

Peru in the High Quality Cotton Textile and Apparel Global Value Chain

OPPORTUNITIES FOR UPGRADING

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Acronyms

ADEX	Export Association (<i>Asociación de Exportadores</i>)
ANPAL	National Association of Cotton Producers (<i>Asociación Nacional de Productores de Algodón</i>)
CMT	Cut, Make, Trim
ELS	Extra Long Staple
EU	European Union
FDI	Foreign Direct Investment
FOB	Free on Board
GVC	Global Value Chain
IDS	International Development Systems
IKTIB	Istanbul Textile and Apparel Exporter Association
ILO	International Labor Organization
IPA	Peruvian Cotton Institute (<i>Instituto Peruano de Algodón</i>)
ITC	International Trade Center
LS	Long Staple
MINAGRI	Ministry of Agriculture, Peru
OBM	Own Brand Manufacturing
ODM	Own Design Manufacturing
PREVEX	Peruvian Apparel Exporters Society (<i>Sociedad Peruana de Exportadores de Prendas de Vestir</i>)
R&D	Research and Development
SENATI	National Service for Industrial Training (<i>Servicio Nacional de Adiestramiento en Trabajo Industrial</i>)
SNI	National Societies of Industries (<i>Sociedad Nacional de Industrias</i>)
SOMO	Centre for Research on Multinational Corporations (<i>Stichting Onderzoek Multinationale Ondernemingen</i>)
SUNAT	National Superintendency of Tax Administration (<i>Superintendencia Nacional de Aduanas y de Administración Tributaria</i>)
T&A	Textile and Apparel
UK	United Kingdom
UNCTAD	United Nations Conference on Trade and Development
UNCOMTRADE	United Nations Commodity Trade Statistics Database
US	United States
USDA	United States Department of Agriculture

1. Introduction

This report analyses Peru's participation in the high quality cotton textile and apparel global value chain. The textile and apparel sector is a key pillar of Peru's manufacturing sector. In 2013, it accounted for 17% of Peru's non-traditional exports with total exports of US\$1.9 billion (ADEX, 2015). Peru participates in multiple stages of the value chain as a full package apparel supplier with backward linkages into the textile, yarn and cotton cultivation segments. As a vertically integrated industry, ranging from agricultural production to manufacturing, the sector offers a wide range of employment opportunities, generating an estimated 350,000 direct jobs. The sector's growth to date has been driven by the use of high quality cotton inputs – Peruvian “Pima Cotton”, its integrated supply chain, and a millennial tradition in textile and apparel which underlies its high quality production. Over the past decade, however, changes in the sector both at a national and global level have affected Peru's competitiveness, and exports have begun to decline. These changes require the development of a new strategy for the future.

Apparel production is considered to be a springboard for economic development due to its low fixed costs and emphasis on labor-intensive manufacturing (Gereffi & Memedovic, 2003). While the worldwide industry is extremely competitive, the high quality cotton apparel that Peru produces, is a niche segment within the market, which insulates it to a certain degree from these global dynamics. Accounting for just 2-3% of total global cotton production (Cillóniz, 2012; Cotlook, 2014), high quality fiber is differentiated from regular cotton by its staple length, which gives it superior characteristics with respect to color absorption, strength, feel and durability. There are very few countries that produce high quality cotton, including Egypt, China, India and the United States (US), and only a small number of textile and apparel manufacturers that operate with these materials. In the past, this fiber was reserved for luxury products, but in recent years, the use of high quality cotton has increased for mass markets.

The capabilities of Peruvian operations in this sector have generally increased as a result of their engagement in the GVC. In particular, local firms have improved the quality of production and the speed in which they respond to client needs while also learning how to enter new markets. The unit value of exports from Peru grew by more than 50% between 1998 and 2014, at a time when other producing countries were experiencing stagnation or decline in product value (IDS, 2015). They entered into the fast fashion segment, which depends on rapid dispatching of smaller production batches and required a reorganization of local firms' production models. They also successfully entered regional markets; while US markets had dominated exports of high value products before 2008 (SUNAT, 2015; UN Comtrade, 2015), leading firms in Peru began to diversify into high-end niche segments of regional markets, including Brazil, Colombia and Argentina following the worldwide economic crisis. Furthermore, Peru's unique production model of vertical integration from agriculture to manufacturing has allowed the country to capture a high share of value added.

Despite the growth of the sector, future expansion is challenged by a convergence of constraining factors within Peru that are undermining its competitiveness. First, the production of high quality cotton in Peru has declined significantly; from 268,000 tons in 1996/7 to just 82,000 tons in 2013/14 (MINAGRI, 2014a), allowing it to meet just 30% of its domestic market demand for this differentiated product (Field Research, 2015). Small-scale, traditional agriculture, combined with deteriorating varieties and inconsistent agricultural policies have all contributed to a reduction in domestic production. As a result, the manufacturing firms in this industry have had to rely on higher cost US cotton imports. Secondly, these manufacturing firms have faced increased labor costs, with salaries rising over 30% since 2008 (Werner International, 2014). Together with delays in transportation and increased bureaucratic procedures, this has increased total production costs.

Peru's textile and apparel sector thus needs to establish a new strategy moving forward to maximize on its past experience and continue to participate in this GVC. To do this, the sector needs a holistic upgrading approach that tackles both cotton production and manufacturing in order to re-position the country as a niche leader of both high quality cotton and quality production sought by luxury brands. Quality production alone is not sufficient to insulate Peru from the competitive market where other producers are steadily improving their techniques. Its trade agreement with the US based on the 'yarn forward' arrangement has increased the importance of the yarn mills to the country's apparel supply chain. Without long-term access to supplies of high quality cotton, which are declining globally, the competitive position of these mills, and thus the entire chain, is comprised. The following four key upgrading strategies are recommended: (1) Process and product upgrading in the agricultural sector to guarantee competitive supply of raw materials; (2) Product upgrading in apparel manufacturing towards higher value brands; (3) Consolidation as a fast-fashion supplier, with a focus on high value brands; and (4) Functional upgrading in the medium to long term into design and branding activities. These strategies will help to secure the transition of Peru's textile and apparel sector from a large scale mass-market provider to a high value niche operator, while maintaining employment for the most skilled segment of the labor force and supporting rural employment goals.

This report is structured as follows: Section 2 provides an introduction to the global high quality cotton industry, a discussion of the main segments of the value chain and analysis of the changing trends in the global trade in the industry. This also includes an analysis of the different upgrading strategies which have been pursued by different actors in the GVC. This global analysis provides insights into the dynamics of the global industry and provides broader context to analyse the development of Peru's industry to date. Section 3 analyses Peru's position in the GVC in detail, providing both a snap-shot of the country's current participation in the sector, but also examining how Peru's sector has both upgraded and benefited from this engagement in GVCs. Section 4 concludes with recommended for upgrading strategies.

2. The Global High Quality Cotton Textiles and Apparel Industry

2.1. Introduction

The high quality cotton textiles and apparel (T&A) global value chain (GVC) is a niche segment of the global textile and apparel industry, comprised of high value products fabricated from extra long and long staple cotton. Globally, cotton is divided into three main categories based on the length of the staple or fibre: Extra long staple (ELS) fibres have a staple length of 34.9 mm or longer (1 3/8 inches), long staple (LS) cotton with a length of 28.5 mm to 34.9 mm (1 1/8 to 1 3/8 inches) and upland cottons have staples of 28.5mm or less.¹ The length of the ELS and LS staples directly contributes to the uniformity, strength and luster of yarns, making them softer and more durable (ITC, 2007). These characteristics make ELS and LS cotton particularly well suited for luxury products.

Although it is not possible to measure the size of the global market from a final product perspective as no allowances are made in trade statistics to differentiate textile and apparel products according to cotton type, it is known that high quality cotton accounts for approximately 2-3% of total cotton production worldwide (Cillóniz, 2012; Cotlook, 2014). Its production requires very specific climatic conditions (ITC, 2007), which combined with high production costs, contributes to its scarcity and subsequent high prices on the global market. Together with its premium characteristics, this scarcity positions high quality cotton as a valuable, albeit small, niche market within the broader global apparel industry.

Over the past two decades, several global trends have marked the evolution of this niche segment and have important implications for the future of Peru's textile and apparel industry. Due to its superior quality characteristics, there has been increased demand for high quality cotton for use in general apparel markets. However, in the face of falling global production, this increased demand has led to a significant premium being charged for high quality cotton and thus, the mass-markets have shifted away from its use and made increased efforts to find lower cost substitute fibres with similar performance. As prices continue to rise, it is likely that this will once again become a premium product directed only to luxury brands in which its superior natural characteristics are fully valued. Each of these trends is discussed in further detail below.

Diversification from Luxury Brands to Mass Market Apparel: Historically, high quality cotton was destined for use in luxury brand markets, particularly for dress shirts and bed linens. Over the past two decades, as consumer awareness has grown regarding the characteristics of high quality cotton in terms of feel, appearance, strength and durability, the range of products being produced with it has broadened significantly and in particular being used for premium cotton basics (ITC, 2007). There is also a rising number of mass market products such as knit T-shirts being made from blends of high quality cotton and upland cotton yarns or synthetic fibres (Field Research, 2015).

Declining Global Production of High Quality Cotton: Over the past decade, there has been a gradual decline in the production of high quality cotton worldwide, as illustrated in Figure 1. This is the outcome of both short-term reductions by key producers, the US and China, and longer term declines in other countries. In particular, several countries that used to be significant players in the global market have virtually disappeared since 2006. These include Australia (-100%)², Sudan (-98%), the Central Asian producers, Uzbekistan and Tajikistan (-85% and -91% respectively), Peru (-77%), and Egypt (-57%) (Cotlook, 2014). This decline has been attributed to different factors: (1) availability of higher yielding upland varieties

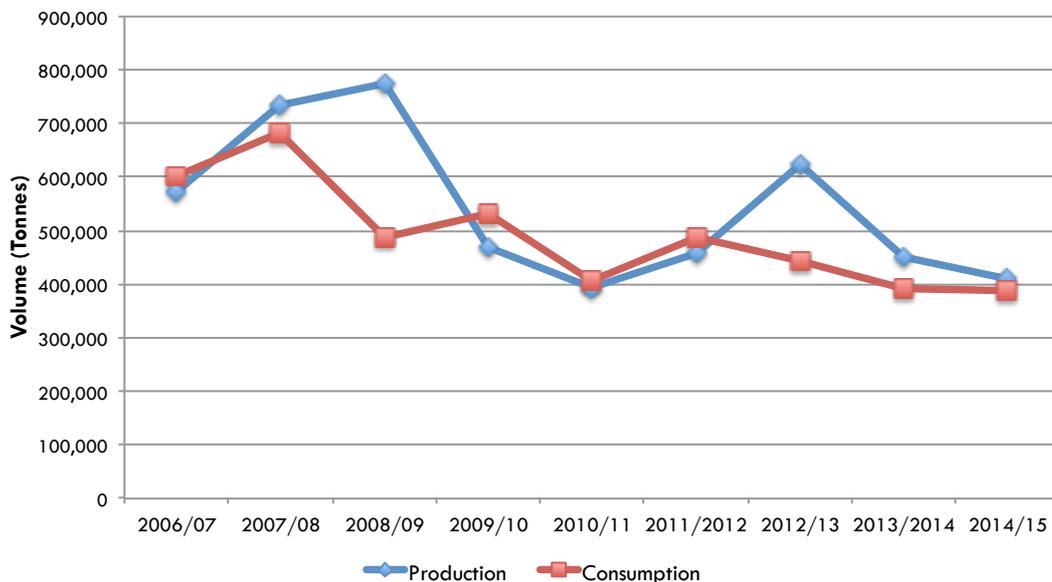
¹ ELS and LS cottons are produced from the *gossypium barbadense* plant family.

