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**Textile and Apparel Supply Chain
Corridor Diagnostics,
SWOT Analysis, and Remediation Action Plan
for
Light-Weight Woven Cotton Fabric (HS 5208)
Exported from Thailand to Vietnam**

SUBMITTED BY

ASEAN Competitiveness Enhancement
(ACE) Project

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1. INTRODUCTION

This ASEAN textile and garment supply chain corridor diagnostics is an activity of the first-year work plan of the ASEAN Competitiveness Enhancement (ACE) Project. The project identified two supply chain corridors (supply chains that cross at least one national border) to be the initial focal point for ACE project intervention. This report assesses the strengths, weaknesses, opportunities, and threats of trade in light-weight woven cotton fabric (HS 5208) between Thailand and Vietnam. The report also makes recommendations for enhancing this supply chain corridor's competitiveness.

A textile and garment supply chain involves a complex chain of processes such as fiber production, yarn spinning, weaving, knitting, dyeing, finishing, bleaching, washing, garment manufacturing, and marketing. The end products can be classified according to their application such as for clothing, home, sports, medical, automotive, industrial, or packaging. Each type of textile product has a typically complex supply chain, and every component of almost all of these supply chains exists within the ASEAN region.

Yet the scale of textiles trading among ASEAN countries is relatively small. A possible solution to increasing trade and integration among ASEAN countries is to focus on a small number of pilot or indicative supply chain corridors and take specific action to expand and enhance their competitiveness. The ACE Project has chosen HS 5208 (light-weight woven fabric weighted not over than 200 grams per square meter containing 85-100% cotton) exported from Thailand to Vietnam as a pilot for this strategy.

This report diagnoses the strengths, weaknesses, opportunities, and threats (SWOT) of the HS 5208 supply chain corridor between Thailand to Vietnam and proposes an action plan based on the SWOT analysis. The report is structured in four distinct sections as follows:

- The first section leads the report with this introduction and incorporates objectives, methodology, and industry background.
- The second section focuses on the Thai textile industry and contains industry background, an overview of Thai textile mills, a review of Thailand's trade in HS

5208, exports of HS 5208 from Thailand to Vietnam, major findings from interview surveys, and concludes with a SWOT analysis of Thai textile mills.

- The third section looks at Vietnam’s garment industry. This section includes industry background, an overview of Vietnam’s garment factories, major findings from the interview surveys, and a SWOT analysis of Vietnam’s garment factories.
- The last section of the report combines the Thailand and Vietnam data and provides a SWOT analysis of the Thailand-Vietnam supply chain corridor, followed by activity recommendations to address identified constraints in the corridor, and concludes with an action plan listing the recommendations.

1.1. OBJECTIVES

The objectives of the Thailand-Vietnam supply chain corridor diagnostics are to:

- Analyze the critical constraints to the competitiveness of Thai textile mills and Vietnamese garment factories such as type of manufacturing, destination markets, technical capability, and manufacturing performance.
- Identify the fabric-sourcing models used by Vietnamese garment factories and the critical factors affecting sourcing decisions.
- Analyze apparel buyers’ requirements and sourcing models.
- Identify key constraints to the competitiveness of the Thailand-Vietnam supply chain corridor.
- Recommend development interventions to address the constraints identified in the supply chain corridor and recommend an action plan.

1.2. METHODOLOGY

The ACE Project engaged a senior textile and apparel specialist to lead the diagnostics of the Thailand-Vietnam supply chain corridor. The specialist’s five principal tasks were as follows:-

1. Develop an interview form for textile mills that identify constraints on the textile side of the supply chain corridor covering manufacturing types, product types, supply chain models, functional fabric development capability, buyers’ requirements, compliance, capacity utilization, customer service performance, and human resource development.

At the same time, develop an interview form for garment factories to study similar constraints on the demand side of the supply chain corridor covering manufacturing types, fabric sourcing model, buyers' requirements, pre-production activities, and human resource development.

2. Lead a team to interview decision makers of at least ten factories located in Vietnam which manufacture garments from light weight woven cotton fabrics, using the garment factory interview form. At least four of these factories were to be companies that import fabric from Thailand. At least six were to be factories that import the fabrics from countries other than Thailand.

3. Lead a team to perform interviews of decision-makers of at least 10 Thai textile mills that export light weight woven cotton fabrics to Vietnam, using the textile mill interview form.

4. Analyze the information from the interview surveys and the customs and logistics studies and prepare a SWOT analysis report that includes findings, conclusions, and recommendations for enhancing the competitiveness of the supply chain.

5. Develop an Action Plan based on the SWOT analysis report to build on the strengths, address the weaknesses, pursue opportunities, and avoid the threats that have been identified.

1.3. INDUSTRY BACKGROUND

The Multi-Fiber Arrangement (MFA), which governed the world trade in textiles and garments from 1974 through 2004, was phased out on January 1, 2005. The quota restrictions on the amount of garments developing countries could export to developed countries were abolished. This resulted in a significant reduction in garment production in medium and high labor cost countries. Since the removal of quotas, production of garments in higher cost countries in the ASEAN region (Southeast Asia) has been relocating to lower cost countries. At the same time, exports of garments from low cost countries to medium and high cost countries throughout the world have been increasing dramatically.

This global shift in garment production has been a boon to the garment industry in many economically less developed countries in many regions of the world where labor costs are low. The ASEAN region has been no exception. Vietnam and Cambodia, in particular, are relying heavily on the textile and garment sector to help them weather the current global economic downturn.

International buyers the world over are consolidating their supply bases and are expected to identify and select textile mills and garment factories capable of becoming their preferred long-term suppliers in the post-quota era. Exporters/suppliers need to be able to offer as many of the following qualities as possible to be good candidates:

- Provide consistent quality
- Deliver reliably with shorter lead times
- Offer product development/innovation
- Demonstrate that they understand the markets' dynamics and driving forces
- Understand and share the buyers' problems
- Develop direct, trusted relationships with the buyers.

While price is always an important consideration, these other factors will increasingly have overriding importance to the buyers.

2. THAI TEXTILE INDUSTRY

2.1. INDUSTRY BACKGROUND

The modern textile and garment industry in Thailand began in 1936 when the Ministry of Defense started production of textiles for military applications using imported machinery. Private textile mills were subsequently established shortly after World War II as a result of textile shortages. The industry has evolved and developed to rank among the top export earning industries in the country in the last decade. It now plays a key role in the economy of Thailand.

According to Mr. Phongsak Assakul, former chairman of the National Federation of Thai Textile Industries and the Thai Textile Manufacturing Association, Thailand features a fully integrated textile industry consisting of 18 synthetic fiber factories, 150 spinners, and 1,300 weaving enterprises. There are also 400 dyeing, printing, and finishing firms and some 2,500 garment factories. These factories employ more than 1 million workers or 22.1 percent of the country's industrial labor force.

Mr. Phongsak noted that the industry has a significant impact on the Thai economy as a whole. The Thai textile industry earns US\$6 billion annually in foreign exchange and contributes 12.3 percent of Thailand's gross domestic products.

2.2. OVERVIEW OF THAI TEXTILE MILLS

In 2008, the Thai textile industry comprised over 600 textile mills. These factories rely more on the domestic market — only 40 percent of their fabric production was exported while approximately 60 percent was sold in the domestic market which had an annual market value of US\$5.7 billion (200 billion Thai baht).¹ Thailand exported over US\$7.2 billion worth of textiles in the same year.² Some of the more important export markets for Thai textile products include USA, EU, ASEAN, Japan, and China.

Thai fabrics are increasingly facing intense competition from China, especially after the elimination of the MFA. Thai textiles are known for their quality, although at relatively

¹ Source: http://www.thaitextile.org/th/information/infor02news.asp?whichpage=2&ttnews_id=10458.

² Source: http://www.fibre2fashion.com/news/textile-news/newsdetails.aspx?news_id=73159.

higher prices. However, Thailand lacks strong capacity in the production of functional fabrics as compared to China.

Nevertheless, an industrial impact study in late 2008 found that China's producers have started to focus on satisfying domestic demand, resulting in lower exports.³ This development is expected to help create better opportunities for textile products from other countries, including Thailand, to fill the gaps left by China. Neighboring ASEAN markets may find Thailand an attractive source of textiles to replace a depleting supply from China, not least for reasons of proximity, shorter delivery times, and quality.

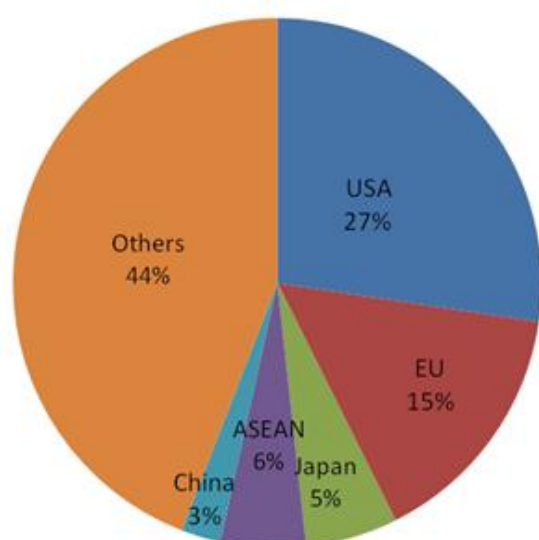
Export Markets for Thai Fabrics

The United States has consistently been the largest export market for Thai textile products. From 2005 – 2007, the U.S. accounted for 27 percent on average of total Thai fabric exports. Thailand's second largest export market, the E.U., accounted for 15 percent. The ASEAN region represented the third largest market but only accounted for 6 percent of total Thai textile exports during the period. Other major markets for Thai fabrics include Japan (5%) and China (3%). (Figure 1)

While the U.S. has been the largest export market for Thai textiles, Thai exports to the U.S. steadily declined in value from US\$2.11 billion in 2005 to US\$1.93 billion in 2008. On the other hand, Thai fabrics enjoyed positive growth in export value to the EU and ASEAN markets over the same period. In fact, ASEAN represents the most promising new market for Thai textiles. Thai textile exports to other ASEAN countries expanded from US\$770.1 million in 2005 to US\$1,024 million in 2008. (Table 1)

³ Source: www.depthai.go.th/DEP/DOC/51/51016151.doc.

