eliminating non value added activities.

*“... the ultimate goal of lean production or Toyota System is to achieve multi skilled [workers] ... since most of the garment firms make simple products, a single operator usually carries out a single process, while our firm tends to have multi-skilled operators. Thus when a garment requires 176 panels and a single operator performs only a single process, we will require 176 operators. We do not do that, Instead we still utilise 60 operators [within a production line] since a single operator carries out several processes, either on a single machine or on different machines ... **We have a [drinking] water filler.** The idea came up when we were asked by a buyer to provide drinking water for operators. We have 60 operators within a production line and we noticed that when an operator moved out from the line to take water, we lost a certain amount of time. Then we tried supplying water to operators by paying an extra worker. After doing calculations, it was found that **the benefit covered the cost of lost time.** The water filler walks around taking bottles from operators to be filled with drinking water, thus there is no operator who is walking around just to get drinking water ... “(*Tunggal Garmenindo*, 13 March 2008).*

In implementing the lean manufacturing concept, *Tunggal Garmenindo's* global buyer, *JDI*, provided consultancy services to the manufacturer, encouraging and assisting *Tunggal Garmenindo* in its attempts to improve production capability. This was because *JDI* would benefit from any improvements. For instance, *Tunggal Garmenindo* was applying a supply chain management in collaboration with *JDI*.

*“... We sometimes think that the buyer assists us in implementing a lean concept for 2 reasons; **to improve our productivity or to lower prices** since our production outcome is higher. For instance, in the past we produced 10 and after implementing the lean concept we could make 15 which means cheaper [average cost] ... we started to implement a supply chain management to gain a commitment from the [materials] supplier to provide an estimated arrival time. In implementing the supply chain management, the buyer assists us since several suppliers are nominated by the buyer ... “(*Tunggal Garmenindo*, 13 March 2008).*

Tunggal Garmenindo was able to sustain its cost competitiveness through the implementation of production management (e.g. quality management system, lean manufacturing system, warehouse management system and Six Sigma).

“Whatever we do, it only delays death. At the end we will all die but who will die first? Why do we have to be efficient and productive? It is because we do not want to die first. Why? The nature of labour intensive industry is like water which will flow to the place with the cheapest labour. It cannot be avoided. Minimum wage in Jakarta is almost Rp. 1 million [per month] and it will be more than Rp. 1 million next year ... we have to relocate our factory. That is the basic problem. The reason is simple, why did Toyota relocate to Indonesia? There is a certain limit which eventually forces us to move out ... we are planning so that simple garments will be moved to our new factory in Central Java, since the price of simple garments means they are unlikely to be produced in Jakarta. We are not moving our factory in Jakarta to Central Java, but we are moving products, thus high-tech [value] products will still made in Jakarta since the operators are high-skilled and smart ... “(Tunggal Garmenindo, 13 March 2008)

Tunggal Garmenindo continuously improved its production capability in order to maintain its relationship with *JDI*: who demanded that *Tunggal Garmenindo* should not only possess capability to carry out production activities (e.g. operative and innovative) but also be involved in garment development. The manufacturer was required to interpret designs supplied by *JDI* and to turn them into patterns and proto-samples. For this purpose, *Tunggal Garmenindo* invested in the *Lectra* computerised system to assist in transforming designs into patterns and proto-samples.

“... What are the aspects that buyers complained about? Buyers usually complain about 3 aspects: quality-delivery-development. Thus many buyers are complaining about development since the garment development process tends to change. In the past, the buyer would provide a design and we were asked to make [a sample], then the buyer would approve or not. Now, the buyer comes to us to look at our samples and change the designs all at once. The buyer will ask this-or-that, wanting to test our skill to make samples according to their ideas ... the buyer will be happy if we can make the sample better than their ideas ... ” (Tunggal Garmenindo, 13 March 2008).

8.1.2c) Case of Jaya Garmenindo: Innovative capability in design and marketing

In order to improve its cost competitiveness, *Jaya Garmenindo* applied flexible human resources management rather than focusing on implementation of a production management system. *Jaya Garmenindo* optimised use of its operators by classifying them into permanent, seasonal temporary and seasonal temporary outsourced operators. Permanent operators were used in low season, while in high season *Jaya Garmenindo* recruited additional temporary operators and outsourced production activities. Furthermore, in order to sustain its competitiveness, the manufacturer established a division of Market and Product Development to carry out design, product and market development. The division was responsible for interpreting market trends and translating them into original designs. For this purpose, the division actively cooperated with domestic textile manufacturers in order to access information on the development of new textiles. In addition, the division created brand names to diversify *Jaya Garmenindo's* market segment.

By exploiting product innovative capability in design and marketing, *Jaya Garmenindo* was able to diversify market destinations and enter the export market, utilising its design capability to adapt to the different demands of that market.

*“The export market is different from the domestic market particularly in size. Client firms in Europe or the Middle East are generally bigger than in the domestic market ... **There is also a difference in customers' taste.** For instance, there was a time when customers in the Middle East liked jeans which were stitched using large thread size, while in Indonesia the product was less popular... thus we have to know the fashion trends in different markets”* (*Jaya Garmenindo*, 6 March 2008).

To create original designs, *Jaya Garmenindo* travelled abroad to access knowledge of recent fashion trends in the global market, particularly within the European market. Subsequently the manufacturer adapted the fashion trends to the domestic market.

*“People who are involved in the garment business are likely to design new products by **learning from new fashion trends** [in other countries]. It means that garment design which is on trend in Europe is likely to enter Indonesia within one month. Thus we can try to innovate by creating a new design which is likely to suit the domestic market ... We try to understand fashion trends ... “*(*Jaya Garmenindo*, 6 March 2008).

Buyers did not usually assist *Jaya Garmenindo* in acquiring design capability, and the firm had to rely on its own efforts and investment in that respect.

“Fortunately one of the owners is an artist who loves design ... it is a long-term process, achieving expertise in design and product development. We also make garments for global brands; we are likely to learn from them about quality, specification, design, and fashion trends despite the lack of direct assistance ... We also once recruited expatriates who had the expertise in the apparel business, thus we obtained new insights, although they only worked for 1 or 2 years. We never stop learning ... Our owner is always going abroad to search for new things or insights. He always comes home with new thoughts or information to share with us” (Jaya Garmenindo, 6 March 2008).

Aside from design, *Jaya Garmenindo* was also involved in market development to bring garments from production to market. This involved marketing strategies of selecting the target market, creating own brand names and carrying out promotion and distribution. *Jaya Garmenindo* targeted the middle-classes since they were likely to make up the majority of their customer base. These middle-class customers had little interest in global top brand names. Brand development involves establishing a name: but that name must be associated to product, price, quality and other attributes which influence customers' perception. Thus *Jaya Garmenindo* tended to create brand names that were perceived by the customers as global brands with good design, quality and price.

“Our brand of ‘C’ has survived for years but I do not know why. Perhaps the word is easy to pronounce or to remember or maybe it’s a matter of perception: most of the consumers say our brand sounds like a foreign brand name or maybe the name has an association with the Pope in the Vatican” (Jaya Garmenindo, 6 March 2008).

To promote and develop its brand names and market, *Jaya Garmenindo* had to ensure that its own brand names were communicated and promoted effectively with the target customers. In addition, by developing a good distribution network the manufacturer made sure products were available at the place and time required by the customers.

*“I think the activity of brand development relates to marketing strategy. For instance, in brand promotion, our advertising has to be strong and so does product distribution. However, most of all, **brand development requires consistency over a long period** ... we started to sell our own brand to independent stores around Indonesia on a cash basis ... Thus our brand has gained recognition since we have always been available across cities for years and our brand name has become an icon in the minds of consumers. Thus **promotion and distribution** have to be aligned. In my opinion, the best promotion efforts will be useless without the support of effective distribution ... I often see product brands which are advertised frequently on television programmes but I cannot find the products in the market. It is useless and in the end the brands are ‘gone with the wind’; we have heard of the brand but then forget about it. Thus they [promotion and distribution] have to be simultaneous ... We have representative offices in Jakarta, Jogja, and Surabaya to distribute the product. For distribution beyond Java island, including Sumatera, Kalimantan and the eastern parts of Indonesia, we have a sister trading company ... In fact, we have carried out simultaneous promotion activities in the last 2 or 3 years ... we have applied various promotion channels or advertisements. We do not advertise through television programmes since it is very expensive, but we are present in television programmes by providing the supporting garments worn by TV presenters or an actor/actress in a TV series. Thus our brand name and logo will appear at the end of programme ... we also build a big billboard which is placed in the biggest stores in every city ... to attract youngsters, we organise events related to music or a fashion show, including pop music bands or a top model competition” (Jaya Garmenindo, 6 March 2008).*

Brand creation and development was not a risk-free activity and it required a lot of investment. *Jaya Garmenindo* developed marketing capability through learning from its failures and successes.

*“I do not know exactly how much we spend on brand promotion, but it is quite a big sum. For instance, when we organised a **promotion event, it was likely to cost billions of Rupiah** since the event was arranged in several big cities around Indonesia and most of the cost was spent on booking popular bands or top models ... Launching a new brand name from zero until it becomes a strong brand is not easy, it requires time and even then **there are several brands which, as we call it, have ‘died young’**. In 1999 we launched new brands such as ‘R’, ‘H’, ‘Cr’ to the market and we were trying to develop the brands. However, the brands stayed alive for only 2 or 3 years and after that we thought that the brands were no longer viable and we decided to stop selling them, giving huge discounts until the product ran out. Now we have brand ‘CDL’, sales of which are decreasing ... In the past, we published our own magazine, but the magazine was only issued for 3 editions since it was not reasonable to*

carry on ... Another problem is counterfeiting, since brand 'C' is quite strong [in the market], thus people are likely to make fake products of 'C'. 'C' brand is not only being counterfeited in the domestic market, but a Chinese producer has also made fake 'C' brand in Africa and the Middle East. We tried to take legal action to tackle this problem, but the attempt cost us money without any result. It is difficult to crack down on fake products in the domestic market and it is even harder in other countries. Legal actions to tackle this wrongdoing just cost money without any real result. There are a lot of domestic producers who become rich by producing fake 'C' brands ...”(Jaya Garmenindo, 6 March 2008).

8.1.2d) Cases of Lestari Garmenindo and Cipta Garmenindo: Innovative capability in design

In order to improve their cost competitiveness, similarly to *Jaya Garmenindo*, *Lestari Garmenindo* and *Cipta Garmenindo* outsourced some of their production activities to other garment producers, focusing mainly on design activity to maintain their relationships with buyers. Furthermore, both manufacturers acquired design capability by travelling abroad to access new garment designs and generate original ideas. Additionally, *Lestari Garmenindo* and *Cipta Garmenindo* maintained close relationships with their input suppliers to obtain information required for their garments.

Consequently, the garment manufacturers have to rely on their own efforts in acquiring and developing design and marketing capabilities.

8.1.3 Closing remarks: What role does technological capability play in value chain upgrading among the Indonesian garment manufacturers at the domestic and global level?

The five garment firm cases demonstrate the different types of technological capability possessed and utilised by the Indonesian garment manufacturers in undertaking their activities. *Busana Garmenindo* illustrates the Indonesian garment manufacturer which utilises process operative capability to make garments. This manufacturer focuses on improving production operation and techniques to meet the specifications of global buyers. *Tunggal Garmenindo* demonstrates the garment manufacturer which exploits process innovative capability to improve its production activities through the implementation of production management. *Lestari*

Garmenindo and *Cipta Garmenindo* illustrate the Indonesian garment manufacturers which use not only process capability, but also product innovative capability to generate original designs for supplying their buyers. Meanwhile, *Jaya Garmenindo* utilises full capability to design, to produce and to market its garments. By acquiring and exploiting product innovative capability, *Jaya Garmenindo*, *Lestari Garmenindo* and *Cipta Garmenindo* are able to carry out activities beyond production functions. Consequently, the types of capability determine the extent of upgrading processes undertaken by the Indonesian garment manufacturers.

In order to engage in design, branding and marketing functions (i.e. functional upgrading), the Indonesian garment manufacturers have to upgrade their capability from mere process to product innovative capability. Production has different characteristics from design, branding and marketing activities; production knowledge may be embedded in production equipment and operation manuals, while design, branding and marketing knowledge are embedded in firms and systems. Design, branding and marketing, being more tacit than production, are therefore more difficult to diffuse and transfer to the Indonesian manufacturers, and require more efforts in terms of the learning process and investment. Furthermore, global buyers are unlikely to diffuse design and marketing knowledge and capabilities to the Indonesian garment manufacturers, since those are their core competencies. This was supported by the statements given by a global branded marketer (i.e. *GIC*) and retailer (i.e. *TDS*) from the United States.

“We never share designs [with firms], thus design capability is for us only. We need a 'tailor' to make it and somebody has to do it. But we provide training on how to increase production or quality, which is technical instead of production-based. Product development is ours, since it is our job or our core business” (GIC, 15 February 2008).

“Do we provide assistance to vendors? ... [assistance] to improve quality: yes [provided] but no [assistance] to improve their design capability. [To improve] design capability, they have to hire a designer or they have to find talented people in the marketplace to support them on this at their own cost ... ” (TDS, 21 February 2008).

8.2 Technological capability of the consumer electronics manufacturers in Indonesia

8.2.1 Descriptive overview of capability of the surveyed consumer electronics manufacturers

Table 8.3 Capability of the consumer electronics sample (total sample = 15)

Ownership of manufacturers	100% FDI	Joint venture	100% Domestic
Descriptive			
No. of manufacturers	4	3	8
Age of manufacturers (years, average)	27	35	21
No. of employees (people, average)	1,605	1,883	1,288
No. of manufacturers supplying 100% for domestic market	0	0	6
No. of manufacturers supplying for domestic and export markets	4	3	2
No. of manufacturers supplying 100% for export market	0	0	0
Dynamics			
Annual sales growth (%)	11-20	11-20	≤ 10
Capabilities			
Age of machineries (years, average)	9	10	9
ISO 9000 certification (no. of manufacturers)	4	3	7
ISO 14000 certification (no. of manufacturers)	3	2	3
OHSAS 18001 certification (no. of manufacturers)	1	0	1
Reject rate (%)*	< 5%	< 5%	< 5%
ERP application (no. of manufacturers)	1	2	4
CAD usage (no. of manufacturers)	4	3	7

Source: Author's own survey 2008, reconstructed from interview results

There was no indication of different production capability across the consumer electronics manufacturers in Indonesia, since the Indonesian domestic-owned manufacturers and the foreign affiliates (i.e. subsidiaries and joint ventures) utilised equipment of relatively similar age. The domestic-owned manufacturers (i.e. 4 out of 8) also implemented the ERP system to enhance productivity and efficiency. Furthermore, most domestic-owned manufacturers (7 out of 8) adopted quality management systems by acquiring the ISO 9000 certification. As a result, all manufacturers claimed to achieve product reject rates below a 5 per cent threshold. Furthermore, both the domestic-owned manufacturers and the foreign affiliates carried out design and product development activities by using the CAD software and hardware.

8.2.2 The nature of capability and capability acquisition processes among the consumer electronics manufacturers in Indonesia²

This subsection investigates different types of capabilities possessed and exploited by the consumer electronics manufacturers in Indonesia in undertaking activities. It also assesses the learning processes undertaken by the consumer electronics firms to improve their capability. In order to obtain in-depth understanding about the nature of capability and learning processes, discussion is based on the same six firm cases examined in chapter seven. This study utilises a simple classification of capability to explore the nature of capability of the consumer electronics manufacturers in Indonesia. Operative capability is a basic capability required by the consumer electronics manufacturers to operate production equipment in transforming electronic parts and components into finished goods. Operative capability involves activities of assembly, input sourcing, inventory and quality control. The layout of the assembly line of the consumer electronics manufacturers may be set up as a serial assembly process (i.e. conveyor belt system), in which working processes are broken down into short cycle tasks. Line balancing techniques are applied, and the required operators are spread out in a specific sequence along the line, down which components and products are transported by using conveyors (Miyake, 2006). Alternatively, assembly lines may be designed as a parallel assembly process (i.e. cell production system), in which a small team of operators or work cells perform multiple assembly tasks in a shorter production line (Isa & Tsuru, 2002). The consumer electronics manufacturers conduct assembly line balancing infrequently: since neither buyers nor customers require product customisation.

Quality control is required to ensure that the manufacturers produce electronic products which meet certain technical standards (i.e. product performance, durability and safety) and environmental standards set by global lead electronics firms, national or international organisations. For instance, in order to be sold in Indonesia, electronic products have to meet technical standards of the *SNI* (i.e. *Standar Nasional Indonesia*), which are set by the National Standardisation Agency of Indonesia (i.e.

² A major part of this section will be presented at the 8th GLOBELICS International Conference: Making Innovation Work for Society: Linking, Leveraging and Learning, 1 - 3 November 2010 University of Malaya, Kuala Lumpur, Malaysia

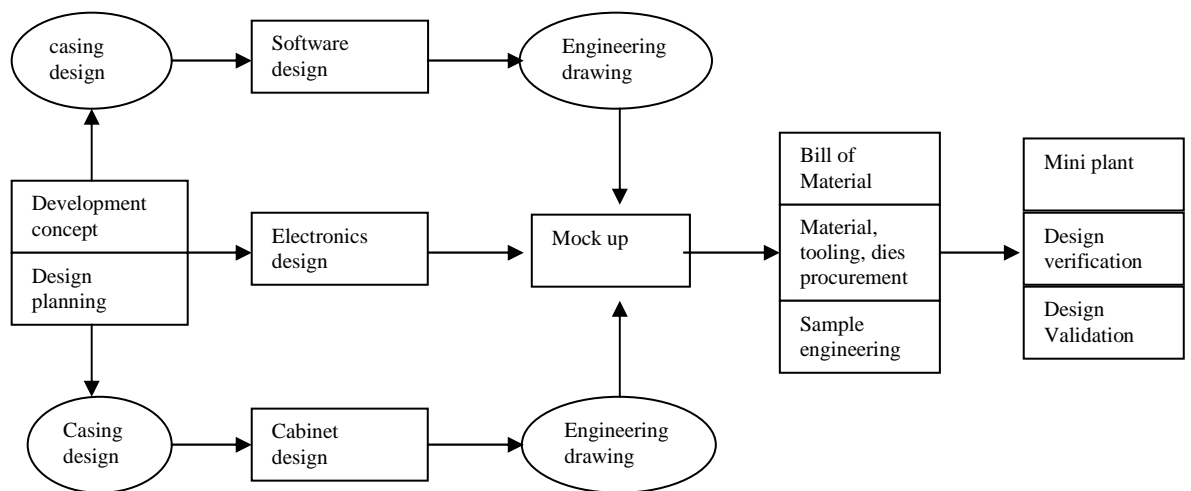
Badan Standardisasi Nasional). In the same way, electronic products have to meet international technical standards set by the *International Electrotechnical Commission* (IEC) and environmental standards (e.g. RoHS) to be sold in the global market. To meet these requirements, the consumer electronics manufacturers in Indonesia have their own testing laboratories for examination of their products. Input sourcing activity involves the consumer electronics manufacturers in searching out and dealing with component suppliers in order to establish effective long-term relationships. Meanwhile, they undertake inventory control to monitor supply, storage and accessibility of components used in assembly and to monitor finished products for distribution.