² According to available statistics, Australia did not plant any high quality cotton in the 2013/14 campaign (Cotlook, 2014).

(Australia, India), (2) high opportunity costs due to higher returns from other crops (Egypt, Peru), (3) rising production costs, (4) water shortages, and (5) poor incentives or lack of clarity regarding policies such as minimum price guarantees (Cotlook, 2011, 2012, 2013, 2014). In addition, the political instability in Egypt temporarily destabilized the country's economy, contributing to a drop in production.

Notably, the decline in production has been due to several exogenous factors and not the result of declining demand from consumers. Declines in the US have primarily been the result of the ongoing drought in California, which has reduced the areas under production during the past three years from over 200,000 ha to 130,000 ha (Cotlook, 2014).³ The reduction of Chinese production is in a large part an unforeseen consequence of the Chinese state reserve policy to buoy up cotton stocks, which excluded ELS cottons. With premiums declining from 1.3:1 to 1.1:1 in China, many producers shifted to upland varieties (Cotlook, 2014). Indeed, reserves purchasing by countries in the cotton industry lead in fluctuations in price and subsequently impacts supply decisions. As a result of these reductions in production, combined with consumption rates that closely match outputs, stocks are declining.

Figure 1. Global Production and Consumption of High Quality Cotton



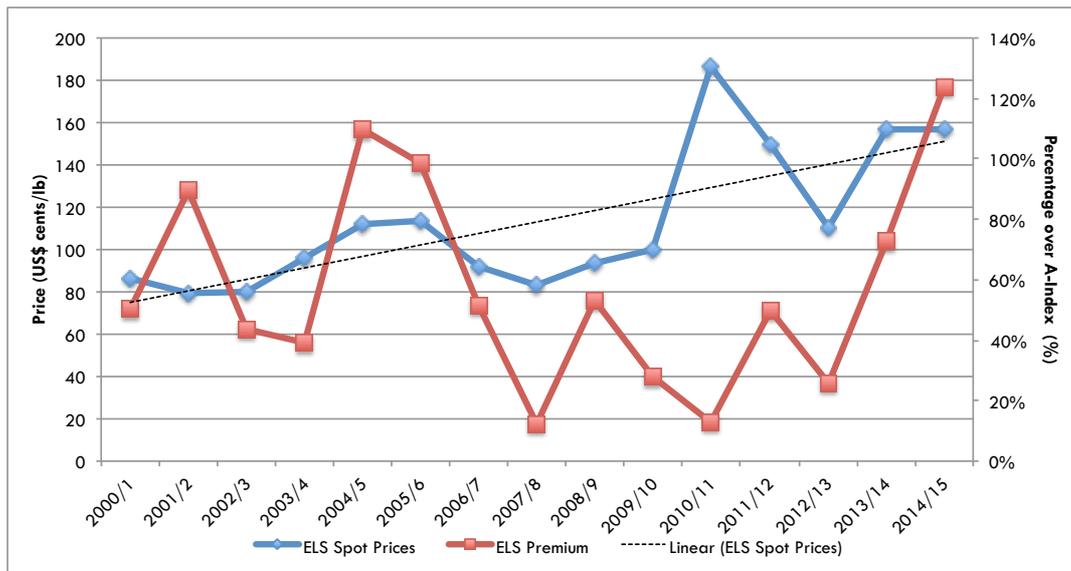
Source: Authors elaboration based on (Cotlook, 2011, 2014).

Production declines in these developing countries have resulted in a consolidation of the export market. The US, in particular, has come to dominate global trade in high quality cotton. With its domestic T&A sector shrinking due to lower cost global competition, the US today exports American Pima cotton fiber to the majority of the developing country producers (in particular to China, Egypt, India and Peru). Due to their historically high production, these countries have installed mill capacity specifically for high quality cotton fibers and strong links with apparel production networks. American Pima has further earned a reputation amongst these mills for high quality consistency and low levels of contamination.

³ In 2013/14, California accounted for 96% of production and 93% of total area planted in the US (Cotton Council International, 2014).

Increasing Global Prices For High Quality Cotton: Prices for high quality cotton have increased over the past fifteen years, approximately doubling in this period. Figure 2 illustrates this upward tendency.⁴ Premiums have also increased significantly in recent years. These rising input prices, combined with declining stock and increased pressure from apparel producers to push down prices is changing the way in which many yarn mills operate. Many are moving towards a just-in-time production model —purchasing cotton fiber against existing yarn contracts and minimizing inventories, or engaging in contract production to secure their inputs at a fixed price (Cotlook, 2014).

Figure 2. High Quality Cotton Spot Prices and Price Premium over Upland, 2000-2015



Source: (Cotton.org, 2015).

Increased elasticity in demand with substitute fibres, particularly for lower value markets: Facing high prices and uncertain demand, yarn mills are beginning to replace some of their use of high quality cotton with substitute fibres. Advances in yarn and textile technologies are allowing mills to use a variety of blends to produce high-count yarns with similar performance from both man-made fibres and upland cotton. Man-made fibres used in this manner include various high tenacity cellulosic fibers such as Tencel, MicroTencel and Modal. Longer staple upland cottons are also being produced as a result of investments in R&D. These are considerably cheaper than high quality cotton, which allow the yarn mills to be more competitive in the yarn market (Cotlook, 2013). Cotton, however, continues to be preferred over synthetics in higher value markets and thus this is likely to contribute to the return of high quality cotton as a luxury niche market that values high quality natural products.

Since 1998, the cost of regular cotton clothing has been going down globally compared to the cost of high quality cotton clothing, which has been rising: On average, prices of apparel have declined over the past 15 years, but the price of high quality cotton apparel has been steadily increasing (IDS, 2015). The end of the Multi Fiber Arrangement in 2005 has opened new opportunities for developing countries in the market in which major labels compete for market share by slashing prices (the ‘race to the bottom’ strategy) and reduce

⁴ The volatility between 2011 and 2013 is largely a result of trends in the broader cotton sector. High prices in 2011 mirrored those in the general cotton sector as a result of Chinese reserve policies (Cotton Inc, 2013), and led to a rapid increase in production in 2012/13 season, which subsequently depressed prices. Due to high prices, high quality cotton price premiums over upland cotton were low during this period, but as global production has returned to pre-2011 trends so have price premiums.

costs through the use of global apparel production networks. World prices of knit apparel fell by 12% from US\$3.36 per unit in 2002 to US\$ 2.95 in 2014 (IDS, 2015). Pushed by major labels, firms in low income countries compete for manufacturing contracts by reducing costs, particularly through lower wages, unsafe working conditions, lack of social protection or cheaper raw materials (Brandsmith, 2014; Pickles & Godfrey, 2013). In five of the top 10 apparel-exporting countries to the US, wages for garment workers declined by an average of 15% in real terms between 2001 and 2011 on a per country basis.⁵ Peru has diverged from these global trends, during this same period, wages rose in real terms by 17.1% (Worker Rights Consortium, 2013), and the prices of knit apparel increased from US\$6.9 per unit to \$11.36 in 2014.

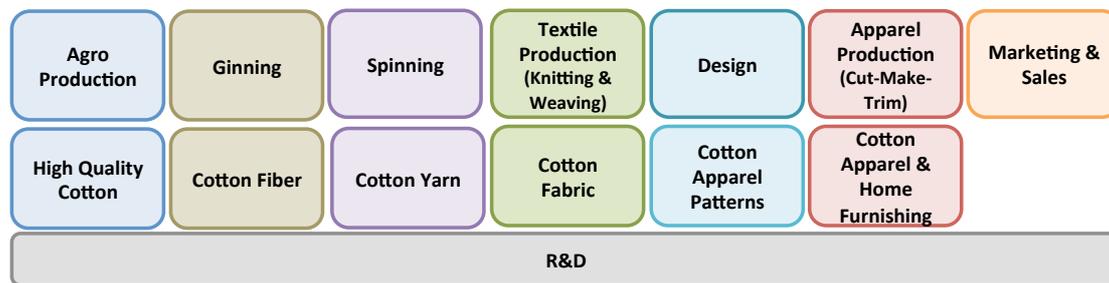
Fast fashion is on the rise amongst luxury brands. One of the most influential trends in sourcing in the apparel industry is the emergence of ‘fast fashion’ in order to respond to quickly changing consumer demand and capture current fashion trends. This market segment focuses on significantly decreasing the time taken from design and production to delivery to the consumer, both for new product lines as well as replacing high turnover products, such as specific model size or color. Shorter lead times, quick response and flexibility are essential for this segment (Plank et al., 2012). Although this developed first amongst lower cost retailers such as Zara and H&M, whose goal was to make fashion design accessible to the mass market (Escalona Orcao & Pérez, 2014), more traditional brands and retailers, as well as luxury brands such as Chanel, Cavelli and Yves San Laurent have also begun to adopt these strategies for ‘fashion-sensitive’ items. Other companies such as Burberry allow customers to order online immediately as their products are launched on the runway (Roberts, 2010). This has raised the importance of geographic proximity to end-markets combined with the potential to produce high quality in a short time-frame in sourcing decisions (Plank et al., 2012).

2.2. The High Quality Cotton Textile & Apparel Global Value Chain

There are eight segments of the high quality cotton textile and apparel GVC, including all stages from agricultural cultivation, production of yarn, textiles and apparel to their distribution and sales. Figure 3 illustrates the chain. Most GVC analyses to date have focused primarily on the textile-apparel sector specifically, with other upstream stages being only briefly examined in the context of inputs (Appelbaum & Gereffi, 1994; Bair & Gereffi, 2001; Frederick & Gereffi, 2011; Morris et al., 2011). In these cases, there is a broad range of inputs including cotton, wool, and man-made fibres. In this report, a more comprehensive approach is adopted as this is a niche market segment based on one unique and scarce input, and agricultural production plays a key role in ensuring the availability of the final product. It is a highly vertically integrated sector with significant degrees of interdependency between all stages of the chain.