Figure 1: Thailand's Fabric Exports by Markets (Average for 2005-2007)



Source: Calculated from Textile Information Center, Thailand Textile Institute

Table 1: Thai Fabric Exports Classified by Major Markets, 2005-2008

Market	2005		2006		2007		2008	
	Million US\$	Change %	Million US\$	Change %	Million US\$	Change %	Million US\$	Growth %
USA	2,111.1	1.48	2,083.5	-1.31	2,026.8	-2.72	1,932.0	-4.68
EU (15)	1,210.4	1.35	1,316.8	8.80	1,327.1	0.78	1,368.4	3.11
ASEAN	770.1	17.23	803.2	4.29	924.8	15.14	1,024.0	10.73
Japan	412.1	-4.09	395.4	-4.04	381.3	-3.57	470.4	23.37
China	282.5	6.16	249.7	-11.61	264.4	5.88	253.5	-4.14
Others	190.73	7.82	1,986.0	4.13	2,107.1	6.10	2,151.3	2.10
World	6,693.5	4.68	6,834.6	2.11	7,031.5	2.88	7,199.5	2.39

Source: Information and Communication Technology Center with Cooperation of the Customs Department

Thai Fabric Exports to ASEAN Countries

Vietnam, Laos, Singapore, Cambodia, and Indonesia have been at the top of the list of neighboring ASEAN markets since 2005 (Table 2). Since 2007, Vietnam has overtaken Laos and Cambodia to become the largest export market in the region for Thai fabrics, with consistently positive growth each year. The value of Thai fabric exports to Vietnam reached US\$82.17 million in 2008. (Table 2)

Table 2: Thai Fabric Export Classified by ASEAN, 2005-2008

Market	2005		2006		2007		2008	
	Million US\$	Change %	Million US\$	Change %	Million US\$	Change %	Million US\$	Growth %
Vietnam	40.2	30.94	53.3	32.66	67.3	26.18	82..17	22.19
Laos	57.5	30.68	55.0	-4.37	55.94	1.73	69.34	23.95
Singapore	24.2	-19.87	34.3	41.90	53.3	54.69	47.12	-11.21
Cambodia	37.2	10.06	55.8	50.00	37.2	-33.33	47.32	27.20
Indonesia	33.2	12.16	38.4	15.72	35.8	-6.79	46.69	30.67
Myanmar	27.2	24.89	28.4	3.04	31.8	11.85	39.91	26.30
Malaysia	25.3	34.57	27.4	8.14	24.3	-11.29	24.22	-8.26
Philippines	28.1	18.57	22.2	-21.03	20.8	-6.40	19.92	-3.72
Brunei	0.3	-25.0	0.4	46.67	0.4	-15.91	0.26	-29.73
Total	273.6	15.77	315.3	16.75	326.6	3.41	53.1	14.99

Source: Information and Communication Technology Center with Cooperation of the Customs Department

2.3. REVIEW OF THAILAND'S TRADE IN HS 5208

The harmonized system code HS 5208 refers to light-weight woven cotton fabrics which contain 85% - 100% cotton and weigh not more than 200 grams per square meter. These fabrics are used mostly for garment tops and home textile products including men's shirts, women's shirts, bed sheets, and pillow cases. In this supply chain diagnostics, we focus on the trade flows in light-weight woven cotton fabrics between Thailand and Vietnam as an indicative supply chain corridor. Within ASEAN, Thailand is the largest supplier of the HS 5208 textiles and the two largest ASEAN markets for it are Vietnam and Cambodia (Table 3). Thailand exported, on average, US\$6.22 million and US\$11.15 million⁴ worth of the fabrics to Vietnam and Cambodia respectively during 2003 – 2007. (Table 3)

⁴ Data from UN Comtrade database.

Table 3: Major Textile Supply Chain Corridors in ASEAN (Average for 2003-2007)

Fabric	World (Mil. USD)	ASEAN Share	Source Country for Intra-ASEAN Trade
HS 6001: Pile knitted & crocheted pile fabric Malaysia → Cambodia	69.85	56.23%	86.55% Malaysia
HS 5208 : Light weight woven cotton fabric Thailand → Cambodia	91.66	13.57%	86.19% Thailand
HS 5208 : Light weight woven cotton fabric Thailand → Vietnam	167.63	5.39%	68.10 % Thailand
HS 5407: Woven fabrics of synthetic filament yarn Thailand → Vietnam	284.14	3.28%	86.37% Thailand
HS 5209: Heavier weight woven cotton (Denim) Indonesia → Cambodia	146.76	8.79%	55.06% Indonesia

Source: Calculated from UN Comtrade data

Table 4 below features trade figures during the period 2003 – 2007 for intra-ASEAN imports of HS 5208 fabrics compared to imports from China, ASEAN’s largest competitor, and other source countries. The percentage of light-weight woven cotton fabrics sourced by ASEAN countries from other ASEAN countries during the period is relatively small - consistently less than 8 percent - compared with the proportion they import from other countries. China, by comparison, enjoyed a healthy share of the ASEAN market during the period—consistently more than 40 percent. Figure 1 below paints this stark contrast clearly. The intra-ASEAN share has even declined over the years, from 7.6 percent in 2003 to only 5.04 percent in 2007. (Table 5)

Table 4: ASEAN Imports of HS 5208 in 2003 – 2007 in Value

Unit: Thousand USD

Import from	2003	2004	2005	2006	2007
Intra-ASEAN	16,385	23,965	24,701	23,665	16,344
China	109,842	131,199	156,964	228,326	180,021
Japan	24,204	23,827	26,490	28,488	24,454
Hong Kong	16,071	33,979	34,779	39,260	34,233
India	4,618	6,628	10,115	7,753	5,152
Pakistan	2,810	3,233	4,695	4,069	2,544
Rep. of Korea	8,480	23,869	36,253	44,413	7,078
Other Asian countries	15,252	44,286	53,493	43,033	28,722
USA	937	1,801	2,784	2,465	2,502
The rest of the world	16,959	17,304	18,443	23,935	23,264
Total	215,558	310,093	368,715	445,408	324,314

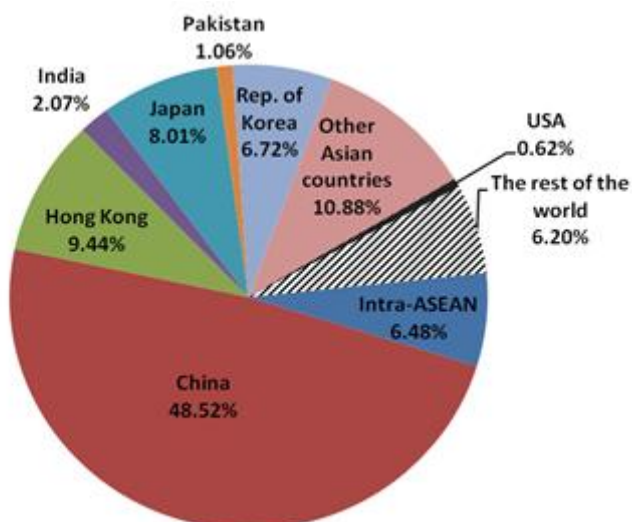
Source: UN Comtrade

Table 5: Percentage of ASEAN Imports of HS 5208 in 2003 – 2007

Import from	2003	2004	2005	2006	2007
Intra-ASEAN	7.60%	7.73%	6.70%	5.31%	5.04%
USA	0.43%	0.58%	0.76%	0.55%	0.77%
China	50.96%	42.31%	42.57%	51.26%	55.51%
Hong Kong	7.46%	10.96%	9.43%	8.81%	10.56%
India	2.14%	2.14%	2.74%	1.74%	1.59%
Japan	11.23%	7.68%	7.18%	6.40%	7.54%
Pakistan	1.30%	1.04%	1.27%	0.91%	0.78%
Rep. of Korea	3.93%	7.70%	9.83%	9.97%	2.18%
Other Asian countries	7.08%	14.28%	14.51%	9.66%	8.86%
The rest of the world	7.87%	5.58%	5.00%	5.37%	7.17%
Total	100%	100%	100%	100%	100%

Source: UN Comtrade

Figure 2: ASEAN Import of HS 5208 in 2003 – 2007



Source: UN Comtrade

Sales of HS 5208 fabrics among ASEAN countries fluctuated but enjoyed a positive growth trend until they reached a peak of \$24.70 million in 2005 (Table 6). It is interesting to note that after the end of the Multi-Fiber Arrangement (MFA) in 2005, ASEAN imported less from within the region. The decline reached a dramatic 30.94 percent drop in 2007. Contrarily, they imported more from the rest of the world, and the growth rates for these imports went up by 20.23 percent and 22.59 percent in 2005 and 2006 respectively as compared to 3.07 percent and even experienced negative growth of 4.19 percent for intra-ASEAN imports during the same period. Nevertheless, ASEAN imports of the fabrics from the rest of the world dropped by 26.98 percent in 2007, whereas ASEAN imports from all countries in the world went down by 27.19 percent that year, reflecting the global oil price hike at the time.

Table 6: Growth in ASEAN imports of HS 5208

Year	Intra-ASEAN		The rest of the world		Total import	
	Value (Thousand US\$)	Year-on-year growth %	(Thousand US\$) Value (US\$)	Year-on-year growth %	(Thousand US\$) Value (US\$)	Year-on-year growth %
2003	16,385		199,173		215,558	
2004	23,965	46.27	286,128	43.66	310,093	43.86
2005	24,701	3.07	344,014	20.23	368,715	18.90
2006	23,665	-4.19	421,743	22.59	445,408	20.80
2007	16,344	-30.94	307,970	-26.98	324,314	-27.19

Source: Calculated from UN Comtrade data

2.4. EXPORTS OF HS 5208 FROM THAILAND TO VIETNAM

Table 7 below features the value of trade in light weight woven cotton fabric (HS 5208) that Thailand exported to Vietnam and year-on-year growth in percentage terms during the period 2002 – 2007. The figures show that the trade in HS 5208 fabrics between the two countries fluctuated quite substantially before the end of the quota era, a 24.29 percent drop between 2002 and 2003 and then an impressive increase of 32.54 percent in 2004. Thai exports to Vietnam continued to grow after the Multi Fiber Arrangement expired at the end of 2004. Although growth in 2005 dropped to 12.28 percent, trade value grew at an impressive rate of 37.29 percent the following year.

Table 7: Export of 5208 from Thailand to Vietnam in 2002 - 2007

Year	Value (US\$)	Year-on-year growth (%)
2002	4,847,295	
2003	3,669,843	-24.29
2004	4,864,176	32.54
2005	5,461,474	12.28
2006	7,498,293	37.29
2007	9,606,581	28.12

Source: UN Comtrade

China's Exports of HS 5208 Fabrics to Vietnam

It is worth comparing Thailand's performance to that of China, its largest competitor in this fabric category. Table 8 below provides trade data for the HS 5208 fabric that China exported to Vietnam and year-on-year growth rates during 2002 to 2007. It is clear that China has consistently been a much larger exporter into the Vietnam market than Thailand. For example, China exported US\$170.2 million worth of the fabric to Vietnam in 2007 compared to Thailand's \$9.6 million. In terms of growth rates, China was able to increase its HS 5208 exports to Vietnam by an amazing 66.56 percent in 2003, while Thailand's exports dropped by 24.29 percent.