Innovative capability is required by the consumer electronics manufacturers in carrying out improvements of production equipment and management (i.e. process innovation), generation of original designs, and development of both products and markets (i.e. product innovation). In process innovation, the consumer electronics manufacturers attempt to improve production efficiency through cost reduction and output increase. They may implement production management and systems such as the lean manufacturing system, just in time inventory system, supply chain management and quality management system. In terms of product innovation, the consumer electronics manufacturer conduct design, branding, product and market development through generating original design and functionality and creating their own brand names.

To perform process and product innovative activities, the consumer electronics manufacturers tend to establish research and development (R&D) and marketing departments to create demand and markets for their products. The two functions play an important role in innovation processes within the Indonesian consumer electronics sector (see Figure 8.2). The process of development of new products starts with the generation of ideas and development of concepts for electronic products to meet customers' or the market's needs. The idea and concept are likely to come from R&D and marketing. Subsequently, R&D will design a product and make a mock up. After product design and mock up are approved, R&D work on design of the cabinet, software and electronics circuit and printed circuit board (PCB) and make a prototype.

Finally, R&D produce a bill of materials, which consists of lists of components used on the PCB and a manual and procedures for construction of the product. The bill of materials is used to procure electronic parts and components required for product manufacture. Design of the cabinet may be undertaken by a mould maker, and design of electronic circuits may be done by a PCB maker. Marketing is also involved in the product development process, since it has to be ensured that the product is marketable. Marketing will be used to develop demand and a market niche, via strategies such as market segmentation, product communication and advertisement as well as pricing.

Figure 8.2 Process for development of new electronic products



Source: GABEL

Table 8.4 Types of capability of the consumer electronics manufacturers

		<i>Pusaka</i>	<i>Suara</i>	<i>Cahaya</i>	<i>Berdikari</i>	<i>Harapan</i>	<i>Buana</i>
Operative capability	<i>Production techniques and controls</i>						
	- line balancing	x	x	x	x	x	x
	- quality control	x	x	x	x	x	x
	- inventory control	x	x	x	x	x	x
Innovative capability	<i>Production management system</i>						
	- Production cost saving	x	x	x	x	x	x
	- Productivity improvement	x	x	x	x	x	x
	- Quality improvement	x	x	x	x	x	x
	<i>Product and market development</i>						
	- In-house product design	x		x		x	x
	- Brand development					x	x
- Product marketing ^{*)}	x				x	x	

*) by sister company

Source: reconstructed from interview results

8.2.2a) Case of *Suara Elektrindo*: Innovative capability in production management

Suara Elektrindo simply replicated the production management and systems which had been adopted by its parent company in Korea. By implementing a similar system, the parent company was able to maximise utilisation of production facilities within and beyond its home country. For this purpose, the parent company applied a global enterprise planning system for supply chain planning, factory planning and scheduling, order fulfilment and collaborative demand planning, within its subsidiaries around the globe. Consequently, *Suara Elektrindo* exploited process operative and innovative capability to support the parent company's global strategy, particularly in production activities. The parent company centralised its research and development activities as well as marketing strategies.

8.2.2b) Case of Berdikari Elektrindo: Innovative capability in production management

Berdikari Elektrindo had been developing its capability in making mould and plastic injection of electronic parts since 1992. In 2000, *Berdikari Elektrindo* began to operation of a new facility for assembly of consumer electronics. In order to meet quality standards required by the Chinese lead electronics firm, *Berdikari Elektrindo* established a comprehensive quality assurance laboratory, installing equipment such as: ovens and freezers, to simulate aging of the product; pull force and torque meters to test for strength; transportation simulators for the packaging; abrasion apparatus and tumble machines to test the surface finishing. Furthermore, *Berdikari Elektrindo* acquired ISO 9002:1994 certification in 1997 to conduct a quality management system and was in the process of obtaining ISO 9001:2000. For inventory control, *Berdikari Elektrindo* applied a computerised inventory and delivery control system, which connected its factory in Central Java to its sales and marketing office in Jakarta. By utilising its process operative and innovative capability, *Berdikari Elektrindo* was able to produce electronic products to supply the Chinese lead electronics firm. *Berdikari Elektrindo* was also authorised to conduct sales and distribution within Indonesia. This demonstrates that *Berdikari Elektrindo* developed its marketing capability by learning from the Chinese lead firm.

8.2.2c) Case of Cahaya Elektrindo: Innovative capability in design

In contrast to *Berdikari Elektrindo*, which had developed its process operative and innovative capabilities as an integral part of its expertise in mould and plastic injection of electronic parts over a number of years, *Cahaya Elektrindo* acquired its process operative capability by purchasing a production facility of a Japanese joint venture in Indonesia, and re-opened the production facility to assemble refrigerators, having undertaken little research and development. *Cahaya Elektrindo*'s product improvement activity was focused on minor changes to its refrigerators' appearance, rather than any significant improvement to functionality.

8.2.2d) Case of Pusaka Elektrindo: Innovative capability in production management, design and product development

The case of *Pusaka Elektrindo* demonstrated a Japanese foreign affiliate in Indonesia which improved its production efficiency, productivity and flexibility, rather than engaging in the production outsourcing undertaken by other global lead electronics firms. *Pusaka Elektrindo* replicated the Japanese lead electronics principal by implementing the cell production system as a replacement to the conveyor belt system. It was claimed that the cell production system enabled *Pusaka Elektrindo* not only to improve production efficiency and productivity but also to improve its production flexibility by adjusting to market uncertainties through changing the layout of assembly lines rapidly and utilising fewer, but multi-skilled, workers.

*"... For instance, in the past, people thought by minimising human involvement in the assembling process and replaced human operators by automatic machines, then production would be faster Nowadays, the production system has been forgotten, the **production system has reverted to the concept which relies on human involvement, including the cell production system which is more productive** ... Machines are not always better [than humans]. In the past, operators were waiting for the conveyor to bring the components to them for assembly. Nowadays, the operators have to move to approach the components ... that is the difference of the cell production system. In a cell production system, operators multitask and the team [a group of operators] is responsible for working on the product until it is finished. The system is faster and productivity is better than with the conveyor system" (Pusaka Elektrindo, 07 April 2008).*

Pusaka Elektrindo implemented advanced systems in product development, human resources, and supply chain and quality management by developing and utilising information and communication technologies (ICT). For instance, *Pusaka Elektrindo* incorporated its design, production development and manufacturing activities into one division by integrating computer-aided design (CAD) - computer-aided engineering (CAE) - computer-aided manufacturing (CAM), to reduce the product development cycle, improve productivity and shorten time to market. By integrating the management systems, *Pusaka Elektrindo* was able to introduce a number of new products to the market at the same time and was more responsive to changing market demand. *Pusaka Elektrindo* also implemented ERP (enterprise resources planning) and SCM (supply chain management) systems to speed up the production cycle, from

procurement of electronic parts and components to product delivery. For quality management, *Pusaka Elektrindo* had acquired ISO 9001 certification. The manufacturer also acquired ISO 14001 to manage the impact of its activities on environment. *Pusaka Elektrindo* implemented its management systems by developing and utilising customised information and communication technology.

“Our IT system is customised. We have an Information System Centre or ISC which consists of more than 20 programmers. We buy a core system, but then we customise it (for our needs)” (Pusaka Elektrindo, 07 April 2008).

Furthermore, *Pusaka Elektrindo* made use of the PDCA problem solving process for its business improvement process in general.

*“ ... We apply the PDCA or Plan-Do-Check-Act cycle for continuous improvement. We are used to completing the cycle. For example, we saw that our production line was unbalanced, or its processes were unbalanced, then we decided that a single operator should handle 2 functions; this pattern has become our habit over time. Previously, there were 10 operators [in a production line], (then we tried to figure out) how to establish 8 operators who could produce similar output for the next year. Then the following year we try to find a way for 8 operators to produce higher output, for instance by 10 per cent. It has become a must, otherwise how can we compete? Labour wages are increasing and we will not be competitive if the labour produces a similar quantity of output. Thus accompanying the increasing wage, output has to be relatively higher than the wage increase. Thus in our factory **we are talking about productivity improvement; it's either productivity per operator or productivity per meter square area.** We cannot enlarge working space, instead we have to use the same amount of space or even use a smaller space, thus we will have spare space to anticipate the increasing demand in quantity” (Pusaka Elektrindo, 07 April 2008).*

Pusaka Elektrindo also exploited product innovative capability to undertake design and product development. The manufacturer implemented ICT to assist the product development process. In addition, *Pusaka Elektrindo* established a division (i.e. Creation Centre) to manage generation of ideas for creating original designs and product development that would fulfill the market's and customers' needs.

Since the sales and marketing activities were carried out by its sister company, *Pusaka Elektrindo* did not get involved in conducting marketing strategies.

8.2.2e) Case of Harapan Elektrindo: Innovative capability in design and product development

Harapan Elektrindo was the largest domestic-owned lead consumer electronics manufacturer in Indonesia. The strength of *Harapan Elektrindo* was in its capabilities in design and product development. For this reason, *Harapan Elektrindo* gained the Indonesian Good Design award from the Government of Indonesia on various product designs (e.g. audio products, DVD player and water dispenser). In addition, *Harapan Elektrindo* claimed that it dominated sales of audio products in the Indonesian market and was frequently nominated as the best seller by domestic or international marketing research firms. The manufacturer generated both innovative designs and innovative product functionality and technologies, which were developed by using in-house R&D. *Harapan Elektrindo* had patented its original technologies in Indonesia, Canada and the US. Moreover, *Harapan Elektrindo* was able to invent and produce innovative consumer electronics, including the only dual-functioned refrigerator (i.e. hot and cold) in the world. Since *Harapan Elektrindo* developed technological capability through its own efforts, the manufacturer also gained an award for the Company Most Contributing to Technology Development from the Government of Indonesia in 2007 and 2008. *Harapan Elektrindo* was able to compete not only in the domestic market but also in emerging export markets.

Harapan Elektrindo was supported by more than 200 R&D staffs that were grouped into three divisions: artwork, construction or mechanics and electronics. The R&D department was established in the 1970s and originally consisted of 4 engineering graduates, who were assigned to developing technological capability of the manufacturer by learning from various sources. The case of *Harapan Elektrindo* demonstrated how the manufacturer used its own efforts and investment to search and acquire new knowledge and develop capability over time. For instance, *Harapan Elektrindo* spent almost 10 years (1977-1985) perfecting the production of televisions, by learning from different foreign sources. In its early years, *Harapan Elektrindo* acquired production operative capability from a Belgium-based firm, sending its four

engineers to be trained by that firm. Using the know-how thus acquired, *Harapan Elektrindo* started to assemble televisions in 1978-1979, but problems started to emerge. Firstly, they had no cabinets for their televisions. Fortunately, during the 1970s, television cabinets in the Indonesian market were made from wood and did not require expenditure on costly moulds. Secondly, the televisions were not reliable and were not well proven. This was because the Belgium-based firm was not a television set maker; instead, it was an electronic kit supplier, and had no R&D experience in mass production activities. For this reason, *Harapan Elektrindo* searched for new sources which were able to offer television cabinets and had experience of mass production. *Harapan Elektrindo* finally found and collaborated with a Finnish firm which transferred its production technologies to *Harapan Elektrindo*'s engineers, in purchasing required machinery and equipment, installing production lines and so forth. At the same time, *Harapan Elektrindo* established R&D facilities to undertake design and product development. After acquiring production technologies and capabilities from the Finland-based firm, *Harapan Elektrindo* was able to introduce 20 and 26 inch colour televisions, which were the lowest electricity consuming televisions sold in Indonesia in 1981. Again, *Harapan Elektrindo* encountered problems, since the most popular size of televisions in the Indonesia market at that time was 14 inches, while there was no electronics firm in the Europe that produced 14 inch televisions. This led *Harapan Elektrindo* to search for the required production knowledge and find a new source in Taiwan. As a result, *Harapan Elektrindo* was able to launch its first original design of a 14 inch colour television for the Indonesian market in 1984, after working on its design and development for 2 years. Once again, with its 14 inch televisions *Harapan Elektrindo* had to face technical problems, which the Taiwanese firm was unable to assist in solving. Consequently, *Harapan Elektrindo* had to cease production of 14 inch televisions for nine months, while trying to solve the problem on its own.

“ ... Our technical manager had said that: technically we had understood all [the knowledge] of making [TV] from scratch, by designing the product through a [learning] process; from the Belgian-based firm we learnt the theory, then from the Finland-based firm we learnt the production [techniques], and technical problem solving from our self-efforts, thus our knowledge had been completed from A to Z. But we were still lacking the PPQC or production planning and quality control, which was related to

the logistics of dealing with many component makers and suppliers, because if we wanted to design a product on our own, we were unlikely to buy electronics components from a single supplier from Finnish or Taiwanese sources ... (Harapan Elektrindo, 23 January 2008).

Table 8.5 Capability acquisition and learning process of *Harapan Elektrindo*

Period	1977	1980	1984	1985	1986-Now
Product	Black & White TV	Large colour TV (i.e. 20, 26 inch)	Small colour TV (i.e. 14 inch)	Small colour TV (i.e. 14 inch)	a wide range of products
Knowledge sources	Electronics kit supplier, Belgium	Electronics set maker, Finland	Electronics manufacturer, Taiwan	internal R&D, Input and technology suppliers	internal R&D, Input and technology suppliers
Learning process	Staff training, input use	Staff training, equipment use	Staff training, input use	Self-learning	Self-learning
Capability	Assembly	Assembly	Assembly	Manufacturing, design	Design, marketing, manufacturing, linkage

Source: Reconstructed from interview results

Looking at the historical trajectory of *Harapan Elektrindo*, it showed that capability acquisition required a process of learning new capabilities (i.e. assembly, mass production, design & development, coordination and self problem solving) over time. The process of capability acquisition was far from automatic but it involved conscious, purposive and costly efforts.

“By applying the ‘can do spirit’ ... we can do everything, although at that time we were being labelled as crazy. At that time the abbreviation of our firm was CEG, and it was also known as the Crazy Engineer Group by some people. Thus the company [capability] development is based on ‘can do spirit’ and at the end we really can do everything ... (Harapan Elektrindo, 23 January 2008).

Furthermore, business expansion of *Harapan Elektrindo* was related to its capability acquisition and development. The manufacturer had to think not only of how to make and produce original design and products, but also of how to market the products to achieve economies of scale and profitability. In fact, obtaining economies of scale and profitability from sales was more difficult than production. Brand development and marketing strategies played significant roles in the success of *Harapan Elektrindo* in the Indonesian consumer electronics industry and market.

“... over time, we could sell a lot of 14 inch TVs, until it reached the quantity in which the TV mould had to be copied to produce TVs effectively. However, we did not create a copy of a similar mould; instead, we created a new model, thus we have many models of TV. If we want to use self-design, we have to think about economies of scale, since it requires amortisation. For example if a mould costs Rp. 1 billion [GBP 55,555.6] ... To simplify calculations, assuming production is 10,000 units per year, thus Rp. 1 billion is divided by 10,000 or a unit of TV costs Rp. 100,000 [GBP 5.6] from the [cost of] mould amortisation solely, thus the most expensive [production] cost comes from the investment in moulds. A 14 inch TV now costs Rp. 600 or 700 thousand [GBP 33.3 or 38.9]. Thus Rp. 100,000 of Rp. 700,000 is to cover the cost of the mould. When product sale quantity is larger, let's assume 100,000 units per year, thus the cost of mould per unit TV is Rp. 10,000 [56 pence], so larger scale production and sales is more profitable. In contrast, the materials cost of small electronics products is nothing. The major cost of this product comes from know-how and patents, especially in hi-tech products such as an 'iPod' [portable multimedia player] or hand phone [mobile phone]. Technology is the most expensive cost. You can imagine a hand phone price range is Rp. 700 thousand to Rp. 10 millions [GBP 38.9 to GBP 555.6]. In contrast, you can get a 14 inch TV by paying Rp. 600 thousands or a 29 inch TV by Rp. 2 millions [GBP 55.6] although the materials cost of TVs is relatively high, but TV [technology] has no patents. Mould is the main consideration, a bigger TV needs a bigger mould, while its material is expensive since a mould use special steel, thus a TV mould is likely to cost billions of rupiahs. In contrast, the mould of a hand phone is small, it only costs million rupiahs, but the technologies 'inside' make its price more expensive. For small electronics product, mould is not the main consideration since amortization cost is low, when Rp. 100 millions [GBP 5,555.6] is divided by the quantity of production. Moreover, its retail price is more expensive, amortisation of the mould costs nothing. The retail price of TVs is low, thus the cost of amortisation of the mould is high. This is the [business] game ... (Harapan Elektrindo, 23 January 2008).

The R&D undertaken by *Harapan Elektrindo* provided a clear illustration of innovativeness in generating original designs and product development: from scratch to finished electronic products.

*“The R&D department consists of the **division of artwork** which **designs new products from nothing or mere imagination to something or a drawing**. The drawing will be proposed to the marketing department to gain feedback about the design of the product. After gaining approval, the drawing is sent to the mock up division, to make a product dummy, since looking at the drawing is not adequate ... by making a dummy product we could touch the product, the real size and finishing. After the marketing department have settled on selling the product and approved the product design, the mock up will be sent to the **construction division which develops the cabinet, including panel room, control unit, mounting, back cover ... The electronics division designs the electronics circuit and PCB [printed circuit board]** ... “(Harapan Elektrindo, 23 January 2008).*

In addition, the manufacturer was not required to generate new products for market, but rather to create original designs and technologies. This came from the fact that *Harapan Elektrindo* mostly adapted consumer electronics to the Indonesian market by providing better design and product functionality. Thus *Harapan Elektrindo* was highly dependent on reverse engineering activities for generation of original designs and product development.