⁵ Within the past two years, there have been some indications that the race to the bottom strategy may be exhausting itself in some regions as buyers recognize the importance of investing in wages, working conditions and worker engagement (Pickles & Godfrey, 2013). Moreover, consumers may not want to sacrifice quality and product longevity for a lower price (Cotton Inc, 2011).

Figure 3. High Quality Cotton Global Value Chain



Source: Authors.

Each of these stages of the chain and the role that different countries and actors play in these stages are discussed below.

Agricultural Production: This stage involves the production of seed cotton as an input into the yarn, textile and apparel segments. The high quality cotton segment includes several ELS and LS varieties that differ, to a large extent, according to the countries in which they are produced (see Table 1). The crop requires a significant degree of crop management to ensure optimal yield, although these yields are typically lower than those of upland varieties; factors which result in higher production costs than those for upland. These ELS and LS varieties require specific climatic conditions to thrive, with hot days and cool nights (ITC, 2015), and thus the geographic locations where they can be produced are limited. The primary locations are California, China, Central Asia, Egypt, India and Peru. In developed countries, the production model is typically medium to large scale commercial operations with mechanized harvesting (Cotton Council International, 2014; Supima, 2015a), while in developing countries, production tends to be dominated by small-scale producers who harvest the cotton by hand.

Table 1. Characteristics of Cotton Varieties

Classification	Characteristics	Other popular names
Extra long staple (ELS)	Having a staple length of 34.925 mm (1-3/8 inches) or more	Supima (United States); Pima (Peru, Israel); Giza 88 (Egypt); Suvin (India); Barakat (Sudan)
Long staple (LS)	Having a staple length of 28.575 mm (1-1/8 inches) or more but under 34.925 mm (1-3/8 inches)	Tanguis (Peru) Giza 86 (Egypt); Xinjiang (China) Acalpi (Israel)
Upland Cotton	Having a staple length under 28.575 mm (1-1/8 inches)	Regular cotton

Source: Authors.

Ginning: Following harvest, seed cotton is delivered to the ginnery where cottonseed and other contaminants are removed. Handpicked cotton tends to have a higher degree of contaminants compared to machine-picked cotton (Field Research, 2015). The presence of contaminants affects the final quality of yarn produced and thus is very important in the high-count yarn segment for which ELS and LS cotton is used (Cotlook, 2014). This resulting fiber is then sold to yarn mills. Long fiber cottons are ginned using a roller gin to avoid damaging delicate fibers, upland cottons are saw-ginned (Field Research, 2015). It takes approximately

3 kg of seed cotton to produce 1kg of high quality cotton fiber (Field Research, 2015), thus ginneries are typically located close to agricultural production to minimize transportation of high volumes of raw materials (Cotton Council International, 2014). Ginneries also serve to aggregate production. The cottonseed removed from the lint at this stage is also in high demand for animal feed industries. Every 1kg of high quality cotton fiber produced yields approximately 2 kg of cottonseed. In California, in 2014, the price of Pima cottonseed reached US\$475 per ton (Cotlook, 2014). The ownership of ginneries is highly variable and depends on the specific production location; these may be owned by the producers, or the yarn mills or operate independently.

Spinning: In the spinning stage, cotton fiber is converted into yarn. High quality cotton is typically used in the production of high yarn counts. This stage of the value chain is particularly capital, energy and water intensive—energy costs accounting for 35% of production costs (Farole & Winkler, 2014). Many older yarn mills are geographically located either in traditional cotton production countries, mostly as a result of installed capacity dating back to the 1980s and 1990s, while newer mills are located closer to the T&A production networks. These yarn producers generally produce a wide range of quality yarns and work with both high quality and upland varieties. In many cases, these operations are vertically integrated with textile production. In the face of elevated high quality cotton prices, these firms are beginning to invest in new technologies that allow them to produce higher count yarns with longer upland varieties and man-made fibers as well as blending these with high quality cotton fibers. While yarn mills used to maintain large inventory of high quality cotton fiber, in the context of limited supply, rising prices, and uncertain downstream demand, there is a growing trend of these mills shifting sourcing strategies towards purchasing inputs against yarn contracts (Cotlook, 2014).

Textiles Production: Textile production can be divided into two key categories, knit and woven. These differ considerably in terms of yarn and machinery requirements as well as labor skill and capital investment. Woven fabrics require considerably higher investment than knit production. Knit-textile producers are often vertically integrated with apparel production, while woven fabric producers are typically independent (Farole & Winkler, 2014). Knit fabrics are used for t-shirts, dresses, sweaters, underwear and swimwear amongst others, while woven fabrics are used for dress shirts, pants, jeans, and home furnishing such as bed linens and curtains.

Textile production is often co-located with apparel production, due to the economies of scale required to make it profitable. In the broader apparel sector, textile producers today are thus located in the Asia and, it is generally difficult for developing countries to generate these backward linkages. Due to the dominant role of India and China in all stages of the chain from agricultural production to the final products, an important share of high quality cotton textiles are manufactured in the region. Nonetheless, high quality cotton textile operations are also found in Egypt, Peru and Turkey, thanks to the presence of both upstream and downstream actors. As in the spinning stage of the chain, low cost energy is an important factor regarding the competitiveness of a location as these account for 20% of input costs (Farole & Winkler, 2014).

Design: This stage includes actors that offer aesthetic design services for products and components throughout the value chain. Design and style activities are used to attract attention, improve product performance, cut production costs, and give the product a strong competitive advantage in the target market (Fernandez-Stark & Frederick, 2011). In the textiles and apparel market, designers can be divided into two categories, those that set tendencies and those that follow them. High-end fashion designers from France and Italy, for example, produce original designs that are shown on runways each season. These collections influence fashion tendencies around the globe. As this is their core competency, firms operating in the high-end segment of the market retain design functions in-house (Field

Research, 2015), while consumer brands and retailers, which follow the design tendencies set by the high-end market segment, are more open to outsourcing design to other companies.

Apparel Production (Cut, Make, Trim (CMT)): This stage involves the production of items using high quality cotton textiles, such as home linens (e.g. sheets, towels, etc.) and luxury apparel wear (e.g. fine dress shirting and baby clothes). Apparel manufacturers cut and sew woven or knitted fabric or knit apparel directly from high quality yarn. The cut-and-sew classification includes a diverse range of establishments making full lines of ready-to-wear and custom apparel. Apparel manufacturers can be contractors, performing cutting or sewing operations on materials owned by others, or jobbers and tailors who manufacture custom garments for individual clients. Firms may purchase textiles from another establishment or make the textiles in-house (Fernandez-Stark & Frederick, 2011).

Marketing and Sales: This function includes all activities and companies associated with pricing, selling, and distributing a product, including activities such as branding or advertising. These companies frequently do not make any physical alternations to the product, once it is received from the production operations. Apparel is marketed and sold to consumers (via retail channels), institutions or the government (Fernandez-Stark & Frederick, 2011). This stage of the chain usually accounts for the highest value addition in the chain.

Human Capital in the High Quality Cotton GVC

Apparel production is a labor-intensive activity and cost of labor is one of the most important factors of production. The majority of clothing factories are located in low-income countries that can provide abundant and cheap labor (Dicken, 2007). Millions of workers from developing countries are employed in the sector, under both formal and informal arrangements. Approximately 80% of the labor force is comprised of predominantly young females. Many of these women enter the industry without qualifications, and they typically work for long hours, are paid very low wages and often work in conditions that are precarious (Dicken, 2007; ILO, 2005). In developing countries, the majority of workers are concentrated in the lower segments of the value chain. These factors have earned the industry a bad reputation for labor management. However, as countries move up the value chain, workers with better skills are needed to support new functions, such as international commerce, finance, design and marketing (Fernandez-Stark & Frederick, 2011).

The search for low cost labor has concentrated a large share of the apparel sector in Asia, most notably in Bangladesh, Cambodia, Vietnam, Sri Lanka, Indonesia, India and China, among others. These countries compete fiercely against each other, as procurement seeks out low-cost contracting and Free on Board (FOB) prices are squeezed (Pickles, 2010). Per unit value of exports has declined in all of these countries (except Bangladesh) since 1998 (IDS, 2015).⁶ Other countries where labor costs are higher which have survived in the global industry, such as Turkey and Morocco, depend on a different set of competitiveness factors, including proximity to major end markets that reduces the transportation costs and lead times for production. Pressure on labor prices in these countries however, also remains high (Plank et al., 2012). This is the case for Mexico and Peru in the US market, and Central and Eastern Europe along with Northern African countries supplying the E.U. market (Dicken, 2007).

⁶ Based on entry into the US

2.3. Global Trade in the High Quality Cotton Industry

This section examines the global trade in high quality cotton fiber used by this niche segment of the textile and apparel industry. It is not possible to analyze the trade data of apparel flows produced with these fibers, however, as no differentiation regarding cotton type is applied in trade statistics. Nonetheless, since, the global high quality cotton sector is highly concentrated and participating countries tend to be vertically integrated with a presence in several segments of the chain, certain assumptions can be made about trade flows of final products produced with these fibers. There is a considerable degree of geographic overlap between agricultural production and consumption for the T&A segments, which is not seen in the global upland cotton market (Cotlook, 2011, 2014).

The top four countries that produce high quality cotton fiber, the US (34%), Egypt (21%), India (21%), China (14%), accounted for 90% of total production in 2013/14 (See Table 2), with the remaining production coming from just eight other countries. The majority of these producers also consume a considerable portion of their crop. Only the US, Central Asian countries, Sudan and West Africa have minimal local consumption and export their crops.