Immediately after the end of the MFA in 2005, Vietnam imported 40.85 percent more of

HS 5208 fabric from China compared to the previous year and only imported 12.28 percent more from Thailand. Although the growth rate of the Vietnamese imports from China fell to 17.67 percent the following year, it shot right back again to 44.59 percent in 2007 compared to the growth of 37.29 percent and 28.12 percent for Thai exports to Vietnam in the corresponding years. Clearly Vietnam was switching its source of fabrics after the quota system was lifted. As data from factory interviews later in this report will show, this shift is most likely related to the nomination of fabric sources by garment buyers.

Table 8: Exports of 5208 from China to Vietnam in 2002 - 2007

Year	Value (US\$)	Year-on-year growth (%)
2002	31,783,268	
2003	52,939,553	66.56
2004	71,031,506	34.17
2005	100,046,013	40.85
2006	117,725,697	17.67
2007	170,214,679	44.59

Source: UN Comtrade

Comparison of China and Thailand for HS 5208 Exports to Vietnam

Figure 9 below compares Thailand's and China's share of Vietnam's total imports of HS 5208 between 2002 and 2007. Thailand's share is very small compared to China's. Thailand supplied only 6.08%, 3.28%, 3.67%, 3.41%, 4.08%, and 3.84% of Vietnam's total HS 5208 needs as compared to 39.87%, 47.3%, 53.53%, 62.44%, 64.03%, and 68.05% for China during the six years the data is shown. Furthermore, Thailand's share of the Vietnam market was more volatile compared to China's consistent market share growth.

Table 9: Thailand VS China share of 5208 export to Vietnam

Year	Thailand	Percentage Share	China	Percentage Share	World Export to Vietnam
2002	4,847,295	6.08	31,783,268	39.87	79,708,542
2003	3,669,843	3.28	52,939,553	47.30	111,913,993
2004	4,864,176	3.67	71,031,506	53.53	132,688,622
2005	5,461,474	3.41	100,046,013	62.44	160,236,091
2006	7,498,293	4.08	117,725,697	64.03	183,866,759
2007	9,606,581	3.84	170,214,679	68.05	250,136,259

Source: UN Comtrade

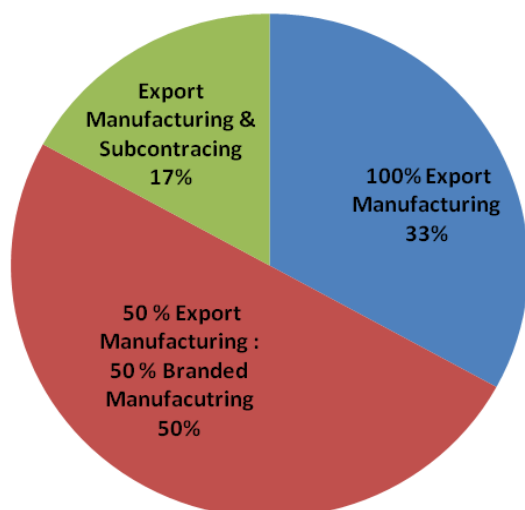
2.5. MAJOR FINDINGS FROM THE SURVEYS OF THAI TEXTILE MILLS

This section summarizes the major findings from the surveys of Thai textile mills in and around Bangkok where most of the textile mills in Thailand are located. The ACE team interviewed decision makers from 12 textile factories which produce HS 5208 fabric. Four of the mills export the fabric to Vietnam, while the remaining mills export to other countries and also sell their product in the domestic market. Some of the more important findings are presented below.

Type of Manufacturing

Six of the twelve mills interviewed sell half of their production in their domestic market under their own brands and export the other half. Four of the participating factories manufacture exclusively for export. The other two are both export manufacturer and sub-contractor (i.e. not the primary contractor).

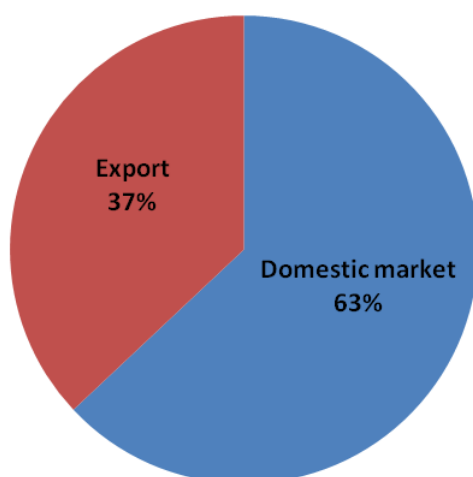
Figure 3: Type of Manufacturing



Markets

The textile mills interviewed rely primarily on the domestic market. On average, they sell 63 percent of their total production in the domestic market, while the remaining 37 percent is exported. This indicates the vertically integrated nature of the Thai textile and garment sector.

Figure 4: Export and Domestic Market Share of Thai Textiles



Export to ASEAN Markets

Eight of the 12 factories interviewed export their fabrics. Table 10 below presents the number of factories exporting to foreign markets. The numbers presented are not mutually exclusive as the same factory can be represented in more than one market

when they export to multiple international markets. For exports to ASEAN markets, more Thai mills, six factories each, sell their textiles to Vietnam and Indonesia than other countries in ASEAN. Cambodia is the third most cited export market. With zero tariffs to take effect in 2012 for intra-ASEAN exports to Cambodia, Laos and Vietnam, Thailand’s producers, as well as those from other fabric exporting ASEAN countries, stand to benefit, assuming they are able to pursue successful marketing strategies.

Table 10: Thai Factories Exporting to Foreign Markets

Market	No. of Factories
ASEAN	
Vietnam	6
Indonesia	6
Cambodia	3
Laos	2
Myanmar	2
Malaysia	2
Singapore	1
Non-ASEAN	
Sri Lanka	3
Bangladesh	3
USA	2
Japan	2
Turkey	2
Pakistan	2
Mexico	2
Italy	1
Netherlands	1
United Arab Emirates	1
Lebanon	1
Australia	1
China	1
Korea	1
South Africa	1
Tunisia	1
Columbia	1

Vertical Integration

Vertical integration in manufacturing can provide competitive advantage for textile and garment factories. A vertically integrated factory can manufacture a garment faster than its competitors. Among the factories interviewed, only two factories are fully integrated (Table 11). The majority of these factories (5 factories) have basic weaving operations plus one or more additional processes such as dyeing or finishing. Three of the factories

have only weaving operations.

Table 11: Vertical Supply Chain Integration

Vertical integration	Factory (#)
Weaving only	3 (25%)
Weaving - dyeing	1 (8%)
Spinning - weaving - dyeing - finishing	1 (8%)
Weaving - dyeing - finishing	2 (17%)
Weaving - dyeing - garment	1 (8%)
Spinning-weaving-dyeing-finishing-garment-offshore sales office	2 (17%)

Functional Fabric Development

Functional fabric development capability is an important indicator of competitiveness and could become a critical factor for success in today's textile industry. Functionality refers to such attributes as wrinkle-resistance, soil-resistance, and flame-resistance.

The technical capability for functional fabric development exists in Thailand and can be acquired by local factories when needed, however Thai mills generally are not very proactive in technical product development and innovation. As shown in Table 12 below, computerized fabric design was rarely found among the factories surveyed. They are rarely the first to develop and introduce new functional fabrics to the market. Functional fabric development in most Thai mills is dictated by buyers' requirements.

If Thai companies do not strengthen this area and take a more proactive approach to the development of functional fabrics, many Thai textile mills risk losing out to competitors. The fact that they are supplying the majority of their production to the domestic market will not help, since Thailand is a free and open market. Global apparel brands are expected to increasingly demand functional fabrics from their textile suppliers.

Table 12: Functional Fabric Development Capability among Thai Textile Mills

Functional fabric	Percentage
Soil resistant (Teflon coating)	13.33%
Pre-cured wrinkle free	13.33%
Softener (Ammonia special)	11.66%
Water repellence	11.66%
Flame retardant	8.33%
Durable press	5.0%
UV protection	5.0%
Sanitize	5.0%
Anti static	5.0%
Anti dust mite	3.3%
Anti bacteria	3.3%

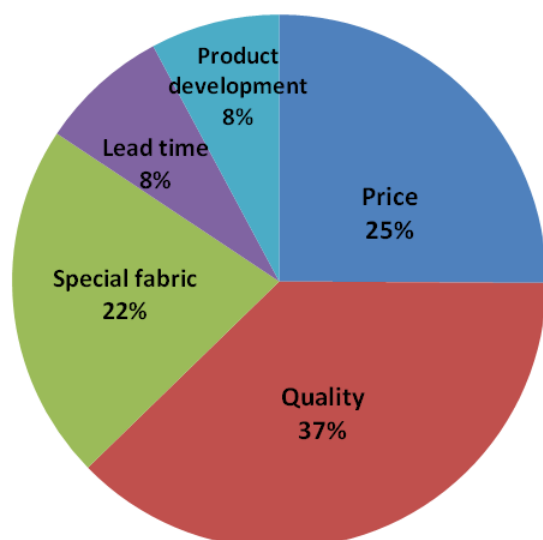
Buyers' Sourcing Model

The sourcing models for Thai fabrics differ by market. For firms selling to the domestic market, fabrics are sourced equally by clients directly or through buying agents. On the other hand, fabrics produced by exporting mills are sourced mostly (71.41%) through buying agents. Other exporting factories (the remaining 28.57%) sell their fabrics both directly and through buying agents.

Buyers' Requirements

The factories were asked to rank the factors they believe their buyers pay most attention to in order of importance—from “Very Important” (5) to “Least Important” (1). More factories believe that reliable quality (37.25%), price (25%), and functional fabric availability (21.56%) are among the most important factors contributing to their success (Figure 5). The ranking reflects both the strengths and weaknesses of Thai fabric producers.

Figure 5: Factors Most Important to Buyers



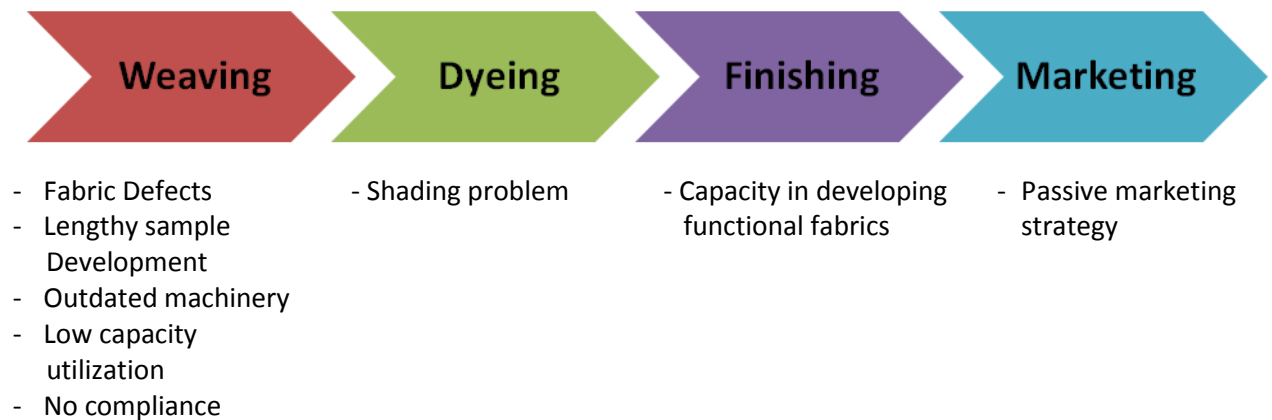
Production Capacity Utilization

The 12 participating textile mills have an average production capacity utilization rate of 75 percent at present. A major manufacturing cost of a textile mill is machinery depreciation which, in combination with production volume, has a direct bearing on unit cost. It is assumed that fixed costs per unit will be inevitably high if capacity utilization is low. These textile mills, on average, are not running at their most efficient capacity utilization level, suggesting that they need to pursue a more proactive marketing strategy.