*“For instance if we want to make an ‘iPod’ [portable multimedia player], there are about 12 brands that are producing ‘iPod’ and each brand produces 2 types or models, thus there are 24 types in total. We will buy all of the 24 types of product and bring them to our factory in Indonesia and we **unscrew each product to look for its advantages and disadvantages, then we try to combine advantages** that come from all of those products and we also decide on our product’s pricing strategy ... and produce it. After producing, we will arrange a focus group discussion, asking people’s opinion on our product ... Thus, as I said before, we go abroad to buy electronics product samples and compare them. Then we divide our R&D staff into 5 groups and ask each group to design and make a new product. In addition, they compete not only on product design but also on pricing strategy. For this reason, when they are designing and making the product, they also have to know the price of cables or other components used ... IC suppliers provide us with their application notes, thus we apply the notes and rectify deficiencies. For example, since the beginning we were aware that European TV had better picture quality than Japanese TV ... But European TV is not heat resistant ... and its reception sensitivity is worse than that of Japanese TV. Thus one of our*

strategies, which was applied in the designing stage, is using IC for video processors, sourcing ICs from Europe [i.e.] Philips, while we purchase the reception tunnel from Japan, thus we combine the technologies” (Harapan Elektrindo, 23 January 2008).

Harapan Elektrindo established linkages to foreign firms, particularly to get access on knowledge and technology sources, in order to keep up with the rapid advancement of process and product innovation taking place in advanced countries. For this purpose, *Harapan Elektrindo* was proactive in visiting international electronics fairs and exhibitions.

*“We get information from two sources. First, there are regular **electronics component exhibitions** in Indonesia at which global component makers introduce their new components or technology. They will offer components or technology which is required by us. Second, we visit exhibitions abroad to meet with component makers. We mostly **visit exhibitions abroad in order to update on recent technology and obtain new [product] inspiration** ... We usually send our art work staff to international exhibitions in Japan, China, Hong Kong, Korea or Taiwan since the best electronics product exhibitions are likely to be held in Asia. In sending the staff abroad, our main goal is to make their eyes used to seeing good design. Italian people are famous for their design skill due to the fact that since the Roman era there have been a lot of buildings which were designed beautifully. Thus people who were born in Italy have eyes which are used to seeing a beautiful design from a young age. For this reason many [world] designers come from Italy and design fashions, buildings, architecture and electronics products, including at ‘Nokia’ which utilises Italian designers. Thus the basic goal is to make their eyes used to seeing beautiful goods ...” (Harapan Elektrindo, 23 January 2008).*

Furthermore, *Harapan Elektrindo* became involved in the export market in order to diversify its market and reduce its dependency on the Indonesian market. In particular export markets, *Harapan Elektrindo* exported not only finished electronic products, but also its innovative technologies and capabilities.

8.2.2f) Case of Buana Elektrindo: Innovative capability in design and business development

Buana Elektrindo acquired process operative capability from a Japanese lead electronics firm whilst carrying out assembly operations for the Japanese firm in the mid 1970s. However, since the Japanese lead firm lost its price competitiveness

during the 1980s and withdrew its support from *Buana Elektrindo*, the manufacturer decided to develop its own brand name and established R&D to undertake design and product development activities. Since then, *Buana Elektrindo* has relied on its own efforts to acquire product innovative capability, without any assistance from global lead electronics firms.

*“Manufacturing know-how or assembly [knowledge] rather than product development was obtained from a Japanese principal and we paid for it ... **The Japanese principal would not assist us in acquiring the know-how in product development.** Thus we learnt about product development slowly by establishing research and development [department] in 1986 ... “(Buana Elektrindo, 16 February 2008).*

Since *Buana Elektrindo* established its internal R&D, the manufacturer was able to introduce a number of innovative electronic products particularly during the 1990s, including televisions with personal data storage, digital voltmeter indicators, short message (text) facilities and an audio cassette player with ‘karaoke’ functionality. In contrast to *Harapan Elektrindo*, *Buana Elektrindo* was less likely to develop significant original technologies in developing its products. Instead *Buana Elektrindo* combined available technologies and features to be applied to its own electronic products to create a market.

“... The marketing idea of SMS TV was that a [SMS facility in] hand phone is for personal use, thus a product for personal and external usage is made as small as possible or portable. However, a product which is used at home is made as big as possible, for instance, large TV or refrigerator. We thought that at home, people were likely to have a [big] product to provide SMS ... We are developing a wooden TV rack equipped with active speakers. Thus we do not need to purchase an audio system and TV rack separately, just plug in our DVD or LCD player to the audio system embedded in the rack to gain the best sound quality. Thus we provide solutions to the customer ... “(Buana Elektrindo, 16 February 2008).

Comparison of the number of R&D staff between *Harapan Elektrindo* and *Buana Elektrindo* provided an impression that R&D activities conducted by *Buana Elektrindo* were less extensive than those of *Harapan Elektrindo*. Moreover, during the visit to the shop floor of *Buana Elektrindo*, it seemed that the manufacturer still

applied the belt-conveyor system, which was inherited from its Japanese lead electronics principal in the past. *Buana Elektrindo* focused on improving its overall business efficiency and productivity by implementing ICT to manage its supply chain, human resources and finance. In addition, *Buana Elektrindo* had downsized its consumer electronics business and was concentrating more on furniture and media storage businesses. *Buana Elektrindo* realised that product innovativeness performed by the manufacturer in the past did not necessarily contribute to profitability if the cost of innovation was higher than the income.

*“In the past we were highly innovative, but we finally realised that **innovative products did not always attract customers** ... regardless of whether our innovation is valued or not by customers. For instance, a customer may consider that the features of a new product are good, but the customer just wants to pay US\$ 2 [for the new features]. If we charge more than US\$ 2 the customer will not purchase the product or just a few customers will buy the product ... **Thus the problem is our production cost is higher than the price which the customer is willing to pay** ...”*
(*Buana Elektrindo*, 16 February 2008).

Furthermore, *Buana Elektrindo* saw that the global electronics industry had changed greatly due to the emergence of contract manufacturers and electronics manufacturing service providers. For this reason, *Buana Elektrindo* outsourced some of its production activities to contract manufacturers and focused on design, branding and marketing activities.

Furthermore, *Buana Elektrindo* transformed its business model from manufacturer toward service provider, by offering its production facility for use by other firms. As a starting point, *Buana Elektrindo* established a sister company to carry out sales and marketing functions independently. During the visit to the factory, it was evident that the assembly facility was still utilised to produce consumer electronics under *Buana Elektrindo* own brand names. However, its plastic mould and injection facilities had been used by other firms in Indonesia (e.g. *Ecco Indonesia*).

“ ... There is a shift in global business, thus we are offering our [electronics] manufacturing facility and transforming into Electronic Manufacturing Services ... We are now in the process of moving toward full EMS. In the near future, we hope that we can create a cooperation

similar to our magnetic tape business, in which we perform manufacturing activity[service] for other firms ... We have been preparing [EMS] since 2002 ... (Buana Elektrindo, 16 February 2008).

By transforming into a service provider, *Buana Elektrindo* moved out of the consumer electronics sector, and concentrated more on manufacturing magnetic and optical media as well as furniture (i.e. TV wooden racks).

“We still produce televisions, washing machines, audio systems, although we are now downsizing our [electronics] facility and focusing on profit margins ... We started [applying EMS] for magnetic tape ... Our magnetic tape production is 90 per cent for export, while 10 per cent for domestic [market]. Secondly, we develop LCD [TV] wooden racks, since LCD [TV] is a growing (business). Thus it is better to produce the wooden rack rather than the LCD TV. This production is also 90 per cent for export and 10 per cent for domestic. Our market is Japan, Europe and Australia. We have to choose what business we want to focus on. In these businesses [magnetic tape and wooden racks] we are less likely to compete with global companies. Furthermore, these are complementary products which global companies are not interested in ... “(Buana Elektrindo, 16 February 2008).

8.2.3 Closing remarks: What role does technological capability play in value chain upgrading within the consumer electronics manufacturers in Indonesia at the domestic and global level?

The detailed information drawn together during the interviews provides a clear indication that the nature of capability possessed and utilised by the consumer electronics manufacturers in Indonesia is distinctive. All the consumer electronics manufacturers have process operative and innovative capabilities to operate and manage production activities in efficient ways. *Pusaka Elektrindo*, *Suara Elektrindo*, *Cahaya Elektrindo* and *Berdikari Elektrindo* illustrate consumer electronics manufacturers which utilise their process operative and innovative capabilities to meet the specifications of global lead electronics firms and enhance competitiveness of global lead electronics firms in the domestic and global markets. Only *Harapan Elektrindo* and *Buana Elektrindo* have utilised full range of process operative and innovative as well as product innovative capability to undertake design, product development, branding and marketing activities to improve their own competitiveness in both the domestic and emerging export markets. Consequently, the types of

capability exploited by the consumer electronics manufacturers determine the extent of their upgrading processes.

To achieve functional upgrading, the consumer electronic manufacturers in Indonesia have to acquire capability beyond process operative and innovative capabilities. By acquiring product innovative capability in design, product development, branding and marketing, both *Harapan Elektrindo* and *Buana Elektrindo* are able to undertake functional upgrading. Both manufacturers can provide innovative products and services, facilitate market segmentation and diversification. To acquire product innovative capability, both manufacturers have to put in their own efforts in the form of learning process and investment. Global lead electronics firms tend to play an important role in diffusing production knowledge to the consumer electronics manufacturers in Indonesia through their processes and product specifications. In contrast, global lead electronics firms are least likely to transfer design, product development and marketing knowledge to consumer electronics manufacturers in Indonesia other than their affiliates. Consequently, manufacturers have to access and learn from sources other than global lead electronics firms in acquiring their product innovative capability.

8.3 Conclusion

Through empirical evidence drawn from the survey and rich stories across the case studies of the garment and consumer electronics firms in Indonesia, this chapter demonstrates that the extent of upgrading processes undertaken by the garment and consumer electronics manufacturers is highly dependent on their types of capability. To undertake process upgrading, the garment and consumer electronics manufacturers have to possess process operative and innovative capabilities to improve production efficiency and product quality. They must operate better production equipment and techniques and apply production and quality management. To achieve functional upgrading, they have to possess product innovative capability to undertake design and product and market development.

The Indonesian garment and consumer electronics manufacturers tend to exploit their full range of capability within domestic and regional value chains. They exploit product innovative capability to design and develop products and market the products in domestic and emerging export markets. They also use process operative and innovative capabilities to make the products. In the global value chains, the Indonesian garment and consumer electronics manufacturers are likely to exploit only process operative and innovative capabilities to make products that meet the specifications of global buyers and lead firms.

The different types of capability that are possessed and exploited by the garment and consumer electronics manufacturers in Indonesia confirm the need to classify the nature of capability explicitly, as argued by the TC literature. Without distinct classification of capability, no exploration of the role of the Indonesian garment and consumer manufacturers and the role of global buyers and lead firms in affecting upgrading processes and trajectory can be complete. This chapter shows that global buyers and lead firms are extremely unlikely to facilitate functional upgrading of Indonesian garment and consumer electronics manufacturers within their value chains through transfer of required capability.

Chapter 9

The Nature of Upgrading Processes in Indonesia

Comparison between the garment and consumer electronics firms

Earlier, chapters six and seven provided insights on the distinctive governance of value chains and their role in upgrading processes among garment manufacturers and consumer electronics manufacturing firms respectively in Indonesia. While it is true that governance of value chains affects these upgrading processes, it is not the only determining factor. Furthermore, as chapters six and seven had detected, some questions concerning the nature of governance of value chains in which the garment and consumer electronics manufacturers were engaged, remained unanswered. Further investigation was required on the influence of firm level capabilities on upgrading processes among the garment and consumer electronics manufacturers in Indonesia. To this end, chapter eight explored the complementary understanding on the nature of capability and the importance of its role in determining upgrading. So far chapters six, seven and eight have provided empirical evidence and analysis on the roles of governance of value chains and different forms of capability in influencing upgrading processes, using case studies of several garment manufacturers and consumer electronics manufacturers in Indonesia. Yet those chapters have not made clear whether the different characteristics of Indonesian garment and consumer electronics sectors, such as technology intensity and governance structure, bring about divergent upgrading outcomes, or whether there is a unique pattern to upgrading regardless of the industrial sector. In fact, the investigation and observation at the firm-level of the garment and the consumer electronics manufacturers in Indonesia showed not only dissimilarities but also similarities. This chapter provides further analysis to shed light on the question of whether a comparison of the garment and electronics firms reveals linkages between governance and technological capability in value chain upgrading. This chapter (i) provides comparative patterns of capability between the Indonesian garment and consumer electronics sectors, (ii) assesses mechanisms of capability acquisition and learning processes between the Indonesian garment and consumer electronics sectors in the context of value chains and (iii) examines the roles of

governance and capability in explaining value chain upgrading processes between the Indonesian garment and consumer electronics sectors.

It is a fact that there are differences between the Indonesian garment and consumer electronics sectors in respect of technological intensity, firm-ownership, market orientation and market structure. However, the two sectors offer a similar conclusion in that those manufacturers inserted in global value chains mostly undertake process upgrading. This is because the garment and consumer electronics manufacturers are engaged in hierarchical structures and captive value chains over which global buyers and lead firms exert direct ownership and a high degree of control. Global buyers and lead firms include the Indonesian garment and electronics manufacturers in their value chains to gain access to and control over (complementary) process operative capabilities of the Indonesian manufacturers, in order to increase the overall effectiveness of their value added activities. Functional upgrading tends to take place within the domestic and regional value chains rather than within global value chains. In the domestic and regional value chains, the Indonesian garment and consumer electronics manufacturers are able to engage in more symmetrical relationships (i.e. modular or market structure) with buyers, and thereby to exploit not only process operative and innovative capabilities, but also product innovative capability to undertake design, product development, branding and marketing functions.

This chapter is organised as follows: section 9.1 compares and examines various patterns emerging between the garment and consumer electronics firms in Indonesia in term of the nature of capability (9.1.1) and the governance of value chains (9.1.2). Section 9.2 assesses patterns of capability acquisition and learning process between the two sectors. Section 9.3 examines the upgrading processes between the Indonesian garment and consumer electronics firms, and offers explanations in respect of the capability of the Indonesian manufacturers and the governance of value chains in which the Indonesian manufacturers are inserted. The last section (9.4) draws conclusions in addressing the research question of this study.

9.1 Garment and consumer electronics firms: Comparative patterns and analysis

9.1.1 Nature of technological capability and learning processes

To compare the nature of capability in terms of width and depth between the Indonesian garment and consumer electronics firms, the typology distinguishes between process operative, process innovative and product innovative capabilities.

Table 9.1 Comparative patterns of capability between the garment and consumer electronics firms in Indonesia

	Garment ¹⁾	Consumer electronics ²⁾
<i>Process operative capability</i>		
1. production line	Conveyor belt system	Flexible production system
<i>Process innovative capability</i>		
1. ERP	18%	47%
2. ISO 9000	18%	93%
<i>Product innovative capability</i>		
1. CAD	73%	93%
2. R&D function	0%	67%
3. After sales service	0%	100%

1) based on 22 firms, 2) based on 15 firms

Source: Author's own survey 2008 and in-depth interviews

9.1.1a) process operative capability

Through possession of process operative capability, the garment and consumer electronics manufacturers in Indonesia are able to operate and control production equipment to make goods using given input combinations (e.g. labour, fabrics and electronic components) to achieve a given level of efficiency and quality. Production systems within the Indonesian garment manufacturers differ from those of the electronics manufacturers. The Indonesian garment firms are most likely to apply the conveyor belt production system, while the consumer electronics firms tend to adopt the flexible production system. Within the conveyor belt system, the assembly line is set up in accordance with working processes in which operators carry out a single working task. The number of operators within the production line is related to the number of working processes required to produce garments. In addition, production

line balancing is achieved by changing the number of line operators. For instance, the production line of *Busana Garmenindo* consisted of 30 operators who were able to produce garments which required at maximum 30 working processes. Each operator had the specific skill to carry out a single working process (e.g. collar attach and sleeve attach). However, since the collar attach process was more time-consuming than other working processes, the manufacturer assigned 2 operators to carry out this process, to balance the work flow of the line. Furthermore, fabrics and accessories to be sewn were transported past stationary operators within sequential stages. The consumer electronics sector, however, tends to apply flexible assembly lines by regularly redefining working tasks and redeploying operators. The Japanese consumer electronics affiliates in Indonesia are most likely to adopt the flexible production system, which is recognised as the cell production system: in which a small group of production operators assemble a product from start to finish by multitasking. Consequently, the number of operators within the assembly line can be reduced and line balancing is carried out by changing the number of tasks rather than the number of line operators. In addition, within the cell production system, mobile operators move toward electronic parts or components to be assembled. For instance, *Pusaka Elektrindo* assigned just 10 operators to assemble televisions, with each operator managing at least 2 tasks. Imbalance in the production line was fixed by assigning additional tasks to operators.

The distinctions between the production systems between the garment and consumer electronics firms were due to the different nature of their products; the consumer electronics manufacturers, as illustrated by *Pusaka Elektrindo*, tended to produce more product categories than the garment manufacturers such as *Jaya Garmenindo*. *Pusaka Elektrindo* classified its electronic products into 7 distinct groups (i.e. televisions, audio products, electric fans, water pump, refrigerators, air conditioners and laundry systems), while *Jaya Garmenindo* categorised its garments into 3 different groups (i.e. formal, casual, jeans/denim). Thus the consumer electronics firms require a more flexible production system than the garment firms, in order to allow for the greater product variation. Meanwhile, the garment firms still apply the conveyor belt system of the Fordist era to achieve mass production.