Table 2. Global Production of Extra Long Staple, by Volume (thousand tons) 2006-2013

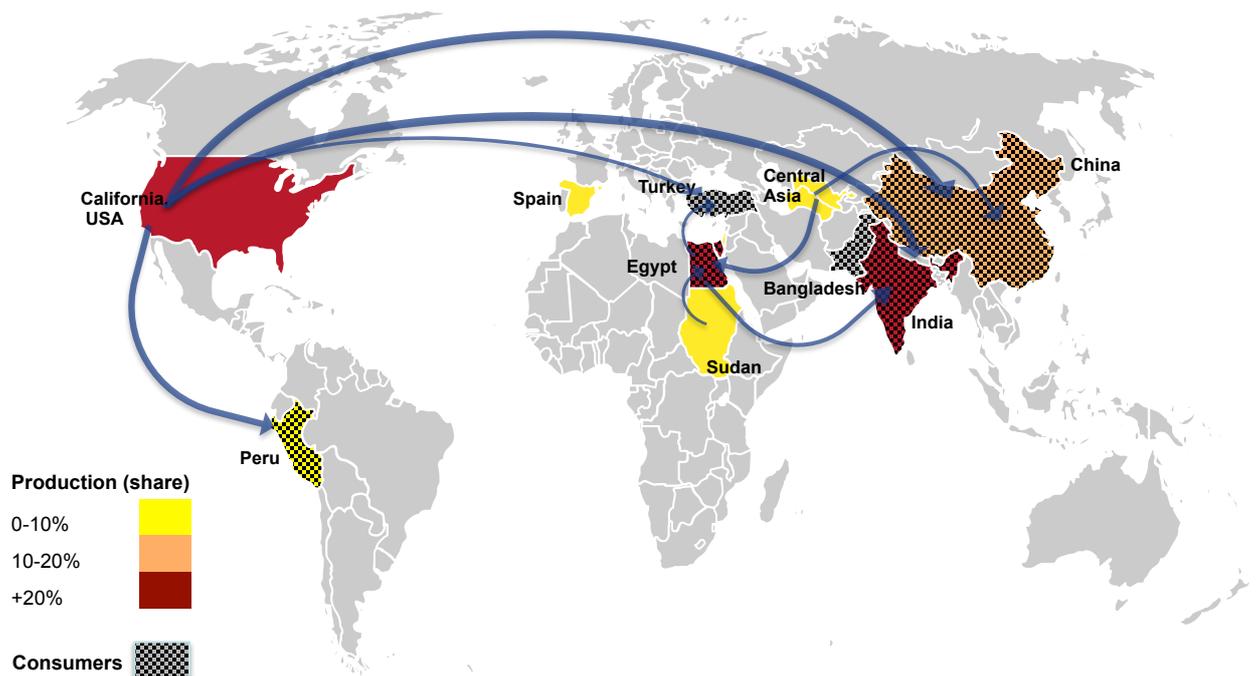
	Production (Volume, thousand tons)					World Share (%)				
	2006/ 07	2008/ 09	2010/ 1	2012/ 1 3	2013/ 1 4	2006/ 0 7	2008/ 0 9	2010/ 1 1	2012/ 1 3	2013/ 2 014
US	167	94	110	170	138	23%	20%	24%	38%	34%
Egypt	215	119	121	97	87	29%	25%	26%	21%	21%
India	69	77	63	65	85	9%	16%	14%	14%	21%
China	170	120	120	60	58	23%	25%	26%	13%	14%
Turkmenistan	25	20	24	18	16	3%	4%	5%	4%	4%
Israel	19	9	7	15	14	3%	2%	2%	3%	3%
Spain	0	2	2	1	5	0%	0%	0%	0%	1%
Peru	17	14	5	8	5	2%	3%	1%	2%	1%
Uzbekistan	12	5	2	2	2	2%	1%	0%	0%	0%
Sudan	30	9	4	15	1	4%	2%	1%	3%	0%
Tajikistan	10	3	0	1	1	1%	1%	0%	0%	0%
Australia	0	0	1	1	0	0%	0%	0%	0%	0%
TOTAL	733	471	458	452	410	100%	100%	100%	100%	100%

Source: Authors elaboration based on (Cotlook, 2011, 2014).

The US accounts for about 65% of global exports, followed by Egypt with 20%, which exports approximately half of its annual production. As Figure 4 illustrates, American high quality cotton is exported to China, India, Pakistan, Turkey, and Peru amongst others. These countries accounted for 80% of US exports in 2013/14, although China accounts for more than half of these (Supima, 2015b).⁷ Egyptian exports are destined to Turkey, India, and China, while the Central Asian countries export to China and Bangladesh.

⁷ See Table 15 in the Appendix.

Figure 4. High Quality Cotton Global Production, Consumption and Trade 2013/14



Source: Authors.

The top seven countries that consumed high quality cotton fiber, India (33%), China (32%), Egypt (9%), Pakistan (6%), Peru (3%), Turkey (3%) and Bangladesh (3%) accounted for 90% of consumption, with India and China together consuming 65% in 2013/14. Although it is not possible to determine from the trade data on cotton yarn exports how much is high count yarn manufactured from high quality cotton fiber, the fact that the top six countries that consume high quality cotton fiber are all low-income developing countries with vertically integrated and export-oriented T&A sectors suggests that an important portion of the yarns produced from this fiber is likely used in the local fabrication of T&A for subsequent export or high-end segments of the domestic market.

Of the consumers of high quality cotton as an intermediary product:

- India produces high quality cotton fibers as well as importing mainly from the US and Egypt; it also has consolidated yarn, textile and apparel sectors. Indian high quality cotton manufacturing is destined for the apparel and home furnishing exports, as well as for the domestic markets in which high quality cotton is blended with silk to produce traditional clothing (Cotlook, 2012).
- China produces high quality cotton fibers as well as importing from Egypt, Central Asia and the US; it also has consolidated yarn, textile and apparel sectors. High quality cotton is important for China's textile and apparel exports, in addition to serving high-end segments of the domestic market (ITC, 2007).
- Egypt produces high quality cotton fibers, which it consumes domestically in addition to exporting; it also has yarn, textile and apparel sectors. Egyptian cotton sheets, for example, are well known for their quality. T&A products are destined to both the domestic and export markets, with a fair share of production occurring in the free trade zones (Cotlook, 2014).
- Turkey imports high quality cotton fibers for its yarn, textile and apparel sectors. Turkey's apparel production is destined for the fast fashion European market. Qualitative reports from Turkey suggest an increased demand for fine yarn counts outside of Turkey in 2014, particularly from the EU and Russia (Cotlook, 2014).

- Peru produces high quality cotton fibers in addition to importing fibers exclusively from the US for its yarn, textile and apparel sectors. Peru's production is mostly for the export market (Field Research, 2015).
- Bangladesh imports high quality cotton for its spinning, textile and apparel sectors. Bangladesh's production is mostly for export.

Table 3. Global Consumption of High Quality Cotton Fibers, by Volume (thousand tons)

	Consumption (Volume, thousand tons)					World Share (%)				
	2006/ 07	2008 /09	2010 /11	2012 /13	2013 /14	2006/ 07	2008/ 09	2010/ 11	2012/ 13	2013/ 14
India	148	125	95	120	130	25%	26%	23%	27%	33%
China	190	205	165	155	125	32%	42%	41%	35%	32%
Egypt	80	43	34	38	35	13%	9%	8%	9%	9%
Pakistan	55	30	30	45	25	9%	6%	7%	10%	6%
Peru	10	9	11	13	12	2%	2%	3%	3%	3%
Turkey	10	5	7	15	12	2%	1%	2%	3%	3%
Bangladesh	10	10	6	12	12	2%	2%	1%	3%	3%
Indonesia	14	10	9	7	7	2%	2%	2%	2%	2%
Thailand	10	9	5	9	5	2%	2%	1%	2%	1%
Germany	5	3	6	3	5	1%	1%	1%	1%	1%
Others	62	31	32	22	22	10%	6%	8%	5%	6%
TOTAL	602	487	405	444	393	100%	100%	100%	100%	100%

Source: Authors elaboration based on (Cotlook, 2011, 2014).

The global demand for finished apparel products made of high quality cotton is concentrated in developed countries, especially the US and Europe. There are specific destinations that supply these markets. For example, Turkey and Egypt mainly exports high quality cotton apparel to Europe, while Peru serves the American market. Exports from China, India and Bangladesh are more global in scope.

2.4. Governance, Lead Firms and Standards

The apparel industry is the quintessential example of a buyer-driven value chain marked by power asymmetries between the suppliers and global buyers of final apparel products (Gereffi & Memedovic, 2003). This is also true of the high quality cotton market segment, particularly where high quality cotton is being used for mass-market brands. Unlike producer-driven chains, where profits come from scale, volume and technological advances, profits in the buyer-driven apparel GVC come from combinations of high-value research, design, sales, marketing, and financial services that allow the retailers, designers and marketers to act as strategic brokers in linking overseas factories and traders with their main consumer markets (Gereffi & Memedovic, 2003).

The companies that develop and sell brand-name products thus have considerable control over how, when, and where manufacturing will take place, and how much profit accrues at each stage, essentially controlling how basic value-adding activities are distributed along the value chain (Fernandez-Stark & Frederick, 2011). This has resulted in the restructuring of the global industry and the relocation of a great deal of T&A production to low cost locations around the world, forcing many higher cost countries out of the industry (Pickles & Godfrey, 2012). Lead firms include retailers and brand owners that are typically headquartered in the leading markets—Europe and the US. Table 4 provides examples of these lead firms.

Table 4. Lead Firm and Brand Types with Regional Examples

Lead Firm Type	Type of Brand	Description	Examples	
			United States	EU-27
Retailers: Mass Merchants	Private Label: the retailer owns or licenses the final product brand, but in almost all cases, the retailer does not own manufacturing.	Department/discount stores that carry private label, exclusive, or licensed brands that are only available in the retailers' stores in addition to other brands.	Walmart, Macy's, JC Penney & Kohl's	Asda (Walmart), Tesco, C&A, M&S
Retailers: Specialty Apparel		Retailer develops proprietary label brands that commonly include the stores' name.	Talbots, The Gap, The Limited Brands, American Eagle Abercrombie & Fitch	H&M, Mango, New Look, NEXT
Brand Marketer	National Brand: the manufacturer is also the brand owner and goods are distributed through multiple retail outlets.	Firm owns the brand name, but not manufacturing, "manufacturers without factories." Products are sold at a variety of retail outlets.	Ralph Lauren, Calvin Klein, Tommy Hilfiger, Van Heusen, IZOD, Polo, Liz Claiborne & Levi Strauss	Lacoste, Ben Sherman, Hugo Boss, Diesel, Gucci
Brand Manufacturer		Firm owns brand name and manufacturing; typically coordinate supply of intermediate inputs (CMT) to their production networks often in countries with reciprocal trade agreements	VF, Hanesbrands, Fruit of the Loom, Gildan	Inditex (Zara)

Source: Gereffi & Frederick, 2010.

Many of these global apparel lead firms have virtually replaced high-end niche brands as the key players in the high quality cotton market in terms of volume. Table 5, for example, shows the top US importers of pima cotton products between 2007 and 2014; these firms all operate in mass-market apparel segments. As a result, the high quality cotton segment has been influenced significantly by practices in the broader T&A sector. International standards are now widely used to coordinate the activities of suppliers. Most lead firms have implemented private standards and codes of conduct based on cost, quality, timeliness, and corporate social responsibility in terms of labor and environmental standards (Bartley, 2005; Gereffi et al., 2001). Factory performance is measured regularly, and delivery, quality, and price are tracked over time. It is common for firms to be certified by multiple buyer brands, such as Wal-Mart, Ralph Lauren, Target, and The Gap.