Thai Textile Manufacturing Processes

Thai textile manufacturing involves the basic processes of spinning, weaving, dyeing, finishing, and marketing. Figure 5 below features a diagram representing these processes. A number of constraints were identified during the interviews with Thai textile mills. These constraints correspond to each of the manufacturing processes and are shown as such in the diagram:

Figure 6: Thai Textile Manufacturing Processes and Corresponding Constraints



2.6. SWOT ANALYSIS OF THAI TEXTILE FACTORIES

This section summarizes an analysis of the information from the interview surveys in a SWOT analysis that lays out the strengths, weaknesses, opportunities, and threats identified for the Thai side of the Thailand-Vietnam HS 5208 supply chain corridor. The section ends with Table 13 which lays it all out in more detail.

Strengths

- A compelling strength of Thai fabrics is their reliable quality, which helps to offset low cost-competitiveness.
- Existing trade relationships within ASEAN markets, especially with Vietnam and Cambodia.

Weaknesses

- A combination of cost-competitiveness factors including high manufacturing costs, outdated machinery, increasingly high labor costs, and low capacity utilization means that Thai suppliers have to charge higher prices than competitors.
- Low levels of computerized fabric design and functional fabric development. Thai textile mills need to upgrade their product development processes.
- Thai textile mills are generally not flexible in product development, especially on fabric samples preparation. They are found to be reluctant to develop samples for prospective buyers.

- Many Thai textile mills are manufacturing-oriented and take passive marketing and sales approach. They prefer to wait for production orders rather than actively pursue them. Many mills rarely participate in trade fairs, and their staff has poor business communications skills, especially in English.
- There are no definitive, reliable, or up-to-date textile and apparel customer databases or business directories in the ASEAN market.
- The majority of textile mills do not comply with leading international standards such as WRAP or SA8000, which are important to leading brand name buyers and retailers.

Opportunities

- Exporters to Cambodia, Laos, and Vietnam will benefit from zero tariffs in 2010. This will offer a good opportunity to promote Thai fabrics to Vietnam.
- ASEAN integration in 2015 and the ASEAN Single Window (with Vietnam's national single window operational) in 2012 will give further advantages to Thai companies engaged in intra-ASEAN trade.
- A commercial e-marketplace and virtual networking portal serving the constituents of ASEAN's textile and apparel industry.

Threats

- Thailand's quality advantage may be threatened by China's rapid improvements in this area.
- Increased demand for functional fabrics by consumers and intermediaries may leave Thai textile manufacturers at a further competitive disadvantage.

Table 13: Thai Textile Industry S-W-O-T Diagnosis

Internal Process	Strengths	Weaknesses
Marketing		<ul style="list-style-type: none"> • Lack of customer data base in Vietnam/ASEAN • Poor market penetration • Poor customer relationship management • Rare participation in trade exhibitions • Only one Textile mill is ranked as good supplier
Supply Chain	<ul style="list-style-type: none"> • Some factories already export to Vietnam 	<ul style="list-style-type: none"> • ASEAN focused exporting agent is not available
Compliance		<ul style="list-style-type: none"> • Mostly NOT compliant with corporate social responsibility
Machinery		<ul style="list-style-type: none"> • Outdated machinery • Poor preventive maintenance system
Production	<ul style="list-style-type: none"> • Consistent quality • Available production capacity 	<ul style="list-style-type: none"> • Higher price than China • Low capacity utilization resulting in high operating cost
Product development	<ul style="list-style-type: none"> • Participation of Thailand Textile Institute • Function fabric such as with dust mite repellent and mosquito repellent 	<ul style="list-style-type: none"> • Weak in computerized fabric design • Poor fabric innovation • Lengthy new fabric product development • Reluctance to invest in new functional fabric
Human resource development	N/A	<ul style="list-style-type: none"> • No competency development • No individual development plan (IDP) • Rarely participate in training programs
External Environment	Opportunities	Threats
Technology	<ul style="list-style-type: none"> • Source ASEAN website will be an electronic data supply chain between suppliers and manufacturers in ASEAN 	<ul style="list-style-type: none"> • Low product development capability resulting in competitive disadvantage
Demand		<ul style="list-style-type: none"> • Fabric mostly nominated by global buying agents • Increased demand for functional fabric
Rivalry		<ul style="list-style-type: none"> • China's quality improvement gains
Laws	<ul style="list-style-type: none"> • Export to CLV is zero tariffs in 2010 	

3. VIETNAM'S GARMENT INDUSTRY

3.1. INDUSTRY BACKGROUND

The textile and garment industry plays a very important role in the economy of Vietnam and ranks as the country's second-largest sector in terms of foreign exchange earnings. Vietnam is ranked as the 10th largest textile and apparel exporting country in the world, with export value of USD 9.1 billion in 2008, which represents an increase of 18 percent over the previous year.⁵ Approximately 65 percent of Vietnam's total garment production is destined for export markets.⁶

The industry consists of approximately 2,000 enterprises; of which 25 enterprises are state owned, around 1,500 are privately owned, and approximately 450 are foreign-owned enterprises (FDI). Together, they account for over 2 million employees⁷, of whom a significant 80 percent are female and many of them are migrants from rural provinces.⁸ Over half of the enterprises (55%) are located in and around Ho Chi Minh City, around 30 percent are located in and around Hanoi, and the remaining 15 percent have set up shop around the port city of Da Nang. Fifty-five percent of all garment factories in the country are affiliated with the Vietnam Textile and Garment Group (VINATEX).⁹

The Vietnamese garment industry is heavily dependent on imports of raw materials. Their yearly demands have always exceeded total domestic supply capacity. Thus imports of fabric and trims are necessary to cover the balance. Overall, 70-80 percent of the raw materials have to be imported. The value of material imports reached US\$ 6.074 billion in 2008, of which 50 percent were brought in from China.¹⁰

⁵ Mr. Vu Duc Giang, General Director of Vietnam National Textile and Garment Group (VINATEX) available at http://vibforum.vcci.com.vn/news_detail.asp?news_id=15430&parent_id=0&cate_id=13.

⁶ Source: <http://english.vietnamnet.vn/features/2008/10/810313/>.

⁷ Source: <http://www.ambhanoi.um.dk/en/menu/CommercialServices/MarketOpportunities/Sector+Analysis/TextileAndGarment/>.

⁸ Source: <http://english.vietnamnet.vn/features/2008/10/810313/>.

⁹ Thai oversea trading promotion office, HCMC.

¹⁰ Source: <http://www.ambhanoi.um.dk/en/menu/CommercialServices/MarketOpportunities/Sector+Analysis/TextileAndGarment/>.

Backward linkages

While the sector may be relatively large and significant to Vietnam's economy, the value added by its garment industry is considered quite low, as most of its raw materials such as fabrics, fibers, yarns, and garment accessories need to be imported. Vietnam's textile industry has to import around 90 percent of its cotton requirements and 100 percent of its needs for synthetic fibers and yarn for domestic production each year.¹¹

Vietnam's textile industry is still rather small. The country needed to import over US\$2.95 billion worth of fabrics for its garment production sector in 2006.¹² The proportion of local material inputs in Vietnam's textile industry is less than 15 percent, rising to only 30 percent in the garment industry.¹³ In an effort to try to increase domestic vertical integration, the Vietnamese government has set a clear strategy to bolster supplies of locally produced inputs. The ambitious aim is to reduce the proportion of overall input materials imported to less than 25 percent by 2010. The strategy has resulted in substantial increase in investment in modern textile manufacturing machinery in recent years.¹⁴

Export markets

Vietnam is an important player in the global garment industry. The country has ranked in the list of top ten largest global garment exporting countries since 2007. Aiming higher, the Ministry of Industry and Trade wants the country to be in the top five largest garment exporting countries by 2015.¹⁵

Trade data in 2007 shows that the US was Vietnam's largest export market for garment products, absorbing 57 percent of its total exports, followed by the EU (18%), and Japan (9%). (Figure 7) Russia has recently emerged as another important market for Vietnam's apparel buying over US\$ 700 million worth of Vietnamese products in 2008.¹⁶

¹¹ EU, Report on Vietnam, 2007.

¹² Source: <http://english.vietnamnet.vn/features/2008/10/810313/>.

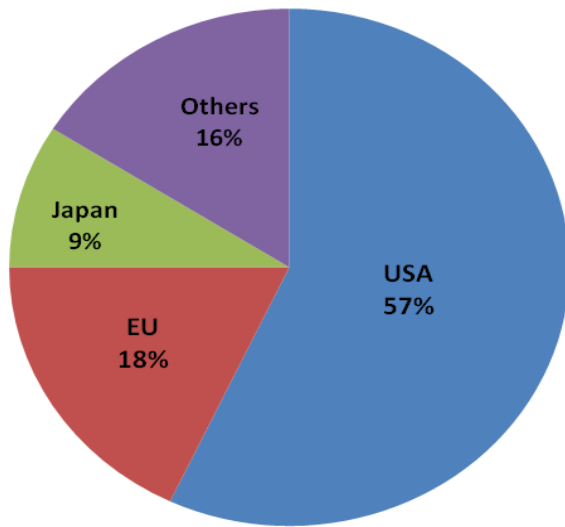
¹³ Ibid.

¹⁴ Ibid.

¹⁵ Source: http://www.itpc.hochiminhcity.gov.vn/importers/news/2008/11/2008-11-2.359910/MISNews_view?b_start:int=40&set_language=en and <http://acs.mofcom.gov.cn/cms/sites/www/images/2009/2/9/6.doc>.

¹⁶ Source: <http://www.depthai.go.th/DEP/DOC/52/52000880.doc>.

Figure 7: Vietnam’s Garment Export Markets in 2007



Source: General Department of Vietnam Customs

Marketing

Garment companies in Vietnam can generally be grouped into three different categories each with its own distinctive marketing characteristics.

The largest group comprises approximately 1,500 privately owned enterprises representing roughly 75% of all garment factories in Vietnam. These factories usually work with sewing orders provided by buyers’ representatives in Hong Kong, Singapore, Taiwan, Korea, Japan or their local offices in Vietnam. These companies normally operate on CMT (cut, make, trim) basis, although some may aspire to step up to FOB (free on board, sourcing their own fabrics) operational basis, if and when they have access to sufficient working capital. The companies in this group are usually vulnerable, as they are dependent on orders being provided by third parties.