The garment and consumer electronics manufacturers in Indonesia share a relatively similar learning process in capability acquisition. They obtain technical knowledge of production operations from equipment and input suppliers. By purchasing equipment and input, the garment and consumer electronics manufacturers obtain the best operation practices and technical support from the suppliers. For instance, suppliers of industrial sewing machine needles, such as *Groz-Beckert*, or interlining suppliers, including *Freudenberg Vilene*, provided a technical information service to the Indonesian garment manufacturers in their efforts to improve levels of product quality. Similarly, the consumer electronics manufacturers obtain an application note from their component suppliers giving details on using the component in a specific application or relating to a particular process. In addition, the Indonesian garment and consumer electronics that take supplier roles for global buyers and lead firms benefit from the transfer of production knowledge. Global buyers and lead firms normally send their quality controllers to the Indonesian garment and consumer electronics manufacturers to monitor quality during the production process and to perform the final quality inspection. Joint ventures within the Indonesian consumer electronics sector also transmit production capability through more formal methods, such as employee training, which is a legal obligation. As has already acknowledged by the TC literature (Bell & Albu, 1999), these capability acquisition and learning processes of Indonesian garment and consumer electronic manufacturers reveal that process operative capability can be acquired passively as a by-product of their relationships with equipment and input suppliers, global buyers or lead firms.

9.1.1b) Process innovative capability

Process innovative capability enables the Indonesian garment and consumer electronics manufacturers to improve their production efficiency and product quality. The survey of this study, as shown in Table 9.1, demonstrates that, to this end, the consumer electronics firms are more likely to implement production management and system than the garment firms. For instance most of the consumer electronics firms implement enterprise resources planning (ERP) system in order to access an integrated database system to effectively manage the whole functions. A similar pattern also applies for quality management systems, with the consumer electronics firms are more likely to acquire ISO certification than the garment firms.

In addition, experiences of the Indonesian garment manufacturers in their attempts to improve production efficiency indicate a different pattern from that of the consumer electronics manufacturers. For instance, garment manufacturers such as *Tunggal Garmenindo* invested in automated machineries in order to reduce the number of labour operators involved in production activities. Furthermore, *Tunggal Garmenindo* relocated its production of low valued garments from West Java to Central Java in order to reap the benefits of the lower minimum wages in Central Java. Meanwhile, another garment case, *Jaya Garmenindo*, applied flexible human resources management in its attempts to improve labour productivity, augmenting fulltime production operators with contract workers or outsourced production workers. In contrast, the consumer electronics manufacturer, *Pusaka Elektrindo*, focused its attempts on improving labour productivity through increasing skills of operators and improving productivity of its workspace as well. Thus, *Pusaka Elektrindo* applied the PDCA (Plan-Do-Check-Action) cycle to improve productivity.

Hence, the Indonesian garment firms rely more on labour based improvement through labour cost reductions, while the consumer electronics firms emphasises process improvement by reconfiguring internal and external relationships. Moreover, the consumer electronics firms also reconfigure its workspace to provide flexible accommodation for its multi-skilled and specialised labour force. The different modes of achieving production efficiency between the Indonesian garment and consumer electronics firms indicate that labour productivity of the garment firms is much lower than in the consumer electronics firms, with the garment firms still relying on lowering labour costs to increase competitiveness.

It is clear that the consumer electronics firms acquire process innovative capability by interacting intensively with technology and systems consultancies. The consumer electronics manufacturers invest consciously in information and communication technologies (ICT), and recruit workers with specific skills to maintain and improve their expertise in ICT. Within the garment sector, knowledge of process innovation mostly comes from the manufacturers' own experiences, assisted by equipment suppliers. Global buyers may encourage the Indonesian garment manufacturers (e.g. the case of *Tunggal Garmenindo*) to improve production efficiency and labour

productivity by diffusing knowledge of production management (e.g. lean manufacturing system).

9.1.1c) Product innovative capability: Design and product development

Evidence from the case studies shows some garment and consumer electronics manufacturers engage in design and product development activities by hiring designers and establishing R&D. The consumer electronics manufacturers generate original products by creating new designs and by also improving product functionality and technologies. The experience of *Harapan Elektrindo* in introducing portable MP3 players clearly illustrates product innovation processes within the Indonesian consumer electronics sector. Initially, *Harapan Elektrindo* purchased product samples, mainly from abroad, and evaluated both advantages and disadvantages of each sample. By undertaking reverse engineering, *Harapan Elektrindo* was able to design and develop original portable MP3 players which combined advantages from the product samples. Therefore the manufacturers could generate both an original design (e.g. exterior, colour and size) and related product functionality and technologies. In contrast, R&D is non-existent in the garment sector. Indonesian garment manufacturers are users of R&D output of the textile industry, relying on their design functions in the generation of original garments. The experience of *Lestari Garmenindo* illustrates how the garment manufacturers may generate new garments. *Lestari Garmenindo* modified designs from garment samples or fashion design books which were purchased from abroad. Subsequently the manufacturer could create original designs with the help of computer-aided design (CAD) software.

Evidence of the generation and development of original product designs suggests that product innovation within the garment sector can be achieved mostly by exploiting design capability. Meanwhile, product innovation in the consumer electronics sector relates not only to design capability, but also to product engineering capability in creating original product functionality and technology. This derives from the fact that the Indonesian consumer electronic manufacturers are able to apply patents for their original technologies. Again, the experience of *Harapan Elektrindo* of applying several patents shows how the consumer electronics manufacturers are able to embed original functionality and technology in their electronic products.

Design capability is acquired by the garment and consumer electronics manufacturers by putting in their own efforts. Design is tacit in nature and diffusion among firms is difficult. This is clearly illustrated by the experience of *Harapan Elektrindo* which sends its designers abroad, not to learn design capability *per se*, but to get a sense of good design. Accumulation of design capability requires much time and effort. The Indonesian garment and consumer electronics sectors normally modify designs of product samples, mostly purchased from abroad, to adapt to the domestic conditions and market. For this reason, the Indonesian garment and consumer electronics manufacturers are proactive in attending international exhibitions and visiting retailers to search for new products and technology. They also invest in computer-aided design (CAD), either by installing CAD software or implementing CAD software and hardware. For instance, both *Lestari Garmenindo* and *Buana Elektrindo* utilised *AutoCAD 3D* software to assist their design activity while *Jaya Garmenindo* and *Pusaka Elektrindo* implemented *Gerber Technology Solution* and *CATIA V5* to support integration of their design, product development and manufacturing activities.

9.1.1d) Product innovative capability: Branding and marketing

Marketing involves brand creation and promotion, distribution, sales and market development; and the survey conducted by this study showed that marketing/distribution activities of consumer electronics firms tend to be separated from manufacturing activity and carried out by different firms. Furthermore, in addition to distribution networks, the consumer electronics manufacturers also provide after sales services. After sales service is almost as important as initial sales as it can provide competitive advantage for manufacturers. The existence of after sales services indicates that the consumer electronics manufacturers, by guaranteeing durability and maintenance, are creating original products not only to enhance aesthetics and appearance, but also functionality and usability. Branding and promotion are carried out to differentiate and develop market segments. The garments market in Indonesia can be differentiated into numerous segments, based on such factors as gender, age and fashion style. On the other hand, the Indonesian consumer electronics market is normally segmented according to income group. Consequently, the consumer electronics sector tends to develop and make use of fewer brand names than the garment sector to diversify its market, as illustrated by the experiences of

Harapan Elektrindo and *Jaya Garmenindo*. Marketing activity tends to be carried out by a few Indonesian garment and consumer electronics manufacturers which are able to market garments and electronic products under their own brand names in the domestic and export markets.

Marketing knowledge is accumulated largely through trial and error, and capability is embedded in the manufacturer's own experience. Marketing capability may be obtained through recruitment of an experienced marketer, and this is more common in the Indonesian electronics firms than in the garment firms. In addition, both the garment and consumer electronics manufacturers make a substantial investment in brand development, as shown by the activities of *Jaya Garmenindo* in promoting its own brand names through *below the line* advertising.

9.1.2 Concluding remarks: What are the differences and similarities in the nature of technological capability and learning processes between the Indonesian garment and consumer electronics firms?

Empirical evidence demonstrates the different degree of technological intensity between the garment and consumer electronics firms in Indonesia. This is particularly reflected within product innovative capability, with the consumer electronics firms not only creating designs *per se*, but also initiating new engineering activities as well as original functionality and technology of products. The different degree of technological intensity also affects the technological efforts made by the garment and the consumer electronics firms. The consumer electronics firms tend to put more investment into acquiring product innovative capability than the garment firms; for instance, in establishing R&D facilities. Although their differences are very apparent, in fact, the most important finding of this study relates to a similarity between the garment and consumer electronics firms in Indonesia. Evidence shows that different types of capability are possessed and exploited by the garment and consumer electronics manufacturers in carrying out the various activities. Furthermore, different forms of capability require distinct acquisition and learning processes on the part of the garment and consumer electronics manufacturers. By moving from process operative to process innovative and ultimately to product innovative capability, manufacturers within both sectors rely more on their own efforts to acquire

knowledge. This is due to the fact that product innovative capability involves tacit knowledge which it is not easily codified, taught and imitated: thus it is difficult to diffuse.

9.1.3 Value chains and governance structure

Table 9.2 Comparative patterns of garment and consumer electronics sample

	Garment		Consumer electronics	
No. of firms	Many firms		Very few firms	
FDI	1 out of 22 firms		7 out of 15 firms	
Domestic firms	4 OBM 2 OBM/ODM supplier 1 OBM/OEM supplier 4 ODM supplier 10 OEM supplier		4 OBM 4 OEM supplier	
Dominant value chain governance structure	Exports (71%): Captive (OEM supplier)	Domestic (29%): Market (OBM) Modular (ODM supplier)	Domestic (77%): Hierarchical (foreign affiliates) Market (OBM) Captive (OEM supplier)	Exports (23%): Hierarchical (foreign affiliates)

Source: Author's own survey 2008, reconstructed from interview results

The survey and interview results, as shown in Table 9.2, identify clear differences between the garment and consumer electronics firms in Indonesia. First, the garment manufacturing firms are far more numerous than consumer electronics firms. Data compiled from the Ministry of Industry of Indonesia and the Statistical Office of Indonesia showed that the number of medium- and large-sized garment manufacturers in 2007 was 901; while the number of consumer electronics firms in Indonesia, based on the list of members of the EMC, was 30. Thus the Indonesian consumer electronics firms were more concentrated than the garment firms. Second, foreign direct investment was more involved in the consumer electronics firms than the garment firms. Out of 15 consumer electronics manufacturers surveyed, 7 were foreign affiliates (i.e. joint ventures or subsidiaries), while 1 out of the 22 garment manufacturers surveyed was a subsidiary of a global firm. Thus the garment firms in

Indonesia were mostly domestic-owned, while the consumer electronics firms were comprised of foreign-owned and domestic-owned. Third, individual garment manufacturers in Indonesia tended to establish relationships with a number of global buyers at the same time while individual consumer electronics manufacturers normally had a tied relationship with a single global lead electronics firm. For instance, *Busana Garmenindo* supplied garments for 4 global branded marketers while *Berdikari Elektrindo* and *Cahaya Elektrindo* exclusively made consumer electronics for a single global lead electronics principal. Fourth, individual garment manufacturers were able to engage in the governance of domestic, regional and global buyers at the same time, while the consumer electronics manufacturer engaged in one particular form of governance. For instance, *Jaya Garmenindo* was involved in market-based governance structures with buyers from the domestic and the regional markets and simultaneously engaged in captive value chains led by global buyers, whilst *Berdikari Elektrindo* was inserted into the captive value chain of a global lead electronics firm. Fifth, the Indonesian garment firms were export-oriented, while the consumer electronics firms were domestic market-oriented. Sixth, global value chains were dominated by captive value chain governance structures (i.e. the garment firms) or hierarchical structure (i.e. the consumer electronics firms), while market-based and modular value chains were to be found in the domestic and regional sphere.

9.1.4 Concluding remarks: What are the differences and similarities of governance forms between the Indonesian garment and consumer electronics firms?

Empirical evidence demonstrates that there are different archetypal patterns of value chains between the Indonesian garment and consumer electronics firms. Manufacturers in the Indonesian garment sector are most likely to be inserted into captive value chains led by global buyers, while the consumer electronics firms tend to engaged in the hierarchical structures of global lead electronics firms. Within the domestic and regional value chains, however, the garment and consumer electronics firms are both most likely to be inserted into a market-based governance structure. Distinct features relating to the value chains indicate: first, the garment and consumer electronics manufacturers in Indonesia are able to establish more symmetrical relationships with buyers in the domestic and regional value chains rather than with those from global value chains. Second, export performance is related to the insertion

of the garment and consumer electronics manufacturers not only into global value chains but also into regional value chains.

9.2 Relation between capability and value chain governance

9.2.1 Nature of governance structure and technological capability

Subsection 9.1.4 has suggested that captive and hierarchical types are the archetypal forms of governance among the garment and consumer electronics manufacturers which engage in global value chains. However, within domestic and regional value chains the Indonesian garment and consumer electronics manufacturers are able to establish market-based governance structures. Within captive and hierarchical structures, the garment and consumer electronics manufacturers in Indonesia make and supply products for global buyers and lead firms. The manufacturers make garments or consumer electronics which meet specifications set by global buyers and lead firms, and thus are mostly involved in production activities. Meanwhile, global buyers and lead firms perform non-production activities, including design, product development, branding and marketing functions. In modular and market-based governance structures, on the other hand, the Indonesian garment and consumer electronics manufacturers undertake not only production activities but also design, product development and even branding and marketing activities. It is apparent that within modular and market-based governance structures, the Indonesian garment and consumer electronics manufacturers require not only process operative and innovative capabilities, but most crucially, they need product innovative capability. It follows that by possessing the full range of technological capabilities, the Indonesian manufacturers are able to gain insertion into modular and market-based governance structures. Even within the garment sector, the Indonesian manufacturers are able to insert into different forms of value chain governance simultaneously, by exploiting their particular type of capability.

9.2.2 Capability acquisition and learning process

By engaging in global value chains, Indonesian garment and consumer electronics manufacturers may increase their capability through accessing knowledge and learning from global buyers and lead firms. Theoretically, they should be able to

obtain full support from global value chain leaders in acquiring and developing capability. More specifically, with the support of global buyers and lead firms, the Indonesian garment and consumer electronics manufacturers can acquire capability to produce goods at a given level of efficiency and input combination (i.e. process operative capability), to improve product quality and production efficiency (i.e. process innovative capability) and to generate original design and develop their own product, brand name and market (i.e. product innovative capability).

Table 9.3 Actual learning processes within different types of capability

Technological capability	Garment	Electronics
Process operation	with the support of machinery and input suppliers and buyers' quality controllers	with the support of machinery and input suppliers and buyers' quality controllers
Process innovation	with the support of machinery suppliers	with the support of consultancy agencies
Product innovation	in-house design combined with support of textile manufacturers	in-house R&D combined with support of component manufacturers

Source: Author's own survey 2008, reconstructed from interview results

Experiences of the Indonesian garment and consumer electronics manufacturers in acquiring and accumulating the different types of capability are shown in Table 9.3. It demonstrates that global buyers and lead firms support the Indonesian garment and consumer electronics manufacturers in acquiring process operative capability, in order to produce goods that meet their requirements. Global buyers and lead firms send their quality controllers to monitor production processes of their Indonesian suppliers. By interacting with the quality controllers, the Indonesian garment manufacturers, such as *Busana Garmenindo*, and the Indonesian consumer electronics manufacturers, including *Berdikari Elektrindo* and *Cahaya Elektrindo*, learn the best practices of production operation. However, global buyers and lead firms are unlikely to support the Indonesian garment and consumer electronics suppliers in acquiring process innovative capability. The Indonesian garment and consumer electronics sectors are most likely to interact with firms and organisations other than global buyers and lead firms, including machinery and equipment suppliers and consultancy agencies.

Therefore, as suggested by the GVC framework, knowledge of process innovation is least likely to flow from the value chain leaders. Similar insights also apply for product innovative capability: in which the Indonesian garment and consumer electronics manufacturers have to rely more on their own efforts to actively seek knowledge beyond global value chains, to acquire design, product development and marketing capabilities. For instance, Indonesian garment manufacturers, such as *Jaya Garmenindo*, hired foreign designers to provide the knowledge and expertise it required to develop its in-house design function. In addition, *Jaya Garmenindo* interacted closely with domestic textile manufacturers to gain information on the latest fabrics, so that they could be applied to their garments. This fact was corroborated by statements of global buyers in Indonesia which affirmed that, as design was their core business, they did not share this capability with their Indonesian suppliers. They suggested that the Indonesian suppliers use their own efforts in acquiring design capability. Indeed, consumer electronics manufacturers, including *Harapan Elektrindo* and *Buana Elektrindo*, invested in in-house R&D by recruiting designers and engineers to design and develop their original products. They sent their R&D staff to attend international electronics exhibitions to access new products and technologies.

9.2.3 Concluding remarks: What light does a comparison of the Indonesian garment and electronics industries shed on capability acquisition within global value chains?

The comparative analysis between the Indonesian garment and consumer electronics firms demonstrates that global buyers and lead firms support the Indonesian garment and consumer electronics manufacturers in acquiring process operative capability. Global buyers and lead firms are highly dependent on the Indonesian garment and consumer electronics suppliers for production activities. They have obligations to improve process operative capability of the Indonesian garment suppliers to meet their specifications. Global buyers and lead firms are, in contrast, least likely to assist the Indonesian garment and consumer electronics suppliers in acquiring product innovative capability, and they therefore have to assimilate design, product development and marketing capabilities from other sources. This evidence questions the extent to which learning opportunities are available within the global value chains. The GVC analysis provides a clear explanation of acquisition of process operative

capability by Indonesian garment and consumer electronics manufacturers from global buyers and lead firms. However, the framework is not so effective for examining how process and product innovative capabilities are acquired by the Indonesian garment and consumer electronics firms. Global buyers and lead firms are reluctant to support the Indonesian manufacturers in acquiring design, product development and marketing capabilities because those are their core competencies and provide the highest rents. Furthermore, design, product development and marketing knowledge are more tacit in nature than production knowledge and require more efforts in terms of the learning process and investment. Consequently, those Indonesian garment and consumer electronics manufacturers inserted into value chains tend to access the 'production system' but not the 'knowledge system', which then hinders their generation of original production and products.

9.3 Upgrading implications

This section attempts to answer the overarching research question on the light that a comparison of Indonesian garment and electronics may shed on linkages between governance and technological capability in value chain upgrading. It starts with a comparison of upgrading patterns between the Indonesian garment and consumer electronics firms. Subsequently, the section relates the upgrading patterns to the forms of value chain governance and types of technological capability of the garment and consumer electronics manufacturers.

9.3.1 What are the similarities and differences in upgrading processes and dynamics between the Indonesian garment and consumer electronics firms?