Table 5. Top US Importers of ESL/LS Cotton Products, by Volume 2007-2014

	Name	Volume (lb)	Share of Total (%)
1	Macy's	18,336,351	13%
2	PVH Corporation (Calvin Klein, Tommy Hilfiger, Van Heusen, IZOD, ARROW, Speedo1, Warner's and Olga)	11,532,663	8%
3	Talbot	7,248,004	5%
4	Ralph Lauren	4,444,501	3%
5	Nextrade	4,147,455	3%
6	Wal-Mart	3,094,455	2%
7	Mark's Work Warehouse	2,900,636	2%
8	Kohl's Department Stores	1,295,445	1%
9	Mast Industries	1,231,655	1%
10	J.C.Penny	681,287	0%
	Other	55,504,789	
	Total	145,725,818	

Source: (ImportGenius, 2015)

At the same time, the consolidation of the US as the world's most important exporter in this market segment has allowed American ELS cotton producers to gain power within the chain. These efforts are being led by Supima, an industry association that represents the interests of American Pima cotton growers. Supima's primary objectives are to promote the consumption

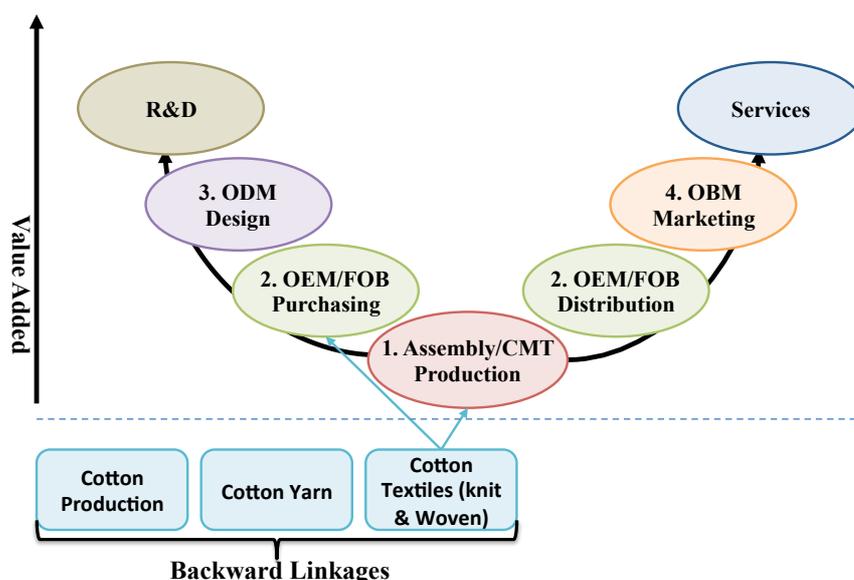
of American Pima cotton around the world, while simultaneously trying to rebrand the product as a luxury input. Having trademarked the Supima brand, the organization certifies companies around the world in all stages of the chain that use their cotton as an input. These licenses are given only to select, high-quality textile mills, apparel and textile manufacturers, and retailers whose products are made of 100% American Pima cotton. The organization audits all brands utilizing the trademark to verify authenticity and restricts sales channels to higher end department stores, retailers and brands. Some of the retailers and brands that use the Supima trademark are American Vintage, Agave, Brooks Brothers and Calaphya. In addition to promoting the use of Supima cotton with these leading brands, the organization directly markets Supima to consumers in an effort to foster demand. For example, it has taken out commercials in the New York Times, hosts events at Fashion Weeks and has billboards in New York City (Cotton Council International, 2014).

2.5. Upgrading Trajectories

Due to the vertically integrated nature of the high quality cotton sector, upgrading trajectories are examined from downstream segments of apparel production, such as yarn and textile procurement, design and marketing, to upgrading opportunities in upstream segments of cotton and yarn production.

- Upgrading within the **apparel segments** of the value chain has been extensively covered in the GVC literature (Fernandez-Stark & Frederick, 2011). This upgrading includes functional upgrading, that is, moving into higher value segments of the value chain, as well as product and process upgrading, which involves improving both the quality of the items produced and the sophistication of the manufacturing operations.
- Upgrading in the **textiles segment** includes the shift from knit apparel to woven apparel. The latter of which is more capital intensive, but which captures a much higher value within the chain. It also involves improving techniques (process upgrading) and final quality (product upgrading).
- Upgrading within the **agricultural segment** include product upgrading such as the use of improved cotton varieties and process upgrading such as the adoption of modern agricultural techniques.

Figure 5. Curve of Value-Added Stages in the Apparel GVC



Sources: Adapted from (Frederick, 2010).

There are three primary functional upgrading trajectories that countries and firms in the sector pursue to increase their competitiveness. These include becoming a full package provider, offering design services in addition to manufacturing and developing own brands.

- **Full Package:** The apparel manufacturer takes responsibility for all production activities including the cut-make-trim (CMT) activities as well as finishing and distribution. The firm must have logistics capabilities, including procuring and financing the necessary textiles, piece goods and trim needed for production. In some cases, the buyer specifies a set of textile firms from which the manufacturer must purchase materials, and in other cases, the firm is responsible for establishing its own network of suppliers. The firm is also often responsible for downstream logistics, including packaging for delivery to the retail outlet and shipping the final product to the buyer at an agreed selling price. The buyer typically provides manufacturer with the product specifications and designs, but the buyer is not involved with the details of the manufacturing process, such as pattern making. Full package firms can range from single production operations to global suppliers, which have multiple production centers and work on multiple product ranges.
- **Original Design Manufacturing (ODM)/Full Package with Design:** A business model that includes design in addition to manufacturing. A garment supplier that does full package with design carries out all steps involved in the production of a finished garment, including design, fabric purchasing, cutting, sewing, trimming, packaging, and distribution. Typically, the supplier will organize and coordinate the design of the product; the approval of samples; the selection, purchasing and production of materials; the completion of production; and, in some cases, the delivery of the finished product to the final customer. Full package with design arrangements is common for private-label retail brands, such as The Gap.
- **Original Brand Manufacturing (OBM):** A business model that incorporates branding of products, in addition to or in lieu of design and manufacturing; upgrading involves a move into the sale of own brand products. Many firms in developing countries enter OBM with brand development for products sold on their domestic or neighboring country markets. Turkey offers an example of a developing country upgrading into the ODM and OBM segments (see Box 1).

Box 1. Turkey Upgrades into ODM and OBM

Over the past ten years, Turkish firms have moved into the design segment of the value chain as part of a broader strategy to establish the country as a fashion center, leveraging the country's OEM production model with short lead times. In 2010, various industry groups collaborated to organize the third "Istanbul Fashion Week" to strengthen Turkey's competitiveness in fashion and design. Deep relationships with retailers such as M&S seeking additional services from their local suppliers also facilitated upgrading into design services. By 2007, firms such as Denizli were designing about 10% of M&S garments manufactured in Turkey (Tokatli et al., 2008). In addition, some firms such as Yavuz Tekstil developed their own designs. Firms that added design as part of their offering as full package manufacturers are seeking out regional opportunities in the Middle East and Africa, where Turkish ODMs offer a competitive advantage with unique designs that harmonize heritage and modern fashion. Turkish firms realized that in order to build a strong global presence as original design manufacturers that could rival their Italian competitors, they needed to upgrade into OBM, the next segment of the value chain. Leading local firms such as Sarar and Mithat already develop and produce their own brands, which they export to global markets and sell domestically. Others were focused on becoming global retailers, such as Bilsar that has retail stores in Milan and Paris. In 1998, Sarar withdrew from its 13-year partnership with Hugo Boss to establish its own global brands for men's suits. These suits are manufactured in Turkey and sold both locally and abroad (Tokatli, 2007). Mithat, previously a full-package supplier with a large number of European and American buyers, today designs and retails three brands of its own that are sold in Poland, Russia, and Turkey. Erak clothing, a full-package supplier to international brands such as Calvin Klein, Guess and Esprit since 1984 (Tokatli & Kizilgiin, 2004), was an early mover and created its own brand, Mavi Jeans, in 1991. Since then, the firm has gradually transformed itself into an original brand-name manufacturer and retailer (Tokatli & Kizilgiin, 2004). Mavi Jeans has global sales of almost \$80 million a year. The company has flagship stores in key market fashion capitals, including New York and Berlin and its products are sold in over 4,000 specialty and department stores globally. They have sold over 40 million pairs of jeans to date (Mavi, 2015).

Product and process upgrading in a country can be very important for driving growth in the industry:

- **Product Upgrading:** The production of more complex and diversified products, which requires increasing the capabilities of the firm, that is, firm "learning". As countries gain experience in the industry, they can move from low-cost commodities to higher value-added fashion goods that warrant higher returns as labor rates increase (e.g., basic to complex products). For example, shifting from the production of sheets and towels to shirts and baby clothes. In addition, product upgrading also includes improving the quality of the product manufactured. This latter type of product upgrading is relatively easily achieved, through the incorporation of training at the firm level.
- **Process Upgrading:** This reduces cost and improves flexibility by improving production methods; it requires capital investment and better worker skills to operate new machinery or/and information and logistics technology.

The development of **backward linkages** also offers further opportunities to capture greater value from the participation in the sector. These backward linkages can include the production of textiles, the spinning of yarns and even agricultural production. In the high quality cotton sector, there are only a few countries that have developed all of these backward linkages; these are China, Egypt, India and Peru.

Table 6. Upgrading Trajectories in the Apparel Global Value Chain

		Diagram	Description
Functional Upgrading	Full Package/OEM		<ul style="list-style-type: none"> Firm takes on a broader range of tangible, manufacturing-related functions, such as sourcing inputs and inbound logistics as well as production. The supplier may also take on outbound distribution activities.
	Product Design (ODM)		<ul style="list-style-type: none"> Supplier carries out part of the pre-production processes such as design or product development. Design may be in collaboration with the buyer, or the buyer may attach its brand to a product designed by the supplier. In many cases, ODM firms work with designers from the lead firms to develop new products.
	Product Brand (OBM)		<ul style="list-style-type: none"> Supplier acquires post-production capabilities and is able to fully develop products under its own brand names. Two options: <ol style="list-style-type: none"> Supplier maintains a relationship with the buyer and develops brand collaboratively Supplier establishes its own distribution channels by establishing a new market channel that is typically more profitable and allows the firm to expand skills. These are often local or regional markets.
Product Upgrading			<ul style="list-style-type: none"> Increase unit value by producing more complex products, which requires increasing the capabilities of the firm. Countries must move from low-cost commodities to higher value-added fashion goods that warrant higher returns as labor rates increase.
Process Upgrading			<ul style="list-style-type: none"> Machinery: improving productivity through new capital investments. Information and Logistics Technology: improving the way the firm carries out these activities. Benefits both the firm and the chain because it reduces the total time, cost and increases the flexibility of the supply chain process.
Backward Linkages into Textiles			<ul style="list-style-type: none"> Textiles are either imported or purchased from local textiles producers. This latter option creates important backward linkages for a domestic textile industry and many countries begin textile production by manufacturing textiles to be used in their apparel exports.

Source: CGGC, Duke University.