The next group is much smaller comprising around just 450 foreign owned companies (FDI) or approximately 22.5 percent of the industry. These companies are typically subsidiary manufacturing facilities of foreign garment producers. They usually do not have their own marketing staff to plan and pursue a marketing strategy and activities. They basically operate as CMT producers for their parent companies which provide production orders and input

materials such as fabric and accessories. Findings from field interviews in the country support this information, as merchandising section was not found, and therefore no marketing among any of the FDI factories in the survey. Their parent companies overseas provide production orders, source fabrics, and make all critical decisions.

The last and smallest group comprises just 25 state owned enterprises (SOEs). This is actually a fast shrinking group, as data shows that Vietnam had as many as 116 garment SOEs in 1997.¹⁷ These manufacturers either work with sewing orders provided by buyers' agents or operate as sub-contractors to fulfill overflow orders from other garment factories. These companies usually operate on CMT basis.

3.2. FINDINGS FROM SURVEYS OF VIETNAM'S GARMENT FACTORIES

This section summarizes the results of a survey of 12 Vietnamese garment factories, all of which source fabrics from Thailand. Among these, six factories are located in and around Ho Chi Minh City, while the remaining six factories are located in and around Hanoi. The survey was conducted over the period December 2008 - January 2009.

The factories surveyed employ between 1,500 – 10,000 people. Twenty-five percent (three) of these factories are state-owned, while the remaining 75 percent (nine) are joint venture factories. The majority of the factories surveyed produces both to order (export manufacturing) and for their own brands (branded manufacturing). They typically produce over 90 percent for export and less than 10 percent under their own brands for sale mainly in the domestic market.

Type of Manufacturing

Table 14 below features the ratio of export and branded manufacturing among interviewed factories. The factories can roughly be divided into four distinct groups according to their type of manufacturing. Overall, these factories are primarily OEM manufacturers¹⁸ producing almost entirely for export. The local market represents only a small proportion of their total output.

¹⁷ Source: http://moeaitc.tier.org.tw/idic/mgz_topic.nsf/0/54f372825f4887ac4825676a002abac9.

¹⁸ OEM or Original Equipment Manufacturer refers to, in textile and garment industry, a company that manufactures garments to order based on specifications supplied by buyers from fabrics usually nominated by the buyers.

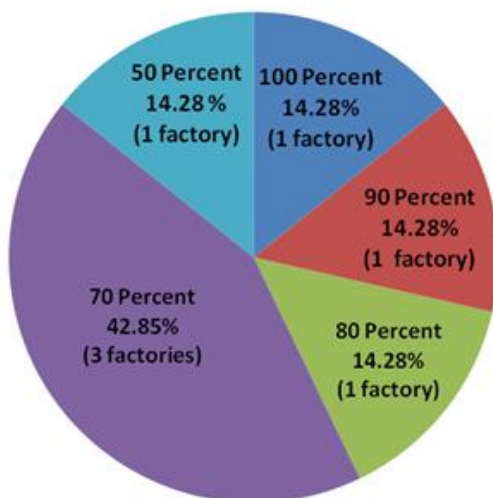
Table 14: Type of Manufacturing

Export Manufacturer	Branded Manufacturer	Factory (#)
100%	-	2
95%	5%	3
90-95%	5-10%	5
90%	10%	2

Fabric Nomination

Only seven of the 12 factories provided input on the question of nomination of the fabric they use for production. All of these seven factories have their fabric nominated by buyers. Figure 9 below shows the extent of these nominations. Three of the factories have up to 70 percent of the fabric they use nominated by their buyers or buying agents. One factory has all its fabric materials nominated. The other three factories have their fabric inputs nominated 90 percent, 80 percent, and 50 percent, respectively.

Figure 8: Percentage of Buyers’ Nomination for Fabric Sourcing



Source of Fabrics

All the factories surveyed import fabric from China (Table 15). Thailand ranks as the second largest source of their fabric imports, as seven factories (58.4%) source their fabric from the Kingdom. Vietnam’s local textile industry also plays an important role, as they supply fabric to three of these factories (25%). Two factories source fabric locally from textile mills in the same group. These are basically vertically integrated factories producing both fabric and garments.

One textile mill is right next door to the garment factory in the group. Other important suppliers include Korea and Taiwan which supply mainly functional fabric to two out of the 12 the factories. Hong Kong and Indonesia are equally important, each supplying fabric to two of the factories in the group.

Table 15: Source of Fabrics

Source	Percentage of factory (Number)
China	100 (12)
Thailand	58.4 (7)
Domestic	25.0 (3)
Korea	16.7 (2)
Taiwan	16.7 (2)
Hong Kong	16.7 (2)
Indonesia	16.7 (2)

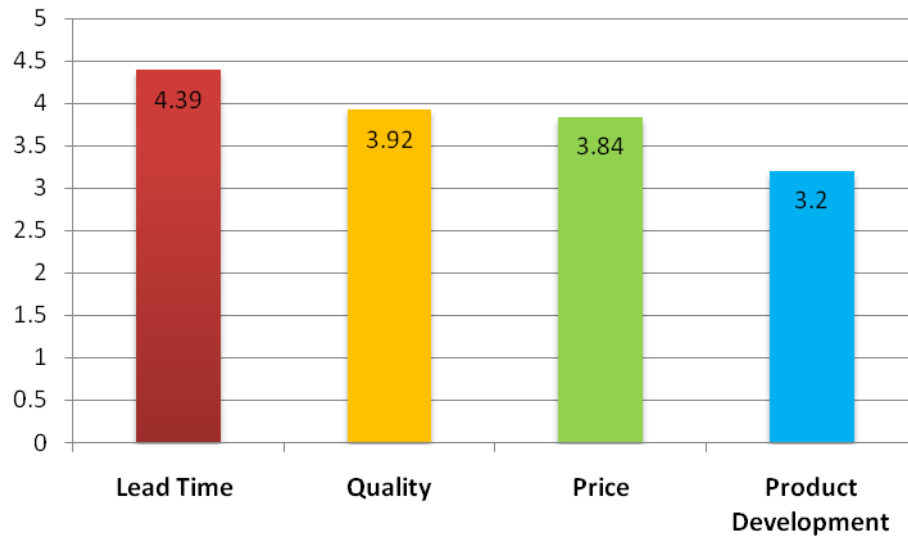
International Brands

The majority of the factories surveyed (10) rely on buying agents to sell their garment products, while the 2 others sell directly to international brands. The data received in response to the question on the factories' top three buyers is rather fragmented. No single brand emerged as the top buyer. Rather, a number of buyers were equally cited including Phillips Van Heusen, JC Penny, Target, Perry Ellis, Mango, and Nike.

Buyers' Requirement

Among the buyers' highest priorities, cited by the garment factories, lead time emerged at the top scoring 4.39 out of 5 (Figure 10). Other important factors include quality (rated 3.92), price (3.84), and product development (3.20). The priority concerns identified by the Vietnamese garment factories are quite different from those that Thai textile mills believe their fabric buyers regard as most important. While lead time is by far the most important factor for international apparel buyers, fabric buyers seem to pay more attention to reliable quality. By contrast, only a small number of Thai textile mills believe lead time is the most critical factor for their buyers.

Figure 9: Important Factors for Garment Buyers
Ranking Scores

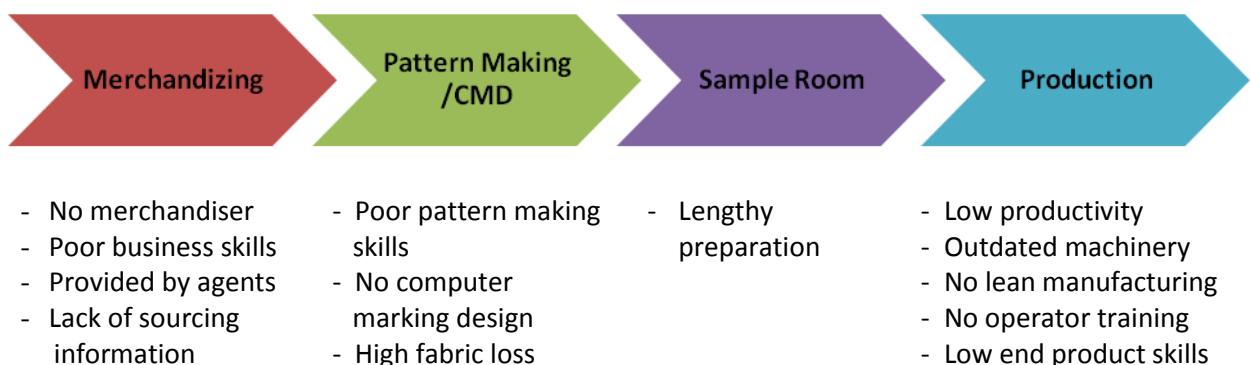


* 5 highest – 1 lowest

Vietnam’s Garment Manufacturing Processes

Vietnam’s garment manufacturing involves the basic processes of merchandising/sourcing, pattern making/CMD, sample making, and actual garment production. These processes are illustrated as a diagram in Figure 11 below. A number of constraints were identified during the interviews with Vietnamese garment factories which correspond to each of the manufacturing processes and are shown in the diagram accordingly:-

Figure 10: Vietnam’s Garment Manufacturing Processes and Corresponding Constraints



3.3. SWOT ANALYSIS OF VIETNAMESE GARMENT FACTORIES

This section summarizes the analysis of information from the interview surveys in a SWOT analysis that presents the strengths, weaknesses, opportunities, and threats identified for the Vietnamese side of the Thailand-Vietnam HS 5208 supply chain corridor. The section ends with Table 16 which lists these features of Vietnamese garment factories in a more comprehensive SWOT table.

Weaknesses

- Foreign direct investment (FDI) companies operate almost entirely on a cut-make-trim (CMT) basis and depend entirely on their parent companies for orders.
- State-owned Vietnamese companies are manufacturing oriented with a passive marketing approach. They focus mainly on manufacturing and depend on others for orders.
- Seventy percent of the fabrics used by FDI factories, in which leading investors include Taiwan, Hong Kong, Korea, and Japan, are nominated by buying agents.
- Passive pre-production activities, especially product development, fabrics, accessories, pattern, and electronic markers which are provided by buying agents and their parent companies.
- Low productivity: production systems are based on progressive bundle units (PBU) and individual piece rate systems. PBU creates high work-in-process, high defects, and low productivity. Lean manufacturing was not found in any of the factories interviewed.
- Human resource development plan and dedicated sewing machine operator training were not found in any of the factories in the survey. Orientation sessions put new labor immediately on the job and provide on-the-job training on the sewing line. Although labor cost is low, any potential advantage is lost due to this low productivity level.