Comparative analysis between the garment and consumer electronics firms in Indonesia demonstrates that the Indonesian garment and consumer electronics manufacturers mostly undertake process upgrading within global value chains by becoming OEM suppliers or foreign affiliates of global buyers and lead firms. In process upgrading, the Indonesian garment and consumer electronics suppliers and foreign affiliates focus on production activity through achieving higher production efficiency and product quality. While the Indonesian garment manufacturers improve production efficiency through the utilisation of automated equipment and lowering

labour costs, the consumer electronics manufacturers are likely to improve efficiency by increasing the skills of their workers.

Table 9.4 Comparative patterns of upgrading processes

	Garment		Consumer electronics	
	Exports	Domestic	Exports	Domestic
Dominant upgrading pattern	Process upgrading	Functional upgrading	Process upgrading	Process upgrading , Functional upgrading
Dominant value chain governance	Captive (OEM supplier)	Market (OBM), Modular (ODM supplier)	Hierarchical (foreign affiliates)	Hierarchical (foreign affiliates), Captive (OEM supplier) Market (OBM),
Type of technological capability utilisation	Process operation and innovation	Process operation and innovation, product innovation	Process operation and innovation	Process operation and innovation, product innovation

Source: Author's own survey 2008, reconstructed from interview results

Furthermore, the Indonesian garment and consumer electronics manufacturers tend to undertake functional upgrading within the domestic and regional value chains by becoming ODM suppliers or undertaking OBM. As ODM suppliers, the Indonesian garment and consumer electronics manufacturers upgrade by involving in design and product development activities to buyers, while the buyers concentrate on branding, marketing and retail activities. Meanwhile in OBM, the Indonesian manufacturers engage in most of the activities, including design, product development, production, branding and marketing activities. Buyers focus on retail business, without exercising direct control over the Indonesian manufacturers. To achieve OBM status, the Indonesian manufacturers produce their original designs and product development and market products under their own brand name.

It is a matter of fact that there are differences in ownership structure and market orientation between the garment and consumer electronics firms in Indonesia. The Indonesian garment firms are mostly domestic-owned that establish a variety forms of relationship with global buyers (i.e. market, modular and captive value chains) to engage in the export market. On the other hand, the consumer electronics firms are comprised of both foreign- and domestic-owned that are mostly oriented toward the domestic market. The differences in ownership structure and market orientation between the garment and consumer electronics sectors may affect the upgrading processes. However, although there is a sharp contrast between firms of the two sectors, the broad picture of upgrading processes shows similarities in that functional upgrading is achieved by both Indonesian garment and consumer electronics manufacturers which are not engaged in value chains led by global buyers or lead firms in the form of hierarchical structure or captive value chains.

Evidence clearly demonstrates that the upgrading trajectory of the garment and consumer electronics manufacturers in Indonesia does not take place within global value chains. Thus the ultimate functional upgrading is not accomplished within the global chains or within the relationships with global buyers and lead firms. Upgrading within global value chains stops at process upgrading, and is least likely to progress toward functional upgrading. In fact, the Indonesian garment and consumer electronics manufacturers do make shifts from being OEM suppliers to ODM and ultimately to OBM status over time, by stepping out of their roles as suppliers for global buyers and lead firms. The experience of *Buana Elektrindo* clearly illustrates this.

Some firms within the Indonesian garment sector even experience a downgrading trajectory in engaging in global value chains. Hence the Indonesian garment manufacturers give up their OBM status in the domestic and regional value chains, to become OEM suppliers for global buyers. For instance, *Jaya Garmenindo* had been involved in OBM since the 1970s, producing original designs and garments and marketing the garments under its own brand name in the domestic market. During the period 1980-1990, *Jaya Garmenindo* was successful in diversifying its market and buyers through selling garments in emerging export markets (e.g. the Middle East and

the Eastern Europe). Thus the manufacturer was able to transfer its experiences of functional upgrading within the domestic market to the emerging export market. In the 2000s, *Jaya Garmenindo* became engaged in value chains led by global buyers from advanced countries as an OEM supplier. In so doing, *Jaya Garmenindo* gave up design, product development and marketing expertise and provided merely production services to global buyers. However, *Jaya Garmenindo* maintained its OBM status by simultaneously serving the domestic and regional value chains, which were distinct from its global buyers in terms of organisation.

9.3.2 Concluding remarks: what light does a comparison of the Indonesian garment and consumer electronics sectors shed on linkages between governance and technological capability in value chain upgrading?

Linking upgrading to value chain governance and capabilities of the Indonesian garment and consumer electronics manufacturers, as shown in Table 9.4, seems to show that those firms that are engaged in global value chains mostly undertake process upgrading. The Indonesian manufacturers are included in captive value chains or hierarchical structures in which global buyers and lead firms have a high degree of control or direct ownership. Global buyers and lead firms support the Indonesian manufacturers in acquiring and improving capability merely in production activities. Global value chain leaders are not obliged to diffuse their design, product development, branding and marketing knowledge to the Indonesian suppliers, since the Indonesian manufacturers are employed to undertake production activities rather than design, product development, branding and marketing functions. Furthermore, global buyers and lead firms do not provide the opportunity for the Indonesian garment and consumer electronics manufacturers to utilise their product innovative capability (e.g. design and product development) within the chains. Hence, functional upgrading is restricted by the fact that global buyers and lead firms do not involve the Indonesian manufacturers in design, product development, branding and marketing functions. Consequently, those Indonesian garment and consumer electronics manufacturers dealing with global buyers and lead firms failed to move from being OEM to ODM suppliers let alone OBM status.

Functional upgrading mostly takes place within the domestic and regional value chains rather than within global value chains. In the domestic and regional value chains, the Indonesian garment and consumer electronics manufacturers are able to establish relatively symmetrical relationships (i.e. modular or market structure) with buyers. Domestic and regional buyers are less likely to control value chains directly, allowing the Indonesian manufacturers the freedom to organise their value chain activities; and they are able to conduct not only production activities but also design, product development and marketing functions. For this reason, the Indonesian garment and consumer electronics manufacturers have to acquire design, product development and marketing capabilities alongside production capability. Experiences of the Indonesian garment and consumer electronics manufacturers show that they have to rely on their own efforts to invest and learn the necessary capabilities. Stories of Indonesian OBM across the garment and consumer electronics sectors emphasise the importance of such efforts in acquiring design, product development and marketing capabilities. Moreover, these capabilities are accumulated by initially putting things into practice within the domestic market.

For instance, *Jaya Garmenindo* established a Marketing and Product Development division in order to gain knowledge of fashion trends and market competition which could be utilised in its product development and marketing strategies. Design was managed by the owner of *Jaya Garmenindo*, who possessed expertise in art and design. He and his team regularly travelled abroad to access new fashion trends and to gain new insights and ideas. *Jaya Garmenindo* also recruited an expatriate designer to acquire her design knowledge. Marketing strategies were undertaken by *Jaya Garmenindo* to develop its own brand name recognition through the channels of promotion, advertisement and distribution. *Jaya Garmenindo* had tried various promotion methods to introduce and maintain its own brand names. Some of the methods required substantial investment (e.g. TV commercial) while others were less expensive (e.g. billboards, event sponsorship). In the domestic market, *Jaya Garmenindo* distributed its garments through independent retailers and department stores. To support the distribution channel, *Jaya Garmenindo* established representative offices in big cities across Indonesia. After gaining product and brand recognition in the domestic market, *Jaya Garmenindo* diversified its market by selling

garments in export markets. *Jaya Garmenindo* focused on a niche market in the emerging middle income countries rather than advanced markets. To enter the export market, *Jaya Garmenindo* established relationships with importers to learn export-import procedures and subsequently approached retailers directly, and produced garments which were geared in size and style to the different physical characteristics and tastes of the export market.

Similar insights are provided by *Harapan Elektrindo* in its attempts to acquire design and marketing capabilities. *Harapan Elektrindo* established a Research and Development (R&D) division in order to design and develop original electronic products. The division had expanded from just one technical director to 300 designers and engineers. The R&D personnel were regularly sent to international exhibitions in Japan, Hong Kong, Taiwan, South Korea and China to obtain new information on electronic products and technologies. They purchased new electronic products from abroad and dismantled them to learn their technological advantages and disadvantages. By combining the best features of these electronic products, *Harapan Elektrindo* was able to design and develop original products which were adapted to Indonesian market conditions. In the Indonesian market, *Harapan Elektrindo* created two own brand names for different market segments (i.e. low income and middle income groups). Methods of promotion, including TV commercial, billboard, event sponsorship and exhibitions, were carried out by *Harapan Elektrindo* to maintain its product and brand recognition. For product distribution, *Harapan Elektrindo* established a sister company which had representative offices around Indonesia. The sister company was responsible not only for selling products but also providing after sales service. Having been successful in the domestic market, *Harapan Elektrindo* expanded to the emerging export markets of the neighbouring Asian countries and also the Middle East, and sent its people abroad to approach potential buyers, such as electronic superstores or importers, or took part in international electronics fairs. In addition, the manufacturer obtained foreign buyers from its website. *Harapan Elektrindo* was able to export both finished products and electronic kits alongside technical assistance.

The success of the 7 garment and 4 consumer electronics manufacturers in Indonesia (amongst those surveyed for this study) in achieving OBM status and in undertaking functional upgrading demonstrates that extensive value chain upgrading may be achieved through insertion into market-based governance structures, particularly within the domestic and regional value chains. This finding addresses the research question on the extent to which upgrading potential of Indonesian garment and electronics manufacturing firms is constrained or promoted through the nature of value chain governance of domestic and global actors. In order to undertake functional upgrading, the Indonesian garment and consumer electronics manufacturers acquire not only process operative and innovative capabilities in production activity but also product innovative capability in design, product development, branding and marketing functions. Consequently, extensive value chain upgrading can also be achieved through the possession and exploitation of product innovative capability. This addresses the question on the role of technological capabilities in value chain upgrading at a domestic and global levels.

The findings of this study suggest: *First*, the importance of the role of market-based governance structure and modular value chains in promoting functional upgrading. By following the dynamics of value chain governance (Gereffi, et al., 2005), suppliers should increase their level of capability, *ceteris paribus*, in order to move from captive to relational, and subsequently to modular and market-based governance structures. Case studies across the Indonesian garment and consumer electronics manufacturing firms demonstrate that the Indonesian manufacturers not only increase their level of capability but also upgrade their capability by simultaneously moving toward higher functions and deeper capability (i.e. product innovative capability). *Second*: the importance of the role of product innovative capability in supporting functional upgrading and achieving an upgrading trajectory. The case studies within the Indonesian garment and consumer electronics sectors demonstrate that the Indonesian garment and consumer electronics manufacturers may obtain process operative capability from global value chain leaders, but rely on their own efforts in acquiring product innovative capability. Knowledge flows within and beyond global value chains. *Third*: the importance of the roles of domestic and regional value chains in promoting functional upgrading. The GVC literature had acknowledged that while

insertion in global value chains may provide greater opportunity for manufacturers from developing countries to achieve process and product upgrading, it hinders functional upgrading. Within the Indonesian garment and consumer electronics sectors, manufacturing firms undertake functional upgrading in the domestic and regional value chains by learning and putting into practice product innovative capability in design, product development, branding and marketing activities. The findings on functional upgrading within the domestic value chains in this study and similar results from other studies across industrial sectors and countries (Bazan & Navas-Aleman, 2004; Tewari, 1999, 2008) suggest that the GVC framework should take account of the distinct role of the domestic value chains. This study identifies domestic value chains as a playing field to practice and gain mastery of product innovative capability in design, product development, branding and marketing activities as a stepping stone to transmitting the capability to regional value chains.

The important role of the domestic value chains in supporting extensive upgrading (i.e. functional upgrading) implies that the Indonesian garment and consumer electronics manufacturers which are pursuing functional upgrading should engage in domestic value chains rather than global value chains. The domestic value chains provide the greatest opportunity for the Indonesian manufacturer to exploit not only process capability but also product innovative capability. However, if they achieve OBM status in the domestic market, the Indonesian manufacturers may lose the opportunity to gain greater access to the global market and rapid growth. Furthermore design, product development and marketing activities require continuous learning processes and consistency and do not automatically result in increased income. Insights obtained from Indonesian garment and consumer electronics OBM show that insertion into design or marketing functions may provide not only additional income but also additional risks and uncertainties to the manufacturers. The narrative of *Lestari Garmenindo* illustrates how the garment manufacturer prefers to be an OEM supplier, since this involves only production risks, rather than the additional sales risk posed by OBM. Meanwhile, the failures of *Jaya Garmenindo* in developing some of its brand names also suggests that functional upgrading may incur cost without providing increased return. These reasons indicate why there are so few Indonesian garment and consumer electronics manufacturers undertaking functional upgrading and achieving

OBM status. The prospects for upgrading of the Indonesian manufacturing sector are highly dependent on the strategic intentions of the manufacturers: and whether they desire to acquire not only process capability but also product innovative capability and subsequently exploit the capabilities to design and develop original products and develop their own market. Otherwise, the manufacturers will have to remain satisfied with roles as suppliers to global buyers and lead firms which involve production activities alone.

9.4 Conclusion

Through comparative analysis of evidence gathered from the Indonesian garment and consumer electronics sectors, this chapter has attempted to address the question of what light a comparison of the Indonesian garment and electronics sectors sheds on linkages between governance and technological capability in value chain upgrading. This study argues that explanation of upgrading processes within the Indonesian garment and consumer electronics manufacturers cannot focus only on the role of governance in domestic and global value chains into which the Indonesian manufacturers are inserted. Examples given throughout this study show that acquisition of capabilities also has a significant effect on the upgrading of Indonesian garment and consumer electronics manufacturers. Different value added activities require different types of capability; for example, production activities are conducted through exploitation of process operative and innovative capabilities, while design, product development and marketing functions are performed through utilisation of product innovative capability. Process operative and innovative capabilities of the Indonesian garment and consumer electronics manufacturers may be acquired as a by-product of governance of global buyers and lead firms. However, product innovative capability is acquired through the active efforts of the Indonesian garment and consumer electronics manufacturers. Within the governance of global buyers and lead firms, some Indonesian garment and consumer electronics manufacturers are able to undertake process upgrading. The Indonesian manufacturers exploit process operative and innovative capabilities to improve production efficiency and product quality in order to meet the specifications of global buyers and lead firms. On the other hand,

some Indonesian garment and consumer electronics manufacturers undertake functional upgrading within the governance of buyers from domestic and regional value chains. The manufacturers utilise not only process capability but also product innovative capability to conduct design, product development, branding and marketing functions alongside production activities.

Global buyers and lead firms tend to keep product innovative capability and functional upgrading to themselves by discouraging the Indonesian garment and consumer electronics manufacturers from becoming involved in design and product development, let alone branding and marketing activities. Thus, technological capability and appropriate strategic intentions on the part of the Indonesian garment and consumer electronics manufacturers appear to be the main factors in explaining why some are successful in achieving functional upgrading. As a consequence, upgrading processes and paths take place not only within global value chains but also within the domestic and regional value chains. In fact, the domestic and regional value chains provide greater potential for the Indonesian garment and consumer electronics manufacturers to progress to higher value added functions (i.e. design, product development, branding and marketing activities).

Chapter 10

Conclusion

The primary objective of this study is to understand the nature of upgrading processes within the Indonesian manufacturing sector. Through the research process and the empirical analysis and findings explored within the previous chapters this study has attempted to address the overarching research question on what roles governance and technological capability play in upgrading processes within the Indonesian garment and electronics value chains.

The exploration conducted throughout this study demonstrates that upgrading of the Indonesian garment and consumer electronics manufacturing firms is multi-factored and never straightforward. Upgrading is not simply influenced by a single determining factor; instead there are multiple factors that operate at the same time. Among all the factors involved, this study highlights technological capability and governance of value chains.

Hence this final chapter aims to review both the research process and empirical results, and to put out some ideas for possible further study. Section 10.1 provides findings of this study and section 10.2 draws together empirical evidence and findings in answering the research questions. Section 10.3 addresses various implications of the findings. Section 10.4 explores contributions of this study to the existing body of knowledge. Section 10.5 assesses limitations of this study and suggests possible areas for future research.

10.1 Reviewing the study

This study was an attempt to understand the nature of upgrading processes which the Indonesian manufacturing sector undertakes in order to remain competitive both in the domestic and global value chains. An important argument behind this research is that value chain governance and firm level technological capability are both critical to

upgrading processes. This argument seems well supported by the study's empirical findings on upgrading processes in Indonesian manufacturing.

Since it emerged in the 1990s, the global value chain (GVC) framework has been widely used to understand the development of firms and industrial sectors in developing countries in the context of the globalisation of economic activities (for a range of sectoral, national and firm level studies, see www.globalvaluechains.org). In fact, upgrading has become a central theme of studies using the GVC framework. Although this study also examines upgrading research at the firm level in the context of the governance of value chains, it took a different route and used a different perspective than the earlier GVC literature. First, realising that roles of local firms have been little explored by the GVC literature, this study examines the capability of local firms by taking instances from Indonesia to provide a more comprehensive understanding on upgrading processes within developing countries. However, a critical finding of this study is that governance alone is insufficient to fully understand the opportunities and challenges of upgrading. More specifically, this study integrates the technological capability (TC) analysis and the GVC framework. Second, it uses two different industrial sectors as the subject of study to provide a comparative analysis.

10.2 Addressing the research questions

This study addressed the overarching research question of what roles value chain governance and firm-level technological capability play in upgrading processes within the Indonesian garment and electronics value chains. This overarching question was broken down into four subsidiary questions. To answer these research questions, this study drew on different frameworks and collected secondary and primary data from surveys, detailed firm case studies and key informant interviews. This helped to build a more comprehensive picture on upgrading processes in the garment and consumer electronics firms in Indonesia. The main research questions and the key findings are summarised as follows:

a) What role do governance and technological capability play in the analysis of upgrading processes within the national and global value chain literature?

To address this question, Chapter two reviewed a number of studies relevant to aspects of upgrading. This helped the author to grasp conceptual developments in respect to upgrading processes, and also identified different approaches within the literature that emphasised different drivers behind industry and firm level upgrading. Furthermore, this study integrated the TC and GVC frameworks in order to provide a more comprehensive approach to understanding upgrading processes and paths within the garment and electronics firms in Indonesia.

b) How are the Indonesian garment and electronics manufacturing firms inserted into value chains? To what extent is their upgrading potential constrained or promoted through the nature of value chain governance of domestic and global actors?