Upgrading in the Agricultural Segments of the Chain: Two key upgrading trajectories have been very important in driving the competitiveness of high quality cotton production around the world – product upgrading and process upgrading. Adoption of new varieties helps to make production more efficient. For example, this can result in decreased water needs, lower use of fertilizers, and higher resistance to disease and higher yields. India, Israel and the US have all dedicated resources to improving the seed varieties utilized in the production of high quality cotton in recent years (Cotlook, 2014; Supima, 2015a).

3. Peru in the High Quality Cotton GVC

3.1. Introduction

The high quality cotton GVC is a key contributor to Peru's economy. With exports of US\$1.9 billion in 2013, the T&A sector is the country's largest non-traditional exporter (17% of non-traditional exports) (ADEX, 2015). The sector's competitiveness is based on three key factors: (1) the availability of high quality cotton; (2) the fully vertically integrated supply chain, from agricultural production of ELS and LS cotton through to final apparel production, which allow firms to rapidly turn around high quality orders; and (3) high quality apparel production thanks to skilled human capital and a long tradition in the textile industry. Since the 2008 global economic crisis, however, rising labor costs at home and lower domestic cotton production have hurt the sector, and it has struggled to regain its momentum as buyers have shifted to lower cost locations. While this structural shift has already forced higher cost countries out of the industry, Peruvian firms have been forced to upgrade continuously in order to remain competitive. This pressure continues today.

Peru has a strong reputation for the production of high quality cotton. Peru earned its reputation as a global cotton producer in the period following the Second World War, during which plantation owners, protected by import barriers, developed large-scale operations. The sector reached its peak as one of the country's principal exports in the 1960s with over 260,000 ha of cotton under production (Escobal & Salcedo, 2004). Agrarian reform in the 1960s, however, broke up the large operations in favor of cooperatives organized around former plantation workers (Mitchell, 2006). Cooperatives lacked capital and adequate equipment; internal management deteriorated (Korovkin, 1990) and cooperatives weakened (Mayer, 2009). The disintegration of those cooperatives resulted in individual farmers producing cotton in very small plots of land.

Cotton production has subsequently declined as a result of limited investments in genetic development, no modernization of agricultural techniques and weak economies of scale. Innovation and technology improvements essentially stopped following the collapse of the cooperative structure and productivity declined (Escobal & Salcedo, 2004). Since then, despite the country's reputation for producing high quality Pima (ELS) and Tanguis (LS) cotton, the importance of the cotton industry in Peru's economy deteriorated as a result of the lack of investment in genetic improvements and technology (Brenes et al., 2001). As the product became less financially attractive due to declining yields, producers shifted to alternative crops and the area planted shrank annually by about 4% from its peak in 1960, reaching just 25,000 ha in 2014/2015 (MINAGRI, 2015). The industry slowly began to import American Pima fiber in order to meet the demand for their textiles and apparel. By 2014, Pima cotton imports accounted for 70% of the raw material used in the production of high quality cotton products (Field Research, 2015). Without local cotton inputs, the local yarn industries are becoming less competitive. This in turn affects the competitiveness of the entire chain as tariff-free entry into numerous key markets is 'yarn forward', that is yarn must be either manufactured in Peru or come from the destination market.

Today, Peru is a net importer of cotton fiber and the competitiveness of the industry is increasingly dependent on the high quality production of the textile and apparel segments of the chain. The textile and apparel sector took its current, export-oriented form in the late 1990s, with the liberalization of the economy.⁸ The industry grew thanks to good quality of production, the availability of both domestic and imported raw material and the effort of many firms to upgrade technologically in order to compete in international markets (Escobal & Salcedo, 2004; Jaramillo, 2004). Clothing exports grew from US \$337 million in

⁸ Few firms established in the 1960s and 1970s to serve the local industry survived the economic turmoil of the 1990s (Field Research, 2015).

1998 to US\$1.6 billion in 2008 (IDS, 2015), becoming the principal manufacturing export (ADEX, 2015). The majority of these exports were destined for the US market, which accounted for just over 70% of apparel exports that year (UN Comtrade, 2015). Both textile and apparel operations upgraded their capabilities during this time, providing an increasingly sophisticated range of textiles and improving the quality of production, as well as expanding the product lines offered.

Since 2008, labor costs have risen in Peru, forcing local firms to upgrade their products and adjust their business models to remain competitive. Initially, apparel operations were focused on high volume, low value mixes serving mass-market brands such as The GAP and Old Navy that were attracted to Peru's supply of high quality cotton. Over the past decade, however, many of these brands have relocated production to lower cost locations in Asia, as they were less prepared to pay for Peru's production quality for mass-market labels. Peru is expensive in this segment compared to both regional competitors in Central America and global low cost competitors in Asia. In 2012, for example, Peru's labor costs were almost four times that of Vietnam and more than double that of Nicaragua (O'Rourke Group, 2014; Werner International, 2014).⁹ Peru's manufacturers have thus gradually been shifting first towards mid-value brands and now exclusive/high-end brands such as Armani, Brooks Brothers and Lacoste. As a result of the change in business model, several firms have exited the industry, while others have downsized, some by up to 50% of their labor force, since exports peaked in 2008 (Field Research, 2015).

Industrial Organization

The Peruvian industry can be divided into two key parts: agricultural production and industrial production. In the agricultural part, the sector is dominated by a large number of very small producers with a few larger producers.¹⁰ Generally these producers operate independently; the cooperative structure established in the 1960s was largely defunct by the 1980s as a result of poor management and access to necessary resources. Today, there are very few cooperatives in operation. Individual producers largely lack access to finance, and the technical, entrepreneurial and market knowledge to improve productivity and increase their returns. As a result many of these producers have reduced their cotton production and/or have exited the sector entirely. A few large producers, on the other hand, have entered the sector based on close relationships with industrial players in order to ensure a supply of raw material for the latter's operations (Field Research, 2015).

Industrial production includes those companies that transform cotton into the finished textile and apparel products. Apparel exports are dominated by medium and large-sized firms, although there are a large number of smaller exporters. In 2014, 1,352 firms registered exports over US\$50,000; 86% of these exported less than US\$1 million. The 14% of firms with exports over US\$1 million accounted for 81% of T&A exports (ADEX, 2015).¹¹ Production amongst these larger exporters is generally vertically integrated either in fiber and yarn production, or in textile and apparel production, with a few firms spanning all four stages. Firms export both intermediate products such as yarn and textiles, as well as final products. These firms are almost all Peruvian-owned firms. The strong capabilities of the local firms to supply international brands has favored a model of outsourcing rather than foreign direct investment (FDI) which tends to be much higher in other countries in the broader apparel industry, such as Nicaragua and Vietnam (Field Research, 2015; Frederick et al., 2014). Relatively high labor costs, absence of tax incentives, economic processing zones

⁹ Labor costs in Peru in 2012 were US\$2.78/hr compared to US\$0.74 in Vietnam and US\$1.23 in Nicaragua that year.

¹⁰ Large producers in 2014 included Jayanca (500ha), Cerro Prieto (500ha), Ecosac (150ha), Textil Piura (500ha), and Creditex (400ha) (Field Research, 2015).

¹¹ Table 17 indicates the breakdown of exports by firm export value and share of market.

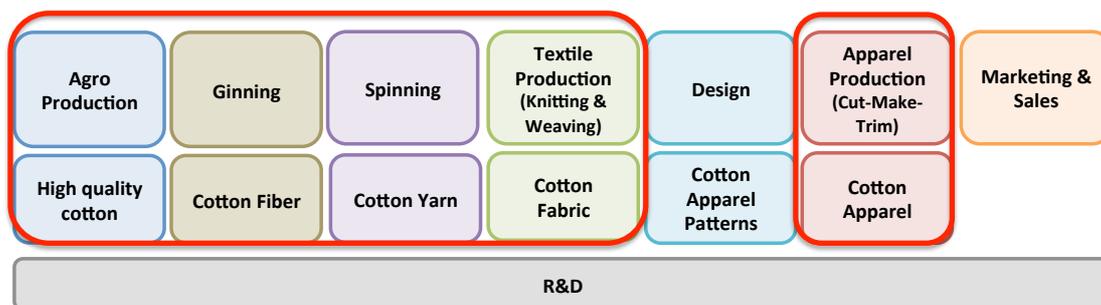
and bureaucratic and infrastructure constraints all contribute to reduce its competitiveness in the attraction of sectoral FDI.

The linkages between the agricultural and the industrial sectors are relatively weak. Several manufacturing firms buy cotton from small producers through in-house ginneries (*desmotadores*). In some cases, in order to ensure quality and quantity, they even offer finance and provide technical assistance to small cotton farmers. This support system, however, is very fragile due to the informality of the sector. There are a number of informal ginneries operating in the sector that do not pay any taxes and can offer better prices to those farmers that have been supported by the formal ginneries (Field Research, 2015). This creates unfair competition, undermining the link that is being nurtured between agricultural production and the manufacturing process. Finally, while the larger T&A firms wield a considerable degree of power within the country vis-à-vis small-scale cotton producers, they are price-takers in the global industry since they are primarily full package service providers with no design or own branding activities being undertaken. As production costs in Peru have increased, firms have been forced to shift away from a high volume/low value mix towards a new business model focused on low volume/high values in order to remain competitive. This has reduced competition for Peruvian products, and, faced with a smaller market, further reduced their market power.

3.2. Peru's Current Participation in the High Quality Cotton Textile and Apparel Global Value Chain

Peru participates in multiple stages of the GVC as a full package apparel supplier with backward linkages into the textile, yarn and cotton segments. Figure 6 highlights those stages. Notably, Peru is not present in either the design or branding and sales stages of the chain, while its weak presence in R&D for the agricultural segment of the chain has significantly undermined the sector's competitiveness.

Figure 6. Peru's Participation in the High Quality Cotton T&A GVC



Source: Authors.