Strengths and opportunities

- Approximately 30 percent of fabrics are not nominated by buyers providing an opportunity for Thai fabrics to sell more to Vietnam.
- The study found that 10 percent of production outputs are sold in the domestic market under local brands, including Viet Tian and Nha Be. Fabric sourcing for domestic

production is not nominated and thus provides opportunity for intra-ASEAN supply. The companies mentioned import these fabrics from Thailand, Japan, Korea, and Italy.

- The Japan-Vietnam free trade agreement has been in effect since early 2009. The rules of origin apply to materials sourced from Japan and ASEAN. ASEAN textile mills should seriously explore and pursue export opportunities to Vietnam to take advantage of the FTA for onward exports of garment products into the Japanese market.
- Fabrics imported from ASEAN origins will enjoy zero tariffs starting in 2010. ASEAN fabrics will have more competitive prices compared with China's.

Table 16: Vietnam’s Garment Industry S-W-O-T Analysis

Internal Processes	Strengths	Weaknesses
Marketing	<ul style="list-style-type: none"> 10% local market is available to promote Thai cotton fabric 	<ul style="list-style-type: none"> Majority (90%) is OEM
Sourcing	<ul style="list-style-type: none"> 30% of OEM is not nominated by buyers and should be open to increased imports from Thailand 	<ul style="list-style-type: none"> 70% of OEM is nominated by leading brands Fabric sourcing database for Thailand is not available
Sourcing performance		<ul style="list-style-type: none"> Thai fabrics are higher priced than China Functional fabric is less available
Supply Chain	<ul style="list-style-type: none"> Some factories already import fabric from Thailand 	<ul style="list-style-type: none"> Few ASEAN sourcing agents available in Vietnam
Product development		<ul style="list-style-type: none"> Most garment factories lack skill in garment design, material sourcing, pattern making, computer marking design, and sample preparation
Compliance	<ul style="list-style-type: none"> Compliance with buyer’s code of conduct 	
Human resource development	N/A	<ul style="list-style-type: none"> No competency development No individual development plan (IDP) Lack of training in merchandizing, sourcing, quality assurance, production planning, and garment costing
External Environment	Opportunities	Threats
Technology	<ul style="list-style-type: none"> Source ASEAN website will provide an electronic data exchange between suppliers and manufacturers in ASEAN 	<ul style="list-style-type: none"> China’s dominance in the global textile and apparel market
Rivalry	<ul style="list-style-type: none"> Develop niche market, avoid competing with China in mass produced products 	
Laws	<ul style="list-style-type: none"> Zero tariffs on fabric imports from ASEAN in 2010 Japan-Vietnam FTA (Rules of origin applied to material sourced from Japan and ASEAN) 	
Economic	N/A	<ul style="list-style-type: none"> US and EU economic crisis has led to reduced demand

Remark: 10 factories already import fabric from Thailand

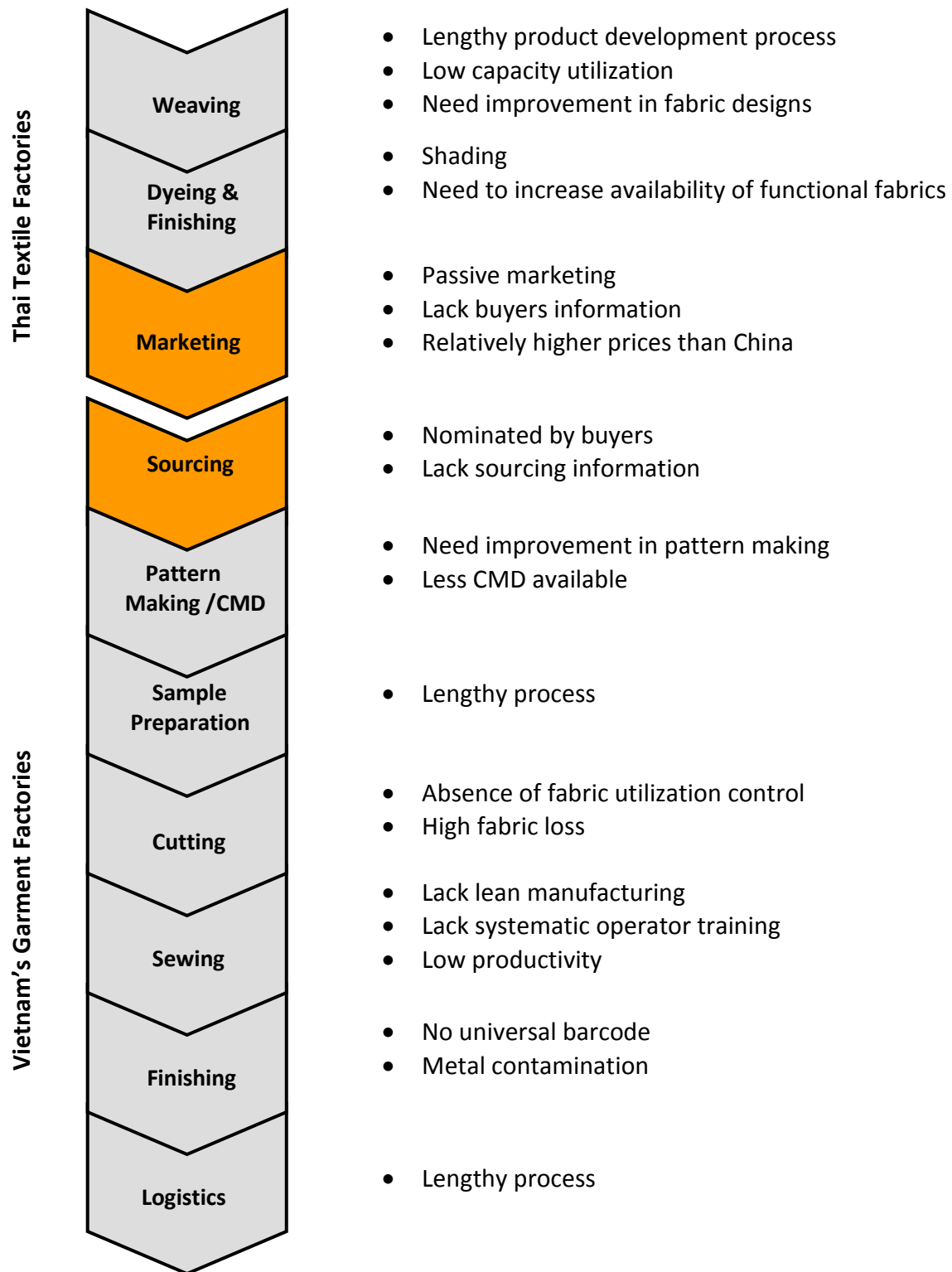
4. THAILAND-VIETNAM SUPPLY CHAIN SWOT ANALYSIS & ACTION PLAN

This section combines the diagnostics data from the analysis of Thai textile factories (section 2.5) and Vietnamese garment factories (section 3.3) into an analysis of the Thailand/Vietnam textile and garment supply chain corridor. From the findings in the Thai textile mills and Vietnamese garment factories above, a number of major constraints have been identified and need to be removed for the supply chain to become more competitive. These constraints can be summarized as follows:

1. Both textile mills and garment factories are too passive in sample and product development and generally have a lengthy development process.
2. Low textile mill capacity utilization result in high factory overhead costs.
3. Mills have higher fabric prices than competitors due to higher labor cost, low capacity utilization, and outdated machinery.
4. Mills have poor fabric innovation and development. Fabric specifications are basically determined by buyers. Textile mills are generally not proactive in fabric development and innovation.
5. Both textile and garment factories passive in their marketing activities.
6. Vietnam lacks fabric sourcing information in the ASEAN region, while Thailand lacks ASEAN market information.
7. International buyers, particularly FDI companies, predominantly nominate fabric.
8. FDI companies rely on commercial activities of their parent companies and operate almost entirely on CMT basis resulting, generally in the absence of pre-production capability among garment factories.
9. Both textile and garment factories have limited external business communication, especially with international buyers among garment factories.

These constraints generally correspond to each of the processes in the supply chain and can be illustrated, as in Figure 12 below. A list of SWOT analysis data is provided in a SWOT diagnosis table after the supply chain processes and corresponding constraints diagram (Table 17).

Figure 11: Thailand-Vietnam Textile and Garment Supply Chain Processes and Corresponding Constraints



4.1. TEXTILE AND GARMENT SUPPLY CHAIN RECOMMENDATIONS

Supply Chain Management (SCM) is essentially an integration process. It involves the management of a network of interconnected businesses involved in the ultimate provision of product and service packages required by customers.¹⁹ It spans all movement and storage of raw materials, work-in-process inventory, and finished goods from point-of-origin to point-of-consumption. SCM aims to provide the right products of the right quality at the right price at the right time, as well as the right information to customers.

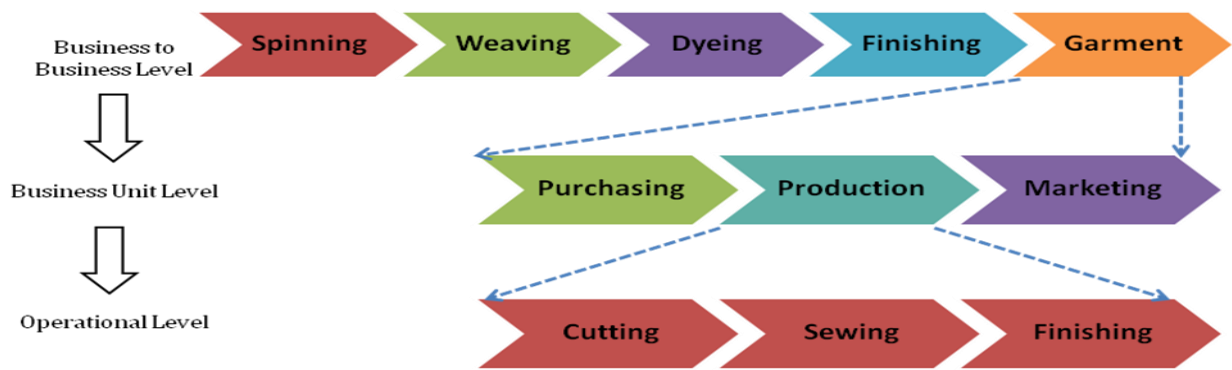
A number of intervention activities are recommended based on the constraints identified in the diagnostics of the Thailand-Vietnam textile and garment supply chain corridor. These activities are designed to help support the integration and enhance the competitiveness of the supply chain.

In summary, Thai textile manufacturers need to upgrade their marketing capability and strategy, enhance their functional fabric development capability, and expand their markets to try to reach full capacity utilization, which will in turn reduce unit manufacturing costs. Vietnam's garment manufacturers, in turn, need to make an extra effort to upgrade their manufacturing mode from CMT to FOB, and eventually to full-service, and improve their production system from progressive bundle unit to lean manufacturing.

Supply chain upgrading can be implemented at three levels as illustrated in Figure 13. To optimize benefits and gain long-term confidence from the customers, a number of intervention activities are recommended and presented in Table 19 below.