To understand the mechanisms for engagement of the Indonesian garment and consumer electronics manufacturing firms in domestic and global value chains as well as the extent of upgrading potential, this study drew on the insights provided by the GVC framework. Based on empirical evidence from the survey of the Indonesian garment and electronics sectors and the rich narratives across the firm cases within the two sectors, this study revealed recent patterns and dynamics of governance structure of the garment and consumer electronics manufacturers in Indonesia. Chapters four, five, six and seven explored these developments in an attempt to answer the second sub-question. Detailed discussion of governance of value chains of the garment and consumer electronics manufacturers is to be found in sections 6.2 and 7.2 respectively. The evidence showed different patterns of value chain governance between global, regional and domestic value chains. Thus the Indonesian garment and consumer electronics manufacturers which were engaged in global value chains were most likely to form captive and hierarchical governance structures. Meanwhile, modular and market-based governance structures were more common within the domestic and regional value chains. Furthermore, the extent of value chain upgrading of the garment and consumer electronics manufacturers was explored in sections 6.3 and section 7.3 respectively. The empirical evidence of the garment and consumer

electronics manufacturers in Indonesia showed that the extent of upgrading processes was related to the governance of the value chains in which the manufacturers were inserted. Thus process and product upgrading took place within captive value chains, while functional upgrading to a lesser extent took place within modular and hierarchical governance structures and to a greater extent occurred within market-based structures.

c) What role does technological capability play in value chain upgrading at a domestic and global level?

To address the nature of technological capability and capability acquisition processes within the garment and consumer electronics manufacturers in Indonesia, this study drew on the insights offered by the TC framework. Chapter eight, in addressing the third sub-question, assessed the nature of technological capability of the garment and consumer electronics manufacturers and their learning processes. Again, by utilising the survey and rich insights across firm cases of the Indonesian garment and consumer electronics sectors, the study discovered the different types of capability possessed and utilised at the firm-level and the distinct learning processes. The evidence demonstrated that the Indonesian garment manufacturers gained support from global buyers and lead firms in acquiring process operative capability. However, the garment manufacturers had no assistance from global buyers in developing product innovative capability (section 8.1). Similarly, the study also showed that Indonesian consumer electronics manufacturers acquired process operative capability from the global lead electronics firms while developing product innovative capability through their own learning (8.2).

d) What light does a comparison of the Indonesian garment and electronics shed on linkages between governance and technological capability in the analysis of value chain upgrading?

To address this final research question, the study conducted comparative analysis between firms in of two sectors. Chapter nine discussed the comparison between the garment and consumer electronics firms and dealt with the fourth sub-question and

the overarching question. Upgrading outcomes were found not only to be influenced by global buyers and lead firms (by means of GVC analysis), but also by endogenous efforts of the Indonesian garment and consumer electronics manufacturers (insights derived from the TC analysis). Upgrading of the Indonesian garment and consumer electronics manufacturers were complex processes, since they were affected not only by the governance of value chains, but also by the types of capability possessed and utilised by the Indonesian manufacturers. Basically, the distinct upgrading processes and trajectory required different types of capability and knowledge. It seemed that the Indonesian garment and consumer electronics manufacturers that engaged in the global value chains obtained support from global buyers and lead firms to acquire merely process operative and innovative capabilities, and were able to undertake process upgrading as a result. Through their own efforts and learning, the Indonesian manufacturers acquired product innovative capability which was channelled into functional upgrading. Within global value chains, product innovative capability and functional upgrading were most likely to be the preserve of global value chains leaders, and the Indonesian manufacturers were not given the opportunity to become involved in design, product development, branding and marketing functions. Consequently, within global value chains the Indonesian garment and consumer electronics manufacturers failed to achieve functional upgrading, which instead, mostly took place within the domestic and regional value chains. Within these chains, the Indonesian garment and consumer electronics manufacturers were able to exploit not only process operative and innovative capabilities but also product innovative capability. They established more symmetrical relationships (i.e. modular or market-based structure) with buyers from these chains. To conduct functional upgrading, manufacturers might switch their buyers and chains, and might also engage in more than one value chain (i.e. garment sector). The alternative was for manufacturers to fully abandon their roles as suppliers to global lead firms and become leaders in their own right (i.e. consumer electronics sector).

10.3 Implications of findings

Although Indonesia is experiencing slow industrial upgrading processes, the evidence at the firm level throughout this study put forward an optimistic view that upgrading

is actually an ongoing process, particularly within the Indonesian garment and consumer electronics sectors. This is a good sign considering that upgrading is necessary to enhance competitiveness of the Indonesian manufacturers. The cross-case analysis points to particular strategies which the Indonesian garment and consumer electronics manufacturing firms may need to consider in terms of moving forward. An important finding about upgrading is that it is not always achieved through insertion into global value chains but also occurs within the domestic and regional value chains. In fact, there is more potential for extensive upgrading within the domestic and regional value chains. Thus the domestic and regional value chains play a significant role in nurturing the potential for the Indonesian manufacturers to achieve functional upgrading. Furthermore, achievement of far-reaching upgrading is highly dependent on the nature of capability possessed by the Indonesian manufacturers. Capability acquisition involves purposive efforts of the Indonesian manufacturers in terms of investment and learning processes. Therefore the findings of this study confirm the influence of governance and technological capability on upgrading processes within the Indonesian garment and consumer electronics manufacturing firms.

10.3.1 on the role of local firms

Local firms are required to be active participants not only in acquiring technological capability but also in utilising the capability to engage in far-reaching upgrading processes and to follow an upgrading trajectory. Empirical evidence of the Indonesian garment and consumer electronics manufacturers demonstrates that the manufacturers invest purposively in equipments, systems and human resources to enhance production efficiency and product quality. Furthermore, the manufacturers actively search for designs and product development and subsequently adapt the product in order to generate original design and product development. External support and assistance may help the Indonesian manufacturers to speed up the learning process by providing access to best practice in terms of new knowledge and capability. In certain functions, particularly design, product development, branding and marketing, external support is at best minimal, and it follows that development of product innovative capability is highly dependent on the manufacturers' own efforts.

Local firms also play an important role in functional upgrading. Examples from the Indonesian garment and consumer electronics manufacturers illustrate that functional upgrading is highly dependent not only on the nature of capability but also on strategic intentions to exploit capability. Moving from process upgrading to functional upgrading exposes the Indonesian manufacturers to additional risks and uncertainties (i.e. production and market). They require capability to engage in design, product development, production, branding and marketing functions and the intention to take on and manage the associated risks. Some Indonesian manufacturers are content with process upgrading, since it involves lower risks and uncertainties than functional upgrading. These manufacturers may have the necessary capabilities to functionally upgrade, say into design; however, it may actually be their strategic intention not to do so. It may make a lot of economic sense for such firms to 'restrict' their functional upgrading.

10.3.2 on the knowledge flow

Knowledge flows within and beyond global value chains. Indonesian garment and consumer electronics manufacturers access knowledge from input and equipment suppliers, in addition to global buyers and lead firms, and also from internal research and development. Within global value chains, the Indonesian manufacturers learn by satisfying specifications and requirements imposed by the global lead firms. However, the absence of flow of design, product development, branding and marketing know-how restricts the potential for innovation of the Indonesian manufacturers. The Indonesian manufacturers acquire design, product development and marketing know-how by accessing internal sources and external sources other than global value chain leaders. Knowledge on adaptive change and innovation is necessary to survival in the domestic and regional value chains.

10.3.3 on value chain governance

Market-based governance structure appears to provide a greater opportunity for local firms to achieve far-reaching upgrading. However, since recent global trade is mostly organised through captive relationships between local suppliers and global buyers and lead firms, thus market-based governance structures are of little importance. The dynamic nature of value chain governance, as explained by the theory of value chains

governance (Gerrefi et. al., 2005), creates the possibility for local firms to move from captive value chains toward relational, modular or market-based governance forms. Improving capability of local firms, *ceteris paribus*, is expected to help this transition. The technological capability approach has shown that firms have to upgrade their capabilities by moving simultaneously toward higher functions and deeper capabilities. The problem lies in the fact that global value chain leaders will attempt to protect their core competencies from acquisition by local firms (e.g. design and marketing).

10.3.4 on the policy implications

Upgrading at the firm level will contribute overall to industrial and domestic development. Examples among the Indonesian manufacturers demonstrated that by becoming full-package suppliers (OEM) instead of just assembly operators (OEA), the manufacturers sourced their inputs and materials domestically rather than through imports. Subsequently, by moving toward becoming original design suppliers (ODM) or own brand manufacturers (OBM), they outsourced production activities to other domestic producers. Therefore, upgrading processes and dynamics have positive effects on backward linkages to domestic industry. Furthermore, the Indonesian manufacturers, by undertaking original design and product development, may create technological innovations which are considered as a factor to promote competitiveness and economic growth. Consequently, to fully exploit the potential of upgrading at the firm level to contribute to Indonesia's economic development, public policies should be created to support the Indonesian manufacturing firms to move toward functional upgrading.

An implication of the study is that public policy needs to be more focused on the ways to improve technological capabilities at the firm level. The evidence demonstrates that Indonesian garment and consumer electronics firms put their own efforts in developing capabilities by acquiring knowledge from foreign sources. Unlike many other countries in the region, knowledge infrastructure in Indonesia (e.g. universities, research institute) has not developed an extensive cooperation with manufacturing firms. By gaining information of the knowledge and technological capability required

by the manufacturing firms to upgrade, the knowledge infrastructure could help the firms in knowledge and capability acquisition process (e.g. transfer, adoption and use).

The study underlines that domestic market matters. Indonesia has a large and growing domestic market, with a significant, growing and demanding urban middle class. The firms should learn from and cater to a domestic market; where quality concerns are rising; that is an important stepping stone for firm level competitiveness. The government of Indonesia may support the firms in learning from domestic market by organising exhibitions as meeting points for domestic producers and consumers.

The study also emphasises the significance of regional and emerging export markets. These are markets where the penetration of global brands and global retailers is less pronounced, and where spaces may exist for Indonesian garment and consumer electronics firms to develop OBM and ODM niches. The government of Indonesia, through its national agency for export development (*Badan Pengembangan Ekspor Nasional*), should be more active in supporting Indonesian garment and consumer electronics manufacturing firms in accessing these markets; by looking for opportunities, providing market information and arranging business relationships with partners from regional and emerging export markets.

Finally, at the macro level, public policies should be aimed at improving the investment climate and at creating a more strategic and targeted industrial policy, if Indonesia is to retain its industrial competitiveness against other economies in the region.

10.4 Revisiting research on upgrading processes, value chains and technological capabilities

This research may be able to offer various contributions to the existing body of knowledge. These contributions have actually been discussed throughout the thesis, particularly in chapter nine, but for the sake of convenience they are briefly recalled and summarised below:

a) research on upgrading. This study provides further empirical exploration of the upgrading processes and dynamics at the firm level, in particular industrial sectors and geographical settings. By investigating upgrading processes within and between the garment and consumer electronics manufacturing firms in Indonesia, the study throws further light on the challenges and opportunities of upgrading. A particular contribution of this study lies in the way it combines theoretical frameworks in explaining upgrading processes, in order to investigate the combined roles of GVC governance and technological capability. Compared with the GVC framework's argument that upgrading processes are primarily determined by the certain governance structure of global value chains, the empirical results within the Indonesian garment and consumer electronics manufacturers led to a rather different assessment. It turns out that upgrading processes depends *not only* on governance of value chains but also upon local firms' own efforts to acquired advanced capabilities and their intention to exploit the capabilities. Furthermore, this research can be considered as an endeavour to enrich upgrading studies through its presentation of examples of upgrading within firms from developing countries.

b) studies of value chain governance. By exploring governance structures of the domestic, regional and global chains in which Indonesian manufacturing firms engage, this study enriches the theory of value chain governance in several ways. First, it suggests that market-based governance structure and modular value chains might provide greater opportunities for local firms to progress to higher skill content activities (i.e. functional upgrading). Second, that domestic and regional value chains can play a more significant role in nurturing local firms to exploit their product innovative capabilities and achieve all types of upgrading: process, product and functional. In addition, by serving the domestic and regional value chains, local firms leverage capabilities across value chains.

Functional upgrading is not common within the Indonesian manufacturers engaged in global value chains, for two reasons. First, functional upgrading involves tacit knowledge which is hard for the global value chain leaders to diffuse to the Indonesian manufacturers. Second, functional upgrading may conflict with the core competencies of global value chain leaders. By diffusing design, product development

and marketing capabilities, the Indonesian manufacturers may become competitors to the global value chain leaders. For these reasons, the global value chain leaders retain control of their design, product development and marketing knowledge and hinder the progress of local manufacturers toward the higher functions. Consequently, prospects for upgrading by local manufacturers within global value chains tend to be restricted.

A significant finding of this study is that domestic and regional value chains play a significant role in supporting conditions for the Indonesian manufacturers to learn and acquire their product innovative capability (i.e. design, product development and marketing) and to undertake functional upgrading. This supports findings from studies carried out by scholars in other countries and sectors (Tewari, 1999, 2008; Bazan and Navas-Aleman, 2004). The Indonesian manufacturers acquire their design, product development and marketing capabilities by trial and practice in the domestic market. Domestic buyers tend to show more confidence in the Indonesian manufacturers' innovative capabilities to design and develop products which meet the domestic customers' needs. As a result, domestic value chains tend to provide more extensive opportunities for local firms to upgrade than global value chains. Furthermore, design and marketing capabilities which are utilised in the domestic market can be exploited to penetrate regional value chains.

c) studies of technological capability. Capability acquisition and learning processes differ not only among firms and industrial sectors but also within different types of capability. Firms may acquire process operative and innovative capability from external sources including buyers, input and equipment suppliers as well as consultancy agencies. On the contrary, product innovative capability is acquired through firms' own efforts with a little support from other firms and organisations. Furthermore, through its integration of TC and GVC frameworks this study takes forward the nascent literature that sought to do this earlier (Morrison, et al., 2008; Zhang, 2009; Sato and Fujita, 2009).

10.5 Limitations of the study and agenda for further research

The study is exploratory in nature, aiming to provide insights into upgrading processes within the garment and electronics firms in Indonesia. For this reason, investigation of the issues relied to a large extent on the strengths of case study analysis. Even within the rich, in-depth insights that the case studies provided, there are notable information gaps. The study focuses on upgrading as result of acquisition of different types of capabilities to undertake value chain activities including design, product development, production and marketing. Given the sensitivities of respondents, there is little if any financial data. Without evidence on a firm's turnover and sales, or other aspects of financial data, it is hard to assess levels of capital and labour productivity. Therefore relationships between different upgrading outcomes and financial performance at the firm level are little explored. Upgrading may be a good outcome, but only if it leads to higher returns to investment. Future studies are still required to assess the link between upgrading and financial performance at the firm level.

A further limitation of case study analysis is that the method does not allow generalisation from a small number of case firms to the total population of firms in Indonesia. Future research could potentially combine both qualitative and quantitative methods in order to produce not only indicative generalisation but also statistical measurement and predictive generalisation to the population of the manufacturing sector as a whole.

The importance of the domestic market emphasised by this study may not apply for other developing countries. Evidence from similar upgrading outcomes within the domestic value chains in other countries, for instance in India (Tewari, 1999, 2008) and Brazil (Bazan and Navas-Aleman, 2004), lead to a consideration that the outcomes are subject to the size of the domestic market. Thus the results of this study may be particularly relevant for countries with a large domestic market. Further comparative research could help to throw light on how the size of the market influences the ability of local firms to invest in their capabilities and to upgrade, and

what implications then arise from this for producers located in relatively small economies.

Further research is also needed to investigate the roles of regional value chains in influencing further development of local manufacturers. Current GVC literature may still posit a traditional global structure, consisting of advanced countries hosting global buyers and lead firms, and the rest of the world hosting supplier manufacturers. The structure should take into account the distinct role regional value chains may play in supporting the process of functional upgrading of local firms and acting as a stepping stone toward global value chains.

In Indonesia, the relationships between knowledge infrastructure (e.g. universities and research institutions) and garment and consumer electronics manufacturers are very weak or even nonexistent. Their research output is not relevant to what the garment and consumer electronics manufacturers do and need. This situation drives the manufacturers to search and acquire knowledge and capabilities from other sources, particularly from overseas, by themselves with little support from national system of innovation. While some individual garment and consumer electronics manufacturers in Indonesia may show signs of product and functional upgrading, the Indonesian manufacturing sector as a whole continues to face an overriding challenge. Thus, despite the success stories of individual manufacturers reported in this study, the Indonesian garment and consumer electronics sectors remain relatively laggard compared to their regional competitors in terms of upgrading, raising value added and moving up the competitiveness ladder. What might account for this? Is it the national system of innovation, is it the nature of government policy, is it to do with GVC governance, is it to do with technological capabilities, or is it the result of a more complex interaction between all these factors? Further research will need to be conducted to explore the nature of this complex interaction.

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Appendix 1 Survey

A.1.1. Administration of survey

A.1.1.1. Invitation – in Indonesian language (original)



Jakarta, 2008

The University
of Manchester

Kepada Yth.

Bapak/Ibu

Re: Survei Proses Upgrading di Industri Garmen dan Elektronik di Indonesia

Dengan hormat,

Perkenankan saya terlebih dahulu memperkenalkan diri; nama saya Yohanes Kadarusman dan saat ini saya sedang menjalani program studi doktoral di University of Manchester, Inggris. Pada bulan Nopember 2007 s/d Januari 2008 saya akan mengadakan survei sebagai bagian dari penelitian untuk disertasi saya. Tujuan utama penelitian saya adalah untuk memahami dinamika dan daya saing sektor manufaktur Indonesia. Secara lebih khusus, saya ingin meneliti bagaimana proses upgrading di sektor garmen dan elektronik di Indonesia dipengaruhi secara simultan oleh upaya perusahaan dalam memperoleh dan mengembangkan kapabilitasnya, serta oleh rantai nilai global (global value chain) di mana perusahaan tersebut terlibat. Oleh karena itu, saya mohon kesediaan perusahaan yang Bapak/Ibu pimpin untuk ikut berpartisipasi dalam survei yang akan saya lakukan.