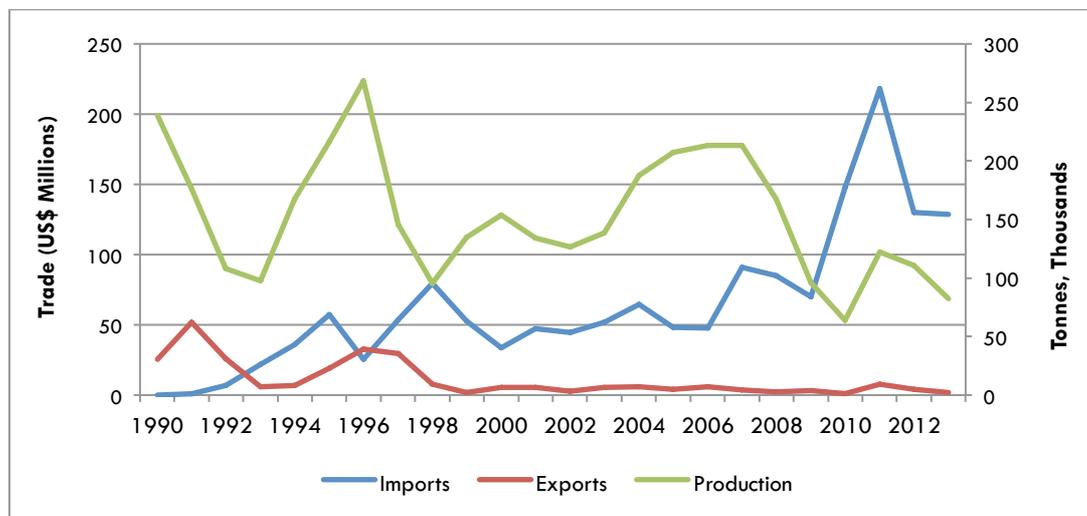
R&D in Genetics Development: Prior to the 1990s, only the use of certified seeds was permitted in the cultivation of cotton; however, over the past two decades, there has been little control of the quality. To reduce costs, small producers typically harvest the seeds from their cotton crops for replanting. Over time, this has resulted in the deterioration of the quality of cotton plants, particularly with the Tanguis cotton variety (Field Research, 2015). Average yield over the past three years is approximately 2,500kg/ha (MINAGRI, 2014a). Within Peru, although there are different public and private organizations undertaking research in the genetic development of high quality cotton (Cillóniz, 2012), anecdotal evidence suggests that commercial application of this R&D to date is limited to one small private sector initiative, the Peruvian Cotton Institute (IPA, *Instituto Peruano de Algodón*), while imported new seed varieties are generally not permitted due to potential contamination with transgenic material.

The new varieties being developed by IPA are essentially a blend of American Pima and Tanguis, which according to the organization produces a slightly shorter fiber than Pima but also shortens the cultivation period from six to nine months (Field Research, 2015).

Agricultural Production: This segment of the value chain forms the foundation for the country’s participation in the high quality cotton GVC. Peru grows four varieties of high quality cotton: Tanguis, Pima, Hazera or Del Cerro, and Aspero.¹² The two most popular varieties are Tanguis and Pima—together, they account for more than 90% of total cotton production (Cillóniz, 2012; MINAGRI, 2012). Tanguis is a LS cotton grown in the central and southern coast of Peru, while Pima is an ELS cotton that is grown in the northern region of Piura (MINAGRI, 2012; USDA, 2012). Tanguis cotton is typically favored by producers; it thrives with little attention and can grow in many different conditions. Pima cotton, on the other hand, requires more crop management. A large portion of this cotton is also produced organically (Farm Hub, 2015).

Total production of cotton in Peru has declined over the decades as areas under cultivation have shrunk. In 1960s, there were around 260,000 hectares of cotton planted, while in the year 2013/14, this declined to approximately 30,000 hectares and production plummeted from 430,000 tons to 82,500 tons (MINAGRI, 2015). Exports of cotton fiber during this same period have disappeared almost completely (see Figure 7). In 1990, Peru exported US\$52 million worth of cotton fiber (UN Comtrade, 2015); today, the country is a net importer. Imported cotton fiber highlighted in Figure 7 also includes upland fiber destined for the domestic apparel sector.

Figure 7. Production, Imports and Exports of Cotton Fiber, 1990-2013



Source: Authors’ elaboration based on (MINAGRI, 2015; UN Comtrade, 2015).

Cotton production is generally highly fragmented with an estimated 20,000 small producers cultivating plots of approximately 5 ha (MINAGRI, 2012), although a small number of operators have begun to cultivate larger plantations of up to 500 ha to meet demand (Cillóniz, 2012).¹³ Productivity varies greatly among producers, from as low as 1,380kg/ha to over 5,000 kg/ha (Cillóniz, 2012), although smaller producers on average achieve approximately

¹² See Table 16 for characteristics of these varieties in Peru.

¹³ Interviewees from both the public and private sector acknowledged that due to poor information systems and the highly fragmented nature of production, it is not possible to establish a precise number of producers in the country, and all figures, including production figures should be considered estimates (Field Research, 2015).

2,480 kg/ha (Gestión, 2014a; MINAGRI, 2015). Generally small producers use traditional farming methods to cultivate Tanguis, and yields tend to be low. Poor economies of scale, limited access to finance as a result of lack of land title, and limited knowledge regarding improved production techniques tend to inhibit growth. Larger producers favor IPA's new varieties, and utilize medium or high technology cultivation methods, resulting in yields similar to those achieved in the US. A 2012 study found that the use of medium technology resulted in almost double the yields of low technology from approximately 1,500kg/ha to 2,750 kg/ha (MINAGRI, 2012), while the IPA variety combined with high technology techniques has reached as high as 5,250 kg/ha (Cillóniz, 2012). Smaller producers sell their cotton to local ginneries to produce the cotton fibers. Several key ginneries are owned by yarn mills, including Creditex and Textil Piura (Field Research, 2015). The total number of ginneries has declined as local production has fallen; as early as 2001, the existing 68 ginneries were operating at just 24% of capacity (Brenes et al., 2001). The power of the remaining ginneries has thus increased over time, particularly in Piura where just two firms operate, allowing them to dictate prices to the producers (Field Research, 2015). Larger producers tend to have direct relationships with yarn manufacturers.

Yarns: Yarn production in Peru is focused on the processing of LS and ELS fibers;¹⁴ this is a capital-intensive sector, which consumed approximately 50,000 tons of Pima, Tanguis and Supima fiber in 2014 (Field Research, 2015). Firms source this high quality cotton fiber from domestic producers as well as imports from the US, accounting for approximately 30% and 70% respectively (Field Research, 2015).¹⁵ The majority of the cotton sourced from the US is Supima cotton (Field Research, 2015). High quality cotton fiber imports have steadily increased overtime to meet the demands of the local textile and apparel sector as local cotton production has declined. This increase is reflected in the upward trends of cotton imports in Figure 7. Local cotton is cheaper than Supima,¹⁶ similar in quality levels and is located closer to the productions center. Thus, buyers typically favor Peruvian production first, and this is then supplemented by Supima cotton (Field Research, 2015). The majority of yarn produced is consumed by the local textile industry for export-oriented apparel, although some yarn is exported accounting for between 7 and 9% of total sector exports over the past decade (see Table 8). Between 2004 and 2014, total yarn production in Peru, including that from shorter fibers, declined from 42,000 tons in 2004 to 31,000 tons in 2014, with a sharp 10.6% drop between 2013 and 2014 (Ortiz, 2013; PRODUCE, 2015). Yarn imports increased steadily reaching US \$124.8 million in 2014. These yarns are mostly short fiber cotton from India, which accounted for 88% of imports and are destined for domestic and regional markets (Field Research, 2015); just 10% of imports come from the US (UNComtrade, 2015).

Declining cotton production, combined with high costs of high quality cotton, has reduced the competitiveness of local mills. This has contributed to the consolidation of yarn production over the past 10 years and today, five major firms, Hialpesa, Textil San Ramón, Textil Piura, Nuevo Mundo and Creditex dominate production. It is estimated that these firms accounted for over three quarters of total yarn production in 2014 (Field Research, 2015). These mills tends to be vertically integrated with upstream activities in the value chain, both owning ginneries located in the key cotton growing regions as well as providing producers with access to credit and other inputs. Two of the five firms also are vertically integrated with downstream activities in T&A. The other firms have close relationships with the large textile producers in the country. In 2015, yarn producers reported operating with underutilized

¹⁴ Shorter fibers require greater preparation and slightly different equipment set up than ELS fibers (Field Research, 2015).

¹⁵ In 2013, Peru imported 57,729 MT of cotton, of which 57,186 MT were imported from US. Between 2009 and 2013 imports from US accounted for 99 percent or more of total cotton imports (UN Comtrade, 2015).

¹⁶ Several firms indicated that the price paid locally in 2014/15 was approximately 12 cents below the price paid for imported cotton (Field Research, 2015).

capacity due to lagging demand for their high quality cotton yarns (Field Research, 2015). Nonetheless, continued competitiveness of yarn production has been supported by the ‘yarn forward’ provision in the free trade agreement with key markets, particularly the US, which permits entry of textile and apparel from yarns produced in Peru or the destination country to enter tariff free (Field Research, 2015)¹⁷

Textiles: Peru’s high quality cotton export textile sector can be broadly divided in two categories, knit and woven production using Peruvian or US yarn destined primarily for the US and European export markets mostly in final apparel (Field Research, 2015).¹⁸ Textile exports, nonetheless grew between 2010 and 2014 to approximately US\$290 million, accounting for 16% of total exports by 2014. Of the textiles produced for the high quality markets, the majority of production is in knit fabric, and firms have developed the capacity to produce a wide variety of fabrics. The production of woven fabrics is more capital intensive and there are very few firms operating in this segment. Generally, firms in the textiles segment in Peru are vertically integrated apparel manufacturers, and a large portion of textile production is destined for internal consumption. Nonetheless, a number of companies also export a share of their textile production (Field Research, 2015). The production of this type of textile is directly correlated with the export of knit and woven apparel products.

Apparel: While the broader apparel sector in Peru includes approximately 2,000 firms (Consortio Cluster Development, 2013),¹⁹ the export sector is fairly concentrated and the leading ten exporters account for 41% of the total (see Table 7 and Table 17). Most major firms in the sector export directly to their clients with full package operations drawing on their vertically integrated operations (Field Research, 2015). There are several companies that operate as brokers, including the largest exporter, Devanlay Peru, and they outsource production to local companies. Firms typically have in-house capabilities to provide finishes such as stamping, washing and packaging, although it is not uncommon for firms to sub-contract these activities when necessary (Field Research, 2015).

¹⁷ Staple fibers may be non-originating.

¹⁸ See Table 10 for Peru’s primary apparel export destinations.

¹⁹ Non-exporting firms focused on the domestic market are primarily microenterprises with a heavy emphasis on informal employment (Peru 21, 2013). It is estimated that 96% of firms are microenterprises with less than 10 employees and informality exceeds 70% among them (La República, 2012). Between 40 and 45% of firms do not have municipal licenses and permits to operate (El Comercio, 2012). Many of these firms are located in Gamarra, in the district of La Victoria in Lima, is the main textile cluster in Peru which is estimated to produce 60% of Peru’s clothing and textile production for the domestic market (Gutierrez et al., 2011). Gamara supplies a wide range of buyers, from important local retailers such as Ripley or Saga Falabella to individual micro-enterprise outlets. Output is sold mostly in Lima. Firms use both Peruvian cotton and fabrics imported from China and others countries. Most microenterprises in Gamarra do not export either directly or indirectly due to high informality, and low productive capacity and business collaboration (Gutierrez et al., 2011). For additional information on domestic firms serving the domestic market, see (Consortio Cluster Development, 2013).