¹⁹ Harland, C.M (1996), "Supply chain management: relationship, chains and networks", British Journal of Management, Vol. 7.

Figure 12: Garment Supply Chain Levels



Recommended Intervention Actions

This section presents a number of possible intervention actions and improvements that can and should be made. The detail of each intervention action is laid out in Table 17 below.

Table 17: Intervention Recommendations

Objectives	Recommended Activities
Right product	1. Textile and apparel companies collaborate with fashion- and trend-setters (buyers)
	2. Upgrade functional fabric design capability
	3. Provide pre-production training courses, including pattern making and sample preparation
	4. Enhance merchandising management skills
Right quality	5. Upgrade quality control procedures in garment factories
	6. Change garment production system from progressive bundle unit to lean manufacturing
	8. Set up lead-time target (days) for business units in the entire supply chain
Right price	9. Provide garment costing and quotation training course
Right information	10. Share information across supply chain by installing enterprise resource planning (ERP) software
Sustainable development	11. Strengthen AFTEX organization; recommended functions include research and strategic planning, industry integration, administration, training and HRD
Enhance management skills	12. Provide management skills training courses to the management of supply chain integration initiative members

The recommendations listed in the table above are elaborated in some detail below.

1. Textile and Garment Fashion Trends Identification

This activity is vital to the ASEAN textile and garment industry. The right products are created with the right design and with correct fashion trends in focus. It is recommended that AFTEX collaborate with leading international fashion trend experts who can provide critical information on fashion trends in the form of regular updates for dissemination to the industry and annual seminars for a wider audience.

2. Functional Fabrics Development

It is generally believed that consumers' requirements nowadays are for fashionable and functional fabrics (or 2F), such as easy-care fabrics, wrinkle-free, stain release, breathable fabrics, etc. The technical capability for these functional fabrics needs to be developed. Specialized finishing and printing techniques require high technical skills which need to be developed in textile training and development institutes, after which the know-how needs to be transferred to the industry for practical applications.

3. Pre-production Training Courses for the Garment Industry

Upgrading skills in pre-production activities enables the buyers to reduce marketing costs, which is the highest proportional cost for the apparel business. Recommended skill enhancement areas include pattern making, computer marking design and sample preparation.

4. Merchandizing Skill Upgrade

With the lack of competent merchandizing staff in many garment companies in Vietnam, these factories have difficulty in sourcing the fabrics and trims they need for production. These sourcing services are usually provided by the buyers' representatives, making it rather unnecessary for the factories to add or build required merchandizing competency to carry out the sourcing themselves. However, if these garment factories are to upgrade their capabilities and move up the ladder to become a full-service supplier, they need to build and upgrade merchandizing skill.

A training course to develop merchandizing skill should cover the following topics:

- Garment structure
- Sewing machine and sewing attachments
- Knowledge in fabrics
- Accessory details
- Garment defects and quality assurance
- Quality inspection such as in line inspection and final inspection
- Garment costing and quotation
- Lead-time planning and control
- Material sourcing
- Business communication

5. Quality Assurance

Quality assurance (QA) is an essential element in the garment manufacturing industry. A preferred supplier is the factory that can provide consistently reliable quality. The scope of QA covers a wide range of activities throughout the production process. They may include fabric and accessory inspection, workforce skills development, and machinery maintenance and upgrades.

6. Lean Manufacturing

Lean manufacturing can make one plant operate like many sub-contractors, each quickly producing a part or parts of an order. The approach results in faster production and higher production yield, faster defects identification, quality improvement, cost reduction, and reduction in repair cost. Most faults are fixed before they leave their respective production module, while each operator still handles multiple operations. In order to change from the progressive bundle unit approach found in Vietnamese factories to lean manufacturing, a pilot line should be set up first to test the new approach and get the workers up to speed with the new manufacturing process before it is adopted throughout the factory.

7. Upgrading Production Planning

The primary objective of production planning is to make the best effort to provide the desired goods and services at the right time. Production planning is generally broken down into four major areas: lead-time planning, material planning, production planning, and production control. A production planning training course should be provided throughout the industry at affordable prices. The course should cover the following topics:

- Set up standard time
- Capacity planning
- Lead-time planning
- Production scheduling
- Material planning and control
- Production reports

8. Setting Lead-time Target

The objective of this recommendation is to set lead-time targets for the entire textile and garment manufacturing processes in order to prevent late shipment. Fabric delivery is a critical element in garment production. To integrate the supply chain across ASEAN corridors successfully, efficient management and coordination within the supply chain is essential. Achievable lead-time targets, which are gradually and progressively reduced to levels demanded by the customers, need to be set across the supply chain corridor. A lead-time control worksheet is usually prepared to determine the duration of each activity in order to prevent late shipment. Subsequently, technical advice and training need to be provided to assist firms in the supply chain to tighten their production and reduce lead-time toward desired targets.

9. Garment Costing

In order to enhance the competitiveness of the ASEAN textile and garment industry, factories need to upgrade their capability to provide quick and accurate estimates and quotes. Training courses recommended should cover such topics as:

- Setting standard allowable minutes (SAM)
- Fabric estimation and calculation
- Accessory calculation
- Wage calculation
- Factory overhead calculation

10. Enterprise Resource Planning (ERP)

Enterprise resource planning (ERP) is a company-wide computer software system which is used to manage and integrate different business activities and resources within a company. Among the main features of ERP are order processing, materials sourcing, inventory management, manufacturing, supply chain planning, supplier scheduling, goods inspection, claim processing, commission calculation, and logistics. The program can provide real-time automatic inventory replenishment for a garment and textile company. It can be introduced in modules to reduce initial outlays.

11. Strengthening AFTEX organization

As the apex organization for the ASEAN textile and garment industry, AFTEX can play a critical role as a facilitator and coordinator to make many of the recommendations above become a reality. AFTEX first needs to register as a legal entity in order to hire necessary staff and collect member fees, or raise operating funds from other means, to provide additional services, as outlined above, to its member national organizations.

AFTEX needs to start building its capacity and establish an organization structure which may consist of a strategic planning section, an industry integration section, an administrative section and a training section. The function of the training section is not to organize and manage its

own training, but rather to coordinate with existing training institutions in the region to fulfill the needs of the industry or to build training capacity where required skills are not being met by the training sector.

12. Management skills

Management skills are an essential aspect in supply chain improvement. Top management has to play a lead role in supply chain improvement based on a range of quantitative and qualitative benchmarks, such as productivity improvements and customer satisfaction. Top management also needs to be involved visibly in the entire implementation process from organization of the supply chain to managing the transition process through to providing necessary communications tools and employee training.

4.2. ACTION PLAN

The supply chain corridor diagnostics confirms the basic premise of the ACE strategy: that greater regional integration of the supply chain is possible, can be competitive, and that it contributes to strengthening economies in the ASEAN region. Moreover, this economic growth is a matter of replacing relationships with external trade partners who currently dominate the global textile business. Its impact will be regional, not on the global market.

However, there are constraints on regional integration; the most important may be lack of awareness of the potential, the absence of a coordinating body to facilitate opportunities for trading partners to meet and pursue mutual interests, and to ensure they are able to forge a seamless flow of communications and materials to compete with already vertical suppliers and regions. Some of these constraints are already being addressed by various stakeholders; others are identified and confirmed through the ACE corridor diagnostic research. The constraints will not prevent trade, but by addressing causes and implementing corrective actions ACE and its partner trade associations, especially the regional group known as the AFTEX, the private sector companies, training organizations and others, can expedite the formation of regional trade relationships.

Not every constraint can be addressed through regional coordination and action. Industrial relations, for example, must be addressed by the stakeholders within a country. Geopolitical conflicts are also beyond the scope of these proposals for action. This plan focuses on the areas where significant gains can be made in the near term, by strategic interventions that address the obstacles to regional trade.

It is organized into 3 parts:

- The S-W-O-T analysis from the corridor;
- An overall Action Plan to address the highest priority constraints and opportunities;
- A summary of the activities planned within the ACE Project for 2009-2010

Table 18: Strengths, Light Weight Woven Cotton Corridor (HS 5208)

	Thailand	Vietnam
Industry and Marketing	<ul style="list-style-type: none"> • Vertically integrated industry with over 600 mills serving international and domestic markets • Solid reputation for quality fabrics • Industry associations provide strong representation to government • Thai Technical Institute supports development of new products and technologies 	<ul style="list-style-type: none"> • Approx 2000 factories, 75% locally owned, over \$8 bb sales, employing 2 million workers • Labor market includes better educated individuals; wage rates moderate (min is \$0.34/hr but most earn 20-40% more) • Controlled economy minimizes labor disputes • Government strategy promoting sector growth as an employment generator • Industry association growing in membership and influence • Small but growing local market for production • Self-selecting as much as 30% of fabric suppliers
Product and manufacturing	<ul style="list-style-type: none"> • Material quality meets buyers' standards • A variety of products and finishes is available (yarn-, piece-dyeing, printing) 	<ul style="list-style-type: none"> • Good manufacturing skills, especially in Ho Chi Minh City concentration • Relatively low energy costs
Trade facilitation and logistics	<ul style="list-style-type: none"> • 8 of 12 surveyed companies already export to ASEAN markets • Familiarity with documentation and export procedures • Transit time very competitive (3-6 days to Cambodia via ocean compared to other sources (6-14 days China to Cambodia) 	<ul style="list-style-type: none"> • New container port at Ho Chi Minh City with direct-call ocean service • Proximity to ASEAN sources reducing time-to-market

Customer service	<ul style="list-style-type: none">• Excellent on-time delivery performance	<ul style="list-style-type: none">• Industry's continued expansion during the economic crisis reflects buyer confidence• Introducing ILO Better Work program desired by many buyers
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Table 19: Weaknesses, Lightweight Woven Cotton Corridor (HS 5208)

	Thailand	Vietnam
Industry and marketing	<ul style="list-style-type: none"> • Individual companies are usually not vertical, reducing efficiency • Most are not innovative and investment in the sector lags • Little cooperation between industry associations • Little participation in ISO and similar international standards programs • Lack of design/product development, merchandising, sourcing skills • Only 70% capacity utilization, pushing up costs • Lack of common standards for testing and certification with VN, KH • Lack of market information 	<ul style="list-style-type: none"> • Financing through local banks is difficult and low rate of FDI reduces outside options • Lack of training institutions and other sources for workforce skills improvement • 70% use materials nominated by the buyers • Lack of product development, merchandising and sourcing skills • Rising labor costs in major production areas • Lack of common standards for testing, quality, between VN, TH • Lack of information about potential suppliers in Thailand
Product and manufacturing	<ul style="list-style-type: none"> • Prices are higher than competitors and quality lower • Inability to produce high demand “functional” fabrics, e.g., wrinkle resistant • Sample development is slow in some categories • Outdated machinery and poor maintenance policies • Little use of computer aided design 	<ul style="list-style-type: none"> • Poor planning and layout result in wasted materials • Poor engineering results in low productivity in some factories • Shortage of qualified mechanics
Trade facilitation and logistics	<ul style="list-style-type: none"> • Poor performance in documentation • Shortage of ASEAN regional logistics agents (as opposed to US, EU etc) • High port charges 	<ul style="list-style-type: none"> • Intra-Vietnam logistics are complicated by poor infrastructure • No direct-call ocean transit to major export markets
Customer service	<ul style="list-style-type: none"> • Misunderstanding of priorities lead time vs. quality • Employees have limited experience with international buyers, languages 	<ul style="list-style-type: none"> • Poor communication/languages skills with buyers