Topik penelitian yang saya ambil menjadi penting karena dua hal. Pertama, globalisasi telah membawa tantangan baru dalam persaingan dimana keberhasilan proses upgrading setiap perusahaan tergantung pada keterkaitan dengan rantai nilai global. Akan tetapi, keterkaitan dengan rantai nilai global tidak serta merta memperbaiki kapabilitas sebuah perusahaan untuk bersaing di pasar global. Oleh karena itu, di satu sisi, keterkaitan dengan perusahaan internasional dilihat memberi kesempatan untuk inovasi dan upgrading di sebagian besar negara berkembang, sementara itu di sisi lain keterlibatan dengan perusahaan internasional dapat mengakibatkan perusahaan terperangkap dalam aktivitas-aktivitas yang rendah nilai tambah. Kedua, kapabilitas yang dimiliki perusahaan juga memainkan peranan penting dalam mempengaruhi proses upgrading dan perbaikan daya saing internasional. Oleh karena itu, penelitian ini ditujukan untuk memahami proses upgrading yang terjadi di sektor garmen dan elektronik Indonesia dan mendalami faktor-faktor yang mempengaruhi proses tersebut. Jika tujuan penelitian ini tercapai maka akan memberikan kontribusi yang berarti bagi penelitian mengenai pembangunan industri manufaktur di Indonesia. Oleh karena itu, partisipasi perusahaan Bapak/Ibu dalam survei ini menjadi sangat penting.

Saya memperoleh informasi mengenai perusahaan Bapak/Ibu dari Survei ini sebenarnya ingin menjangkau sebanyak mungkin perusahaan garmen dan elektronik di Indonesia, namun karena keterbatasan sumber daya, survei ini hanya ditujukan kepada beberapa perusahaan yang telah saya pilih, termasuk perusahaan Bapak/Ibu. Oleh karena itu, saya sangat berterima kasih jika perusahaan Bapak/Ibu bersedia ikut berpartisipasi dalam survei ini. Untuk survei ini saya dan/atau asisten saya akan mengirimkan kuesioner yang berisi pertanyaan-pertanyaan yang berkaitan dengan topik penelitian saya. Setelah Bapak/Ibu mengisi dengan lengkap, mohon kuesioner dikirimkan kembali dengan menggunakan amplop berperangko yang kami lampirkan. Semua data dan informasi yang terkumpul dari survei ini bersifat rahasia dan hanya akan diolah serta dianalisis secara agregat. Pada akhir penelitian, saya akan mengirimkan laporan bagi setiap perusahaan yang terlibat dalam survei ini.

Terima kasih atas perhatian Bapak/Ibu, besar harapan saya bahwa perusahaan Bapak/Ibu bersedia berpartisipasi dalam survei ini. Jika Bapak/Ibu merasa perlu mendapat informasi yang lebih lengkap atau mengajukan pertanyaan, silakan menghubungi saya.

Saya sangat mengharapkan Bapak/Ibu dapat berpartisipasi dalam survei ini. Jika ada pertanyaan atau hal-hal lain yang perlu dijelaskan silakan menghubungi saya.

Hormat saya,
Yohanes Kadarusman
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Institute of Development Policy and Management
The University of Manchester, Arthur Lewis Building, 1st Floor
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A.1.1.2 Invitation – in English (translated)



Jakarta, 2008

The University
of Manchester

Mr/Mrs/Ms.

Re: Survey on Upgrading Processes in Garment and Electronics Industrial Sector in Indonesia

Dear Sir/Madam,

Let me introduce myself. I am Yohanes Kadarusman, who is currently undertaking a doctoral research in the University of Manchester, United Kingdom. I am conducting as a part of my dissertation. Herewith, I would like to ask the assistance of the firm that you are leading in order to participate in this survey. The primary objective of the research is to understand the dynamics and competitiveness of Indonesian manufacturers. Specifically, the research aim at investigating how upgrading processes in garment sector in Indonesia is simultaneously affected by firm's efforts in acquiring and developing capabilities and by the global value chain in which the firm is inserted. The information supplied in this survey is an instrument being used to generate key finding for this study.

The context of the research becomes important because of two things. First, recent globalisation brings about new competitive challenges in which the success of firm's upgrading processes depends on its linkage to global value chain. However, the insertion into global value chain will not automatically improve firm capabilities to compete in global market. Therefore, while on the one hand international linkage with global buyer have been seen as one factor fostering innovation and upgrading processes in most of developing countries, on the other hand the inclusion into global value chain will cause firm get stuck in low value activities. Second, firm's capabilities possession also plays important role in influencing upgrading processes and global competitiveness improvement. For this reason, this research aim at understanding ongoing upgrading processes in garment sector in Indonesia and investigate factors that affect these processes. If these aims are achieved, this might be probably the most meaningful contribution of the research to the development of manufactured sector in Indonesia. Here, lies the importance of your firm participation in this survey.

I got information on your firm from This survey actually would like to cover as many Indonesian firms as possible, but because of resource limitation, this may only be able to reach some of them. Therefore, I would be grateful if you can take participation in this survey. For conducting the survey, I will visit your firm to ask several questions concerning on my research topic to you or appointed key person. I will send the questionnaire prior to my visit, if it is needed. All data and information gathered in this survey will be treated confidentially and will only be processed and

analysed as aggregate. At the end of the research, I will send a report for firm which involves in this survey.

I do hope you will be participating in this survey. Please do not hesitate to contact me if you have things to be asked or clarified. Thank you and with all the best regards.

Yours sincerely,
Yohanes Kadarusman
Doctoral Student
Institute of Development Policy and Management
The University of Manchester, Arthur Lewis Building, 1st Floor
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A.1.1.3 Reminder – in Indonesian language (original)



Jakarta, 2008

The University
of Manchester

**Kepada Yth.
Bapak/Ibu Pimpinan**

Dengan hormat,

Surat ini merupakan tindak lanjut dari surat mengenai Survei Proses Upgrading di Industri Garmen dan Elektronik Indonesia yang pernah saya kirimkan sebelumnya. Karena belum ada tanggapan dari Bapak/Ibu, saya sekali lagi ingin menanyakan kesediaan perusahaan yang Bapak/Ibu pimpin untuk berpartisipasi dalam survey yang akan saya pada bulan Nopember s/d Desember 2007. Jika perusahaan Bapak/Ibu bersedia untuk ikut serta dalam survei ini, saya akan mengunjungi perusahaan Bapak/Ibu untuk menanyakan beberapa pertanyaan berkaitan dengan topik penelitian diatas. Saya hanya memohon Bapak/Ibu ataupun orang yang dipercayakan untuk menerima saya meluangkan waktu sekitar 1 – 2 jam untuk survei ini. Bersama surat ini pula saya lampirkan kembali surat saya yang terdahulu. Partisipasi perusahaan Bapak/Ibu dalam survey ini menjadi sangat penting.

Atas perhatian Bapak/Ibu saya mengucapkan terima kasih dan saya menunggu kabar dari Bapak/Ibu secepatnya. Bila perusahaan Bapak/Ibu tidak bersedia untuk terlibat dalam survey ini, mohon saya dikabari supaya saya tidak mengkontak Bapak/Ibu lagi.

Hormat saya
Yohanes Kadarusman
Doctoral Student
Institute of Development Policy and Management
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A.1.2 Survey template

There were two survey templates provided here: Printed and 2 MS-Word automated forms survey template

A.1.2.1 Survey template – in Indonesian language (original)



The University
of Manchester

No. :

Survei Proses Upgrading di Industri Elektronik/Garmen di Indonesia

PENTING:

1. Survei ini merupakan bagian dari penelitian disertasi doktoral yang sedang dijalankan di University of Manchester, Inggris. Tujuan utama dari penelitian ini adalah untuk memahami dinamika daya saing industri manufaktur Indonesia. Secara lebih khusus, penelitian ini bertujuan untuk menelaah bagaimana proses inovasi dan upgrading di sektor garmen dan elektronik Indonesia dipengaruhi secara simultan oleh berbagai usaha dari perusahaan untuk memperoleh dan mengembangkan kapabilitas, serta juga oleh rantai nilai global (*global value chain*) dimana perusahaan itu terlibat. Informasi yang diperoleh dari survei ini akan menjadi data utama yang akan digunakan untuk menghasilkan temuan-temuan utama dari penelitian ini.
2. Survei ini memuat sejumlah pertanyaan yang terbagi menjadi 5 (lima) bagian dan saya mohon agar anda menjawab seluruh pertanyaan, kecuali memang ada petunjuk lain.
3. Silahkan melengkapi formulir ini dan mengembalikan kepada saya melalui saudari **Rosa Delima, Fakultas Psikologi – Gedung C Lt. 4, Universitas Katolik Atmajaya, Jl. Jend. Sudirman 51, Jakarta 12930, INDONESIA**, dengan menggunakan amplop berprangko yang disertakan dalam formulir ini. Jika anda lebih menyukai mengisi survei ini dalam formulir MSWord, silahkan mengirimkan alamat email anda ke **Yohanes.Kadariusman@postgrad.manchester.ac.uk** atau **kadariusman69@yahoo.com**. Saya akan mengirimkan kepada anda formulir termaksud dalam bentuk lampiran.
4. Segala data dan informasi yang dikumpulkan dalam survei ini akan dijaga kerahasiannya dan hanya akan diproses serta dianalisa secara agregat.
5. Jawaban-jawaban yang anda berikan secara sukarela akan membantu saya untuk memahami topik penelitian ini.

16	Berapa pangsa ekspor perusahaan anda ke negara lain?			
	Uni Eropa: _____%	Amerika Serikat: _____%	Timur Tengah: _____%	Lainnya (<i>sebutkan</i>): _____%

II. KARAKTERISTIK HUBUNGAN PERUSAHAAN ANDA DENGAN PEMBELI

17	Berapa banyak pembeli yang anda miliki?				
	a. kurang 5	b. 6 – 10	c. 11 – 15	d. lebih dari 15	
18	Sebutkan TIGA (3) pembeli terbesar dan pangsa masing-masing pembeli terhadap penjualan total perusahaan anda				
	Nama pembeli		Pangsa		
	(1) _____		_____%		
	(2) _____		_____%		
	(3) _____		_____%		
19	Berapa lama perusahaan anda sudah berhubungan dengan pembeli terbesar/utama?				
	a. kurang dari 1 tahun	b. 2 – 4 tahun	c. 5 – 7 tahun	d. lebih dari 7 tahun	
20	Seberapa sering pembeli utama mengunjungi perusahaan anda setiap tahunnya?				
	a. tidak pernah	b. 1 – 3 kali	c. 4 – 6 kali	d. lebih dari 6 kali	
21	Mohon indikasikan siapa yang membuat keputusan berkaitan dengan: <i>Petunjuk: (1) ditentukan oleh pembeli/prinsipal, (2) ditentukan oleh pembeli/prinsipal sesudah konsultasi dengan perusahaan saudara (3) ditentukan oleh perusahaan saudara, tetapi tergantung pada persetujuan dari pembel/prinsipali, dan (4) ditentukan oleh perusahaan saudara secara independen</i>				
		1	2	3	4
	a. desain produk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b. spesifikasi produk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c. spesifikasi proses produksi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	d. pembelian bahan baku atau komponen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	e. penentuan harga produk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	f. kemasan produk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	g. logistik	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	h. bisnis ritel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22	Hal-hal apa saja yang anda pelajari dari pembeli (global)/prinsipal anda? (<i>boleh memilih lebih dari satu</i>)				
	a. Proses manufaktur				
	b. Desain produk				
	c. Pengembangan merek				
	d. Pemasaran				
	e. Lainnya (<i>jelaskan</i>): _____				

III. KAPABILITAS PERUSAHAAN

23	Selama 10 tahun terakhir (1997 – 2007), apakah perusahaan anda pernah (<i>boleh memilih lebih dari satu</i>)			
	a. Membeli mesin-mesin baru			
	b. Membangun lini produksi baru			
	c. Menerapkan sistem produksi baru			
	d. Memasang komponen ICT baru			
	e. Tidak melakukan apapun → ke pertanyaan No. 25			

24	Bagaimana sistem manufaktur dan peralatan baru tersebut dipasang? a. Dilakukan hampir sepenuhnya oleh perusahaan atau institusi lain → ke pertanyaan No. 24 b. Dilakukan hampir sepenuhnya oleh perusahaan anda atas kerjasama dengan perusahaan atau institusi lain → ke pertanyaan No. 24 c. Dilakukan hampir sepenuhnya oleh perusahaan atau kelompok perusahaan anda → ke pertanyaan No. 25			
25	Mohon berikan keterangan mengenai organisasi lain tersebut beserta lokasinya (<i>boleh memilih lebih dari satu</i>)			
		Lokal	Nasional	Internasional
	a. Suplier peralatan atau software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b. Pembeli/prinsipal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c. Konsultan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	d. Universitas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	e. Lain-lain (<i>sebutkan</i>): _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26	Berapa usia rata-rata mesin dan peralatan yang perusahaan anda operasikan? a. lebih dari 8 tahun b. 6 – 8 tahun c. 3 – 5 tahun d. kurang dari 3 tahun			
27	Bagaimana anda menilai kualitas mesin dan peralatan produksi yang saat ini dioperasikan? a. ketinggalan jaman b. tidak terlalu modern c. sangat modern d. kelas dunia			
28	Berapa tingkat utilisasi kapasitas produksi perusahaan anda pada tahun 2007? a. s/d 40% b. 41 – 60% c. 61 – 80% d. Lebih dari 80%			
29	Apakah perusahaan anda memiliki sertifikasi jaminan mutu (seperti ISO)?		a. Ya → (<i>sebutkan</i>): _____ b. Tidak	
30	Sistem, kendali mutu, persediaan dan perdagangan manakah yang perusahaan anda implementasikan (<i>boleh memilih lebih dari satu</i>)		a. Just in Time (JIT) stock b. Kaizen c. Total Quality Management (TQM) d. e-commerce e. lainnya (<i>sebutkan</i>): _____ f. tidak ada	
31	Berapa tingkat penolakan produk perusahaan anda oleh pembeli pada tahun 2007? a. lebih dari 15% b. 11 – 15% c. 5 – 10% d. kurang dari 5%			
32	Apakah perusahaan anda menetapkan jumlah pesanan minimum dari pembeli?			a. Ya b. Tidak
33	Berapa rata-rata lama waktu yang dibutuhkan perusahaan anda untuk memenuhi pesanan pembeli (sejak order sampai siap dikirim) untuk pesanan ekspor? a. lebih dari 30 hari b. 11 – 30 hari c. 5 – 10 hari d. kurang dari 5 hari			
34	Berapa rata-rata lama waktu yang dibutuhkan perusahaan anda untuk memenuhi pesanan pembeli (sejak order sampai siap dikirim) untuk pesanan domestik? a. lebih dari 30 hari b. 11 – 30 hari c. 5 – 10 hari d. kurang dari 5 hari			
35	Dari mana sumber desain produk anda? a. internal perusahaan b. kerja sama dengan pembeli c. pembeli d. lainnya (<i>jelaskan</i>): _____			
36	Apakah perusahaan anda menggunakan bantuan <i>Computer</i>			a. Ya

37	<p><i>Aided Design (CAD)?</i> b. Tidak</p> <p>Apa aktivitas staf pemasaran di perusahaan anda? (<i>boleh memilih lebih dari satu</i>)</p> <p>a. mencari pembeli b. memelihara hubungan dengan pembeli c. memantau persediaan produk di pembeli d. mengembangkan produk sesuai keinginan pembeli e. lainnya (<i>sebutkan</i>): _____</p>				
38	Apakah perusahaan anda memiliki:	a. Staf dengan tugas khusus R&D	b. Bagian R & D yang terpisah	c. Sentra R & D yang terpisah	d. Tidak satupun
39	<p>Apa aktivitas staf R&D di perusahaan anda? (<i>boleh memilih lebih dari satu</i>)</p> <p>a. memelihara mesin-mesin dan peralatan produksi b. mengawasi kualitas dan persediaan barang c. meng-adaptasi proses manufaktur dan produk baru d. menemukan proses manufaktur dan produk baru e. lainnya (<i>jelaskan</i>): _____</p>				
40	<p>Pernahkan perusahaan anda menemukan proses manufaktur atau produk yang terbilang baru</p> <p>a. perusahaan anda b. pasar lokal c. pasar nasional d. pasar internasional e. tidak pernah</p>				
41	<p>Dari mana sumber pengetahuan perusahaan anda untuk melakukan aktivitas inovasi dan upgrading?</p> <p>a. R&D internal b. pemasok input atau peralatan c. pembeli/prinsipal d. kompetitor e. lainnya (<i>sebutkan</i>): _____</p>				

IV. MENGENAI PROSES DAN SPESIFIKASI PRODUK

		Sangat rendah	Rendah	Tinggi	Sangat tinggi
42	<p>Bagaimana menurut penilaian anda</p> <p>a. tingkat kompleksitas produk yang dihasilkan perusahaan anda?</p> <p>b. tingkat kompleksitas proses produksi produk yang dihasilkan perusahaan anda?</p> <p>c. tingkat kustomisasi produk yang dihasilkan perusahaan anda agar sesuai persyaratan pembeli utama?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43	<p>Seberapa intensif:</p> <p>a. kegiatan perakitan (seperti: menyolder, merakit komponen) dalam proses manufaktur di perusahaan anda?</p> <p>b. kegiatan rekayasa teknik (seperti mengatur alur kerja, tata letak mesin dan peralatan, koordinasi) dalam proses manufaktur di perusahaan anda?</p>	Sangat rendah	Rendah	Tinggi	Sangat tinggi
44	<p>Apakah perusahaan anda telah melakukan investasi besar dan spesifik ditujukan khusus untuk memenuhi permintaan pembeli utama dalam 10 tahun terakhir (1997 – 2007), berupa:</p> <p>a. mesin dan peralatan</p> <p>b. sistem dan struktur organisasi</p>	Sangat tidak setuju	Tidak setuju	Setuju	Sangat setuju
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	c. adaptasi produk agar dapat menggunakan spesifikasi input atau komponen yang diinginkan pembeli	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	d. waktu dan usaha untuk mempelajari praktek bisnis pembeli	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	e. waktu dan usaha untuk membangun hubungan dengan pembeli	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45	Bagaimana menurut penilaian anda:	Sangat tidak setuju	Tidak setuju	Setuju	Sangat setuju
	a. jika perusahaan anda pindah ke pembeli lain, maka perusahaan akan mengalami kerugian berupa investasi yang sudah dikeluarkan untuk menjual kepada pembeli utama selama ini?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b. jika perusahaan anda berhenti berhubungan dengan pembeli utama saat ini, maka pengetahuan yang sudah anda miliki mengenai spesifikasi produk dan proses dari pembeli tersebut akan sia-sia ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46	Bagaimana menurut penilaian anda:	Sangat tidak setuju	Tidak setuju	Setuju	Sangat setuju
	a. sistem manufaktur anda dijalankan dan dikendalikan oleh program software jenis standar/baku ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b. sistem manufaktur anda dijalankan dan dikendalikan oleh program software yang dikembangkan khusus untuk perusahaan anda saja?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47	Bagaimana menurut penilaian anda:	Sangat mudah	Mudah	Sulit	Sangat sulit
	a. sebuah manual lengkap yang menggambarkan proses manufaktur di perusahaan anda dapat disusun ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b. proses manufaktur produk anda dapat dipelajari dari membaca manual lengkap ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c. proses manufaktur produk anda dapat dipelajari jika ada dukungan dari perusahaan atau institusi lain (seperti konsultan) ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

V. MENGENAI PROSES UPGRADING DI PERUSAHAAN ANDA

48	Aktivitas apa saja yang perusahaan anda berikan kepada pembeli utama (<i>boleh memilih lebih dari satu</i>):				
	a. perakitan komponen dan parts menjadi produk akhir				
	b. pengadaan bahan baku dan input (seperti tabung gambar, IC, PCB, mould)				
	c. kendali mutu dan pengujian produk akhir				
	d. mengemas produk untuk pembeli				
	e. mengirimkan produk kepada pembeli				
	f. membuat desain produk				
	g. melakukan distribusi produk ke outlet				
	h. layanan purna jual				
	i. lainnya (<i>jelaskan</i>): _____				
49	Seberapa penting hubungan perusahaan anda dengan pembeli utama menentukan:	Sangat tidak penting	Tidak penting	Penting	Sangat penting

	a. Penambahan variasi produk yang dihasilkan perusahaan anda	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b. Perbaikan kualitas produk yang dihasilkan perusahaan anda	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c. Perbaikan kapabilitas desain produk yang dihasilkan perusahaan anda	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	d. Pengembangan fleksibilitas manufakturing perusahaan anda	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	e. Peningkatan produktivitas karyawan perusahaan anda	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	f. Penurunan ongkos produksi per unit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	g. Akses ke pasar baru	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	h. Peningkatan pangsa pasar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
50	Siapakah kompetitor global terbesar untuk industri anda? a. China b. India c. Malaysia d. Thailand e. Lainnya (<i>sebutkan</i>): _____				
51	Seberapa penting sumber-sumber keunggulan kompetitor global perusahaan anda tersebut:	Sangat tidak penting	Tidak penting	Penting	Sangat penting
	a. harga murah	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b. variasi produk yang beragam	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c. kualitas tinggi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	d. waktu respons yang singkat (dari order sampai produk tiba di pembeli)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	e. fleksibilitas manufakturing yang tinggi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	f. lainnya (<i>sebutkan</i>): _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
52	Apa kendala utama yang menghambat perusahaan anda dalam meningkatkan daya saing di pasar global? (<i>pilih salah satu</i>) a. skala ekonomis b. strategi pembeli utama/prinsipal c. kebijakan pemerintah d. sumber pembiayaan e. lainnya (<i>sebutkan</i>): _____				

IDENTITAS CONTACT PERSON

Mohon tuliskan data-data dari orang yang harus saya hubungi bila saya membutuhkan penjelasan lebih jauh mengenai kuesioner yang anda isi:

Nama *contact person* : _____

Nomor telepon : _____

Nomor fax : _____

Alamat e-mai : _____

Terima kasih atas masukan berharga serta kerjasama anda

A.1.2. Survey template – in Indonesian language (original) and English (translated)

No	Bahasa Indonesia	English
	I. Karakteristik perusahaan anda	I. About your firm
1	Nama perusahaan	Name of firm?
2	Tahun pendirian	Year established?
3	Bagaimana struktur kepemilikan perusahaan anda?	What is the ownership structure of your firm?
4	Berapa jumlah karyawan perusahaan anda pada tahun 2007	What is your firm's total employment in 2007?
5	Bagaimana komposisi karyawan perusahaan anda pada tahun 2007	What is the composition of your employees in 2007
6	Sebutkan TIGA (3) produk utama yang dihasilkan perusahaan anda?	What are the THREE (3) main products of your firm?
7	Berapa kapasitas produksi total pada tahun 2007?	What is your total production capacity in 2007?
8	Apa karakteristik bisnis utama perusahaan anda?	What is the nature of your firm's main business activity?
9	Apakah perusahaan anda merupakan pemasok komponen langsung ke manufaktur/perakit akhir?	Is your firm a direct supplier of components and parts to final assemblers?
10	Berapa pertumbuhan penjualan perusahaan anda tahun 2006-2007?	What is your sales growth in period 2006-2007?
11	Berapa pangsa penjualan produk perusahaan saudara ditujukan ke pasar	What share of your firm's sales go to local, national and/or international market?
12	Apa merek produk perusahaan anda?	What is your product brand or label?
13	Jika perusahaan anda menjual ke pasar internasional, sudah berapa lama perusahaan anda mengeksport?	If your firm sell to international market, how long has your firm been exporting?
14	Bagaimana anda mendapatkan pembeli internasional saat pertama kali?	How did your firm access international buyers for the first time?
15	Bagaimana perusahaan anda memperoleh order untuk ekspor dan pangsa masing-masing metode	How does your firm sell its main export product and its share?
16	Berapa pangsa ekspor perusahaan anda ke negara lain?	What share of your firm's export goes to other countries?
	II. Karakteristik hubungan perusahaan anda dengan pembeli	II. About your firm relationships with buyers or global lead principals
17	Berapa banyak pembeli yang anda miliki?	How many buyers do you have?
18	Sebutkan TIGA (3) pembeli terbesar dan pangsa masing-masing pembeli terhadap penjualan total perusahaan anda	Who are your three (3) largest buyers and its share to your total sales:
19	Berapa lama perusahaan anda sudah berhubungan dengan pembeli terbesar/utama?	What is your length relationship with the largest buyers:
20	Seberapa sering pembeli utama mengunjungi perusahaan anda setiap tahunnya?	How frequent your firm meet with the largest buyer in a year?
21	Mohon indikasikan (1) ditentukan oleh pembeli/prinsipal, (2) ditentukan oleh pembeli/prinsipal sesudah konsultasi dengan perusahaan saudara (3) ditentukan oleh perusahaan saudara, tetapi tergantung pada persetujuan dari pembel/prinsipali, dan (4) ditentukan oleh perusahaan saudara secara independen, siapa yang membuat keputusan berkaitan dengan: a. desain produk, b. spesifikasi produk, c. spesifikasi proses	Please indicate: (1) decided by buyer, (2) decided by buyer after consultation with your firm, (3) decided by your firm but subject to approval by buyer, (4) decided independently by your firm; who makes the decisions regarding: a. product design, b. product specification, c. process specification, d. inputs or parts purchasing, e. price setting, f. product packaging g. logistic operation, h. retail business

	produksi, d. pembelian bahan baku dan komponen, e. Penentuan harga, f. Kemasan produk, g. Logistik, h. bisnis ritel	
22	Hal-hal apa saja yang anda pelajari dari pembeli (global)/prinsipal anda? (<i>boleh memilih lebih dari satu</i>)	What do you learn from (global) buyer?
	III. Kapabilitas perusahaan	III. About your firm's capability
23	Selama 10 tahun terakhir (1997 – 2007), apakah perusahaan anda pernah	Over the last 10 years (1997 – 2007), did your firm invest in new manufacturing equipments and system?
24	Bagaimana sistem manufaktur dan peralatan baru tersebut dipasang?	How were these new manufacturing equipments and systems installed?
25	Mohon berikan keterangan mengenai organisasi lain tersebut beserta lokasinya	Please indicate the type of organisation that assists your firm in installing the system and equipment and its location as well!
26	Berapa usia rata-rata mesin dan peralatan yang perusahaan anda operasikan?	What is your machineries and equipments average age?
27	Bagaimana anda menilai kualitas mesin dan peralatan produksi yang saat ini dioperasikan?	How would you rate the average quality of your firm's production machineries?
28	Berapa tingkat utilisasi kapasitas produksi perusahaan anda pada tahun 2007?	What is your firm's average capacity utilisation rate?
29	Apakah perusahaan anda memiliki sertifikasi jaminan mutu (seperti ISO)	Does your firm have quality assurance certification (e.g. ISO)?
30	Sistem, kendali mutu, persediaan dan perdagangan manakah yang perusahaan anda implementasikan	Which inventory and quality control, and maintenance systems does your firm use?
31	Berapa tingkat penolakan produk perusahaan anda oleh pembeli pada tahun 2007?	What is your firm's average rate of rejects by buyers in 2007?
32	Apakah perusahaan anda menetapkan jumlah pesanan minimum dari pembeli?	Does your firm apply minimum order from buyers?
33	Berapa rata-rata lama waktu yang dibutuhkan perusahaan anda untuk memenuhi pesanan pembeli (sejak order sampai siap dikirim) untuk pesanan ekspor?	What is your firm's average response time (from order to delivery) for export orders?
34	Berapa rata-rata lama waktu yang dibutuhkan perusahaan anda untuk memenuhi pesanan pembeli (sejak order sampai siap dikirim) untuk pesanan domestik?	What is your firm's average response time (from order to delivery) for domestic orders?
35	Dari mana sumber desain produk anda?	What are sources of your product design?
36	Apakah perusahaan anda menggunakan bantuan <i>ComputerAided Design (CAD)</i>	Does your firm adopt computer aided design (CAD)?
37	Apa aktivitas staf pemasaran di perusahaan anda?	What marketing activities in your firm?
38	Apakah perusahaan anda memiliki	Does your firm operationalise R& D activities?
39	Apa aktivitas staf R&D di perusahaan anda?	What is the nature of your R&D activities?
40	Pernahkan perusahaan anda menemukan proses manufaktur atau produk yang terbilang baru	Have your firm invented new manufacturing process or product that is new to:
41	Dari mana sumber pengetahuan perusahaan anda untuk melakukan aktivitas inovasi dan upgrading?	What sources of knowledge your firm use for innovative activities and upgrading?
	IV. Mengenai spesifikasi proses produksi dan produk	IV. About your process and product specification
	<i>Pertanyaan 42-43, silahkan pilih (1) sangat rendah, (2) rendah, (3) tinggi, (4) sangat tinggi</i>	<i>Questions 42-43, please cross your rank in which (1) very low, (2) low, (3) high, (4) very high</i>
42	Bagaimana menurut penilaian anda: a. tingkat	How do you rank: a. your product complexity,

	kompleksitas produk yang dihasilkan perusahaan anda, b. tingkat kompleksitas proses produksi produk yang dihasilkan perusahaan anda, c. tingkat kustomisasi produk yang dihasilkan perusahaan anda agar sesuai persyaratan pembeli utama	b. your manufacturing processes complexity, c. your product's level of customisation to the largest buyer
43	Seberapa intensif: a. kegiatan perakitan (seperti: menyolder, merakit komponen) dalam proses manufaktur di perusahaan anda, b. kegiatan rekayasa teknik (seperti mengatur alur kerja, tata letak mesin dan peralatan, koordinasi) dalam proses manufaktur di perusahaan anda?	How intensive: a. an <i>assembling activity</i> (e.g. soldering, component assembly) in your manufacturing processes, b. an <i>engineering activity</i> (e.g. work flow, scheduling, coordination) in your manufacturing processes
	Pertanyaan 44-46, silahkan pilih: (1) sangat tidak setuju, (2) tidak setuju, (3) setuju, (4) sangat setuju	<i>Questions 44-46, please cross your rank in which (1) strongly disagree, (2) disagree, (3) agree, (4) strongly agree</i>
44	Apakah perusahaan anda telah melakukan investasi besar dan spesifik ditujukan khusus untuk memenuhi permintaan pembeli utama dalam 10 tahun terakhir (1997 – 2007), berupa: a. mesin dan peralatan, b. sistem dan struktur organisasi, c. adaptasi produk agar dapat menggunakan spesifikasi input atau komponen yang diinginkan pembeli, d. waktu dan usaha untuk mempelajari praktek bisnis pembeli, e. waktu dan usaha untuk membangun hubungan dengan pembeli	Over the last 10 years (1997 – 2007), do you think your firm has made major investment specifically to deliver products to the largest buyer: a. in machineries and equipments, b. in system and organisational structure, c. on tailoring your product to using buyer's input or component specification, d. in time and effort to learn buyer's business practices, e. in time and effort to develop relationship with buyer
45	Bagaimana menurut penilaian anda: a. jika perusahaan anda pindah ke pembeli lain, maka perusahaan akan mengalami kerugian berupa investasi yang sudah dikeluarkan untuk menjual kepada pembeli utama selama ini, b. jika perusahaan anda berhenti berhubungan dengan pembeli utama saat ini, maka pengetahuan yang sudah anda miliki mengenai spesifikasi produk dan proses dari pembeli tersebut akan sia-sia?	What do you think: a. If your firm switches to another buyer, you will lose a lot of investments that have made to sell to the largest buyer, b. If your firm stops working with the largest buyer, you will waste a lot of knowledge regarding the buyer's product and process specification
	<i>Pertanyaan 46 silahkan pilih: (1) sangat tidak setuju, (2) tidak setuju, (3) setuju, (4) sangat setuju</i>	<i>Questions 46 please cross your rank in which (1) strongly disagree, (2) disagree, (3) agree, (4) strongly agree</i>
46	Bagaimana menurut penilaian anda: a. sistem manufaktur anda dijalankan dan dikendalikan oleh program software jenis standar/baku, b. sistem manufaktur anda dijalankan dan dikendalikan oleh program software yang dikembangkan khusus untuk perusahaan anda saja?	What do you think: a. your manufacturing system run and controlled by standard type software, b. your manufacturing system run and controlled by software developed exclusively for your own use
	<i>Pertanyaan 47, silahkan pilih (1) sangat mudah, (2) mudah, (3) sulit, (4) sangat sulit</i>	<i>Questions 47 please cross your rank in which (1) very easy, (2) easy, (3) difficult, (4) very difficult</i>
47	Bagaimana menurut penilaian anda: a. sebuah manual lengkap yang menggambarkan proses manufaktur di perusahaan anda dapat disusun, b. proses manufaktur produk anda dapat dipelajari dari membaca manual lengkap, c. proses manufaktur produk anda dapat dipelajari jika ada dukungan dari perusahaan atau institusi lain (seperti konsultan)	What do you think: a. your manufacturing processes can be written in a complete manual, b. you can easily learn how to manufacture your product by studying a complete manual, c. you can easily learn how to manufacture your product by supporting by other firms or institutions (such as consultancy agencies)

	V. Mengenai proses upgrading di perusahaan anda	V. About upgrading processes in your firm
48	Aktivitas apa saja yang perusahaan anda berikan kepada pembeli utama	Which activities do your firm supply to largest buyers
	<i>Pertanyaan 49 silahkan pilih: (1) sangat tidak penting, (2) tidak penting, (3) penting, (4) sangat penting</i>	<i>Question 49 please cross your rank in which (1) very unimportant, (2) unimportant, (3) important, (4) very important</i>
49	Seberapa penting hubungan perusahaan anda dengan pembeli utama menentukan: a. penambahan variasi produk yang dihasilkan perusahaan anda, b. perbaikan kualitas produk yang dihasilkan perusahaan anda, c. perbaikan kapabilitas desain produk yang dihasilkan perusahaan anda, d. pengembangan fleksibilitas manufaktur perusahaan anda, e. peningkatan produktivitas karyawan perusahaan anda, f. penurunan ongkos produksi per unit, g. Akses ke pasar baru, h. peningkatan pangsa pasar	How critical your relationship with the largest buyer in determining on: a. Increase range of product, b. Improve quality of product, c. Improve product design capability, d. improve manufacturing flexibility, e. improve productivity, f. cost reduction per unit, g. new market access, h. improve market share
50	Siapakah kompetitor global terbesar untuk industri anda	Which countries are the main global competitors in your industry
	<i>Pertanyaan 51 silahkan pilih: (1) sangat tidak penting, (2) tidak penting, (3) penting, (4) sangat penting</i>	<i>Question 51 please cross your rank in which (1) very unimportant, (2) unimportant, (3) important, (4) very important</i>
51	Seberapa penting sumber-sumber keunggulan kompetitor global perusahaan anda tersebut: a. harga murah, b. variasi produk yang beragam, c. kualitas tinggi, d. waktu respons yang singkat (dari order sampai produk tiba di pembeli), e. fleksibilitas manufaktur yang tinggi, g. lainnya (<i>sebutkan</i>):	How do you rank source of competitive of your main global competitors in: a. product design, b. product quality, c. product range, d. price, e. response rate, f. manufacturing processes, g. others (please specify)
52	Apa kendala utama yang menghambat perusahaan anda dalam meningkatkan daya saing di pasar global?	What is the main constraint in your effort to improve global competitiveness

Appendix 2

In-depth interview

A.2.1 Interview design

In-depth interview was focused on 'why' and 'how' type of research question that provides complementary with the survey's questionnaire. The questions were emphasised on processes and dynamics that were less likely to be captured in the survey:

A.2.2 Interview questionnaire

A. Introduction

1. Introduction and explanation of the objectives of the study
2. Interviewee details (name and function, time in current role)

B. Process and path of upgrading

Probing questions:

- Tell about your firm's history since the year of establishment (i.e. firm's nature of business, export activities, design activity, production, branding and marketing activities). How your firm undertakes these activities?
- What are challenges faced by your firm (i.e. internal factors, economic factors, other factors, government policy environment). How your firm deals with the challenges?
- How can China dominate in global market? How your firm competes with China in domestic and global market?
-

C. Firm's learning process in acquiring capability

Probing questions:

- Tell about your firm's capabilities from the year establishment (i.e. a milestone in production processes, product, marketing, human resources, R&D).

- How do you search, assess, install and develop your capabilities over time? (i.e. sources of information and knowledge, learning processes, specific investments)?
- How do you compare your capabilities with competitors? (i.e. national and global)?

D. Firm's insertion mechanism into value chains

Probing questions:

- Tell about your firm relationships with buyers or global lead principals (i.e. national, regional and global).
- How do your firm maintain the relationships?
- What are the buyers or global lead principals required for the relationships (e.g. low cost/price, quality standards, speed to response and delivery, standard requirement)? How the buyers or global lead principals monitor your firm?
- What are assistances provided by the buyers or global lead principals?
- What do you learn from the buyers or global lead principals?