Table 20: Opportunities, Lightweight Woven Cotton Corridor (HS 5208)

	Thailand	Vietnam
Industry	<ul style="list-style-type: none"> • Growing market in ASEAN indicating acceptance • Trade benefits in EU, Japan, for garments using ASEAN fabrics • ASEAN common tariff reaches 0 in 2010 for materials to be used in production for local markets • Growth of China’s domestic market and anti-China sentiment may boost ASEAN competitiveness • Intra-ASEAN training opportunities and trade may harmonize standards for both workforce and products • AFTEX website to support marketing and business association among members • B2B links and more border investment will create more opportunities for trade 	<ul style="list-style-type: none"> • Growing privatization and FDI is increasing the interest in new sourcing strategies • FDI companies seem to have more flexible access to financial support • Exports to Japan made with ASEAN fabrics receive duty free treatment • Garment makers select up to 30% of fabrics which creates opportunity for more ASEAN suppliers • Production for local market is growing, and duty rates on Thai inputs for use in local brands go to 0 in 2010 • Support development of training resources through established organizations within ASEAN • AFTEX website to build linkages with other ASEAN suppliers and markets • B2B links and more border region investment will create more opportunities and increase flexibility in the region
Product and Manufacturing	<ul style="list-style-type: none"> • Better capacity utilization will reduce costs (and prices) • Use local market as a base to support more original design and fabric development 	<ul style="list-style-type: none"> • Invest in immediate efforts to improve production planning and reduce fabric waste
Trade facilitation and logistics	<ul style="list-style-type: none"> • Higher fuel costs encourages sourcing closer to the garment makers • Encourage intra ASEAN shipping specialty 	<ul style="list-style-type: none"> • Direct access to international markets via new Ho Chi Minh City ocean service
Customer Service	<ul style="list-style-type: none"> • Conduct training to upgrade understanding of customer needs 	<ul style="list-style-type: none"> • Use training opportunities to upgrade merchandising and customer management

Table 21: Threats, Lightweight Woven Cotton Corridor (HS 5208)

	Thailand	Vietnam
Internal	<ul style="list-style-type: none"> • Lack of willingness to invest in updated equipment and methods • Strong domestic market is a disincentive to develop export capability • Strained political relations and border frictions may inhibit cooperation 	<ul style="list-style-type: none"> • Government interest in national development could obstruct regional sourcing development • Strained political relationships and border frictions may inhibit cooperation
External	<ul style="list-style-type: none"> • Global trade influences including economic weakness and regional trade agreements benefiting other producers 	<ul style="list-style-type: none"> • Global trade influences including economic weakness and regional trade agreements benefiting other producers • Export market countries may impose trade restraints such as dumping or countervailing duties on VN

**ACTION PLAN: THAILAND-VIETNAM CORRIDOR
Light Weight Woven Cotton HS 5208**

Category	Constraint	Cause(s)	Action	Participants	Timing	ACE
Industry and Marketing	Lack of effort	Little information about international market Thai domestic market to absorb 50-60% of output	Build database of international buyers and sellers <ul style="list-style-type: none"> Identify the 30% of users of HS 5208 found to select their own suppliers Gather data regarding styles and qualities and volumes used, or produced, and contact parties Build AFTEX database Provide training on use to associations to guide their members Ensure country associations have protocol to update information 	AFTEX and country trade associations	Aug-Oct 2009	Website and training
	Lack access to trade finance	Economic recession	Develop industry approach to obtaining finance <ul style="list-style-type: none"> Associations organize information sessions for lenders Create workshops to assist factories in applying for finance As trust between corridor partners develops explore new paradigms Request government backing for loans to enable input purchases 	VITAS, Garment factories, Thai textile mill partners	September 2009 Ongoing	No
	Lack of support	Associations lack the organization and skills to support marketing	Upgrade association services <ul style="list-style-type: none"> Establish marketing desk in each association responsible for coordinating information Review association member information and recommend upgrades Coordinate information with corresponding position in partner country Organize marketing workshops and seminars to improve mills' skills 	Thai Textile Institute, VITAS	Sept 2009-ongoing	No
	Lack of access	Only 30% of factories	Build market based on the factories who	-Thai Textile	2 nd quarter	AFTEX

	to decision makers	found to self-select suppliers; balance is by buyers or FDI factory owners	<p>select suppliers</p> <ul style="list-style-type: none"> • Identify contacts through the database mechanism • Present opportunity (faster transit, same quality and price) to buyers representatives located in the region • Begin to build contact with FDI decision makers based on success <p>Market the corridor to buyers in joint marketing sessions at trade shows (E.G., MAGIC, Shanghai, ASEAN)</p>	Assn -VITAS -Mills Garment factories	2010	database Assist with trade shows
Product and Manufacturing	Lack of innovation in fabric tech	Fabric mills lack incentive to invest	<p>Identify highest demand products and build interest – success will encourage more innovation</p> <ul style="list-style-type: none"> • Gather feedback from buyers and from factories regarding functional fabric demand • Research industry publications for uses of various functional fabrics and markets • Present findings to Thai mills and promote development of capabilities • Lobby gov't for benefits to companies for innovation <p>Ensure workforce skills support new technology needs</p> <ul style="list-style-type: none"> • Work through local associations to present findings on functional fabric needs to training providers • Develop curricula designed to upgrade skills of professionals, and upgrade content for students • Design internship programs to provide practical experience and bring new skills into the workplace 	-TTI -TTMA, -VITAS -Mills and factories -Buyers and agents	Oct 2009 and ongoing	Indirect only
	High operating costs leading to	Low capacity utilization, lack of investment in	Upgrade mill equipment and improve capacity utilization	-Thai Textile Institute	Jan 2010 and	Indirect only

	higher priced materials	machinery, possibly lack of market info	<ul style="list-style-type: none"> • Workshops on cost-benefit analysis related to equipment investments • Training for mills in packaging requests for financing • Lobby Thai gov't for loan support and other benefits to stimulate investment • Visit int'l equipment fairs to see new technologies • Promote new capabilities through marketing 	- Mills and factories	ongoing	
	Low productivity, value added No pre-production	Lack of workforce skills training Vietnam lacks an industry training institute	<p>Ensure availability of training in core skills</p> <ul style="list-style-type: none"> • Determine needed positions in factories and in mills • Prioritize skills needs in Vietnam, including merchandising, pattern making, production planning, and layout to minimize fabric lost • Incorporate curriculum for productivity and quality management • Identify regional training organizations with ability to supplement local capabilities • Circulate information via AFTEX web registry for training • Develop programs for skills not currently taught • Establish uniform standards for competence to improve regional workforce integration and consistency <p>Provide incentives to mills and factories to invest in training</p> <ul style="list-style-type: none"> • Lobby gov't to provide benefits to employers for investment and commitment to training and productivity • Ensure financial support for training organizations providing needed skills 	- Thai Textile Institute - VITAS -Training organizations - AFTEX Governments of Vietnam and Thailand VITAS Thai Textile Assoc	Oct 2009 and ongoing July 2010	ACE training component Indirect

Trade and Logistics	Lack of common standards for testing and certification	No history of dialog or collaboration	<p>Evaluate impact on trade to establish priority</p> <p>Implement common standards for testing and certifying textile characteristics based on best practices international testing protocol such as American Society for Testing and Materials (ASTM)</p> <ul style="list-style-type: none"> • Identify appropriate protocols for materials currently in trade • Work through AFTEX to establish regional agreement 	TTMA TTI VITAS AFTEX	Refer to AFTEX to establish timetable for this initiative based on its trade impact	Indirect
Customer service	General lack of skill in customer relations	<p>Large domestic market in Thailand reduces need for language and service skills</p> <p>Cambodian factories have little interaction with buyers</p>	<p>Emphasize customer service skills in regular and vocational education</p> <p>Include merchandising, sourcing, and effective communications in industry training</p> <p>Organize workshops</p>	<p>Thai Textile Assn, VITAS</p> <p>Training partner orgs</p> <p>Thai Textile Assn, VTTAS</p>	Oct 2009 and ongoing	Training of trainers in merchandising

4.3. ACE PROJECT INTERVENTIONS: 2009-2010

The analysis of interviews with fabric mills and garment makers in Thailand and Vietnam reveals a number of patterns and a significant potential for increasing regional integration of the industry. Trade integration is already under way, local markets are growing, and some export markets also offer opportunities that improve the competitiveness of products of an ASEAN supply chain.

ACE can make meaningful contributions to support regional integration that will stimulate investment by both local and foreign interests, contribute to workforce development and individual economic opportunities, and build local markets that are resilient to international competition. These will be articulated more fully in the Annual Work Plan for 2009-2010.

1. Confirm the potential for integration with virtual vertical production models in the corridors considered in this study
 - Drawing on information from the corridor study, develop a program to create model regional vertical partnerships
 - Implement the program, monitoring the results
 - Publicize results to AFTEX and other stakeholders to stimulate additional efforts

2. Improve access to market information
 - Leverage industry associations to develop accurate information about member companies
 - Link fabric producers to garment makers through an AFTEX supplier database
 - Bring fabric producers and garment makers together at trade shows and similar activities to build relationships and introduce potential partners

3. Support improved skills and cost effective production

- Provide training for trainers from ASEAN member countries to build capacity in merchandising, sourcing, and other trade-related professional skills
- Support the development of commonly recognized skill levels in production and customer service
- Leverage industry associations, training organizations and the AFTEX websites to establish continuous development cycles in the industry workforce
- Support training exchanges between regional providers to increase the number of capable organizations contributing to skills development

4. Promote Source ASEAN branding

- Host Source ASEAN brand information centers at trade shows
- Promote benefits of ASEAN products (trade preferences in EU, Japan and Canada) using Source ASEAN website, trade shows, and AFTEX member association websites

REFERENCES

- Sarah Pelot, Vietnam Textile Industry Profile: Despite the world's economic crisis, Vietnam's textile industry continues to develop and increase its value, Textile World Asia, March 16, 2009.
- Michelle Mendieta Mitchell, Thailand Textile Industry Profile: Thailand's modern textile industry, which began for military purposes, continues to adapt to economic shifts, Textile World Asia, May 1, 2007.
- Hildegunn Kyvik Nordås, The global textile and clothing industry post the agreement on textiles and clothing, World Trade Organization, 2004, Geneva, Switzerland.

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