Table 7. Leading Ten Apparel Export Firms (Chapter 61+62), 2014

Firm	Origin	FOB US\$ (million)	Share
Devanlay Peru S.A.C.	France	97.1	8.2%
Confecciones Textimax S A	Peru	64.7	5.5%
Topy Top S A	Peru	59.2	5.0%
Industrias Nettelco S.A.	Peru	58.5	5.0%
Textiles Camones S.A.	Peru	43.8	3.7%
Southern Textile Network S.A.C.	Peru	39.2	3.3%
Hilandería De Algodon Peruano S.A.	Peru	34.5	2.9%
Textil Del Valle S.A.	Peru	33.4	2.8%
Cotton Knit S.A.C.	Peru	29.6	2.5%
Textil Only Star S.A.C.	Peru	26.0	2.2%
Others		693.0;	58.8%
Total		1,179	

Source: (ADEX, 2015)

Note: Chapter 61 and 62 correspond to knit cotton and woven cotton apparel respectively.

The business of these leading firms is highly concentrated in cotton apparel production, which accounts for almost 90% of the exports (SUNAT, 2015); those firms interviewed indicated that over 90% of their cotton exports are made of pure high quality cotton or high quality cotton-synthetic blends (Field Research, 2015).

Design, Marketing and Retail: With the exception of a very small number of operations, firms generally do not participate in these two segments of the value chain. The majority of the firms do not provide design services to their clients (Peru 21, 2013), rather only carry out design functions to support sales initiatives. On one hand, this is due to a lack of design experience in the country and lack of familiarity with the design needs of the key markets, but on the other hand, as Peruvian suppliers have upgraded into the high value niche market, the profile of their buyers have changed. Buyers, today, include firms such as Armani whose core competencies lie in developing original design for the global fashion industry and thus are unlikely to outsource these activities.

Likewise, there have been few attempts to develop own brands and retail operations with little success. However, there are a few emerging designers from the country, including Michelle Belau and Sergio Davila. These initiatives to date have been carried out either domestically or in the regional Latin American market (Consortio Cluster Development, 2013; Field Research, 2015).

Human Capital in the High Quality Cotton GVC in Peru

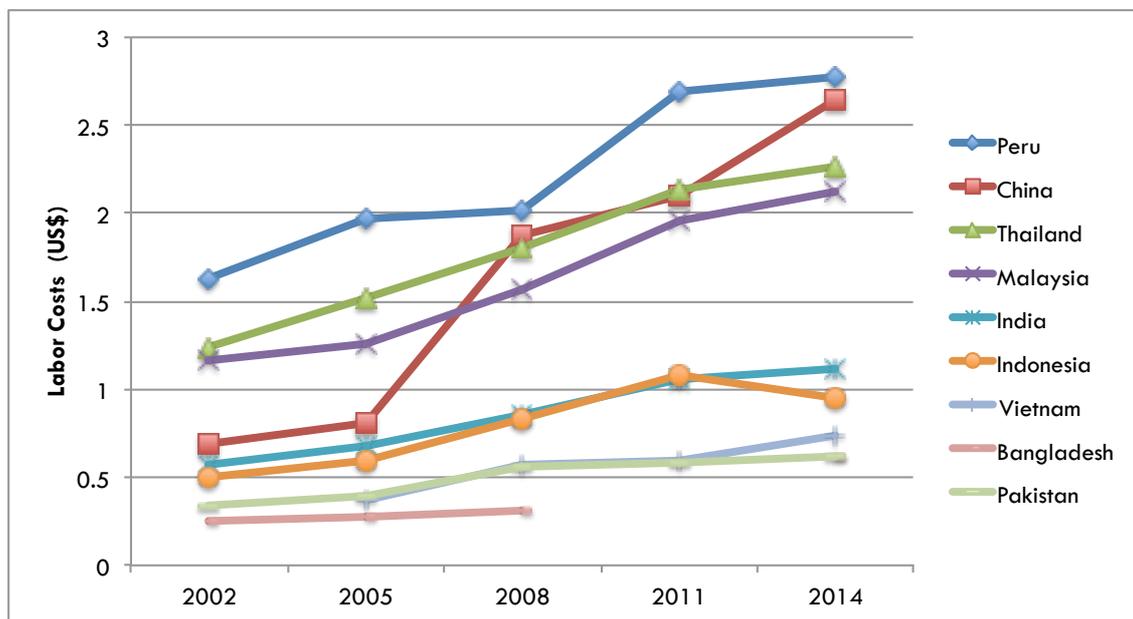
The industry is a major labor employer in Peru in both the agricultural and industrial segments of the chain. The textile and garment sector employs more than 350,000 in direct jobs: 128,000 workers in clothing production; 32,000 in yarn and textile production; 200,000 in fiber production (PromPerú, 2012). Employment is fairly well-balanced, at 60% male and 40% female. More men are devoted to cotton agricultural activities, while there are more women in the manufacturing stages of the value chain (SOMO, 2011).

In Peru, the majority of textile and apparel jobs for the export market are formal. This is in contrast with many informal jobs in the same sector for the domestic market (La República, 2012). The export sector, in general, has high labor standards and workers at many factories receive social benefits and operate in clean and safe work environments. As firms have to actively recruit workers to the sector, many of the large exporting firms offer on-site daycare, medical care and good recreation areas among others (Field Research, 2015). The majority of

the companies are accredited under the Worldwide Responsible Accredited Production (WRAP)²⁰ system, pay social security and child labor is not an issue (Donaldson, 2014). However, although formal employment is high, the majority of workers (94%) are employed under short-term contracts that are characterized by job insecurity and low possibilities to form unions (SOMO, 2011). The sector in Peru has been criticized for abusing this contract scheme, because they re-hire the same workers over and over creating a perpetually temporary workers (Fair Labor Association, 2014).

In general, the country's T&A sector is characterized by more expensive labor than other in competitor countries, especially several of the larger high quality garments exporters such as Bangladesh, India and Pakistan. Although China's labor costs are similar to Peru, these three countries were amongst the top five for the lowest labor costs in the industry in 2014 (Werner International) (see Figure 8). These higher labor costs are the result of declining interest amongst the younger generations to work in the sector, combined with Peru's general economic boom over the past decade (Field Research, 2015). Salaries in the manufacturing stages of the chain are around US\$2.78 per hour, compared to less than US\$1.50 per hour in these other countries (Werner International, 2014). Together with productivity incentives, the minimum wage for unskilled workers in this sector in Peru is around \$300 per month (Donaldson, 2014), approximately 50% higher than the minimum wage. Thus the country is not a cheap location for production of garments. The industry in Peru is based on the high quality cotton and strong craftsmanship. As the sector has upgraded its product base in the last decade, selling smaller quantities of higher value garments, the number of workers has shrunk (Field Research 2015).

Figure 8. Labor Costs in the Textile and Apparel GVC, Select Countries 2002-2014, US\$/Hour



Source: Werner International, 2015.

Note: Data points for 2005 were not available in the original data, thus for this year, an average was created between 2004 and 2007 for all countries.

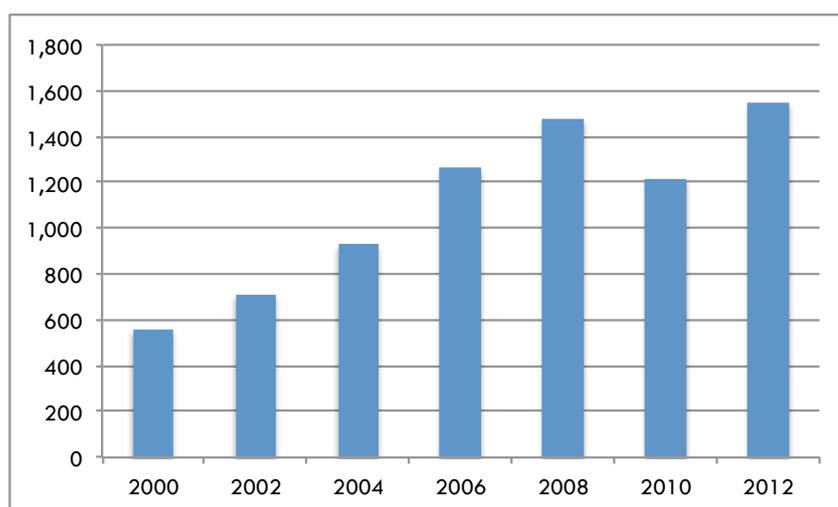
²⁰ Worldwide Responsible Accredited Production (WRAP) is an independent, objective, non-profit team of global social compliance experts dedicated to promoting safe, lawful, humane and ethical manufacturing around the world through certification and education. WRAP is the world's largest independent certification program mainly focused on the apparel, footwear, and sewn products sectors.

3.3. Upgrading and Value-Added in the Peruvian High Quality Cotton Textile and Apparel GVC

The capabilities of Peruvian operations in this sector have generally increased as a result of the country's engagement in the GVC. Exports experienced a period of strong growth although they are now declining and changing in composition, local firms have improved the quality of production, speed of response to market needs and learnt how to enter new markets. Furthermore, Peru's unique production model of vertical integration from agriculture to manufacturing allows the country to capture a high share of value added. This section analyses key aspects of Peru's participation and upgrading in the value chain in recent years.

1. Total Exports Have Begun to Decline: Exports grew rapidly between the end of the 1990s and the mid-2000s as existing firms grew and new firms entered the sector, increasing from US\$337 million in 1998, peaking at US\$1.6 billion in 2008 prior the global economic crisis (ADEX, 2015). Since then, the sector has been unable to fully recover to previous export levels, as costs continue to rise both in terms of labor and high quality cotton inputs. Smaller exporters, in particular, were impacted, approximately 15% of firms that exported over US\$100,000 in 2013 reported no exports in 2014 (ADEX, 2015)..

Figure 9. Number of Firms Exporting Apparel, 2000-2012



Source: Sunat, 2015

Note: Includes all firms registering exports by year.

2. Changes in Exports by Value Chain Segment: Since the industry is vertically integrated, much of the fiber, yarn and textile produced in the country are absorbed locally for the manufacture of the final apparel products. Table 8 shows the exports of the different segments of the value chain. Final product exports account for approximately 68%, followed by textiles, which account for 16%. Exports are dominated by knit products, which accounted for US\$1.1 billion in 2014 (ADEX, 2015). Over the past five years, the exports of intermediary products has increased in absolute value as well as relative value compared to final products which has declined somewhat. Textile exports represented only 9% of the total industry exports in 2010, while in 2014 it increased to 16%. During the same period, apparel exports declined from 77% of the total sector exports to 68%.²¹

²¹ For example, 368 firms with exports over US\$100,000 in 2013 registered no exports in 2014.

Table 8. Exports by GVC Segment, 2010-2014

	US\$ (Million) FOB					Share				
	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
Fiber	100	105	84	87	125	6%	5%	4%	5%	7%
Yarn	121	145	148	159	168	8%	7%	7%	8%	9%
Textiles	138	196	303	265	289	9%	10%	14%	14%	16%
Apparel (Total)	1,202	1,541	1,639	1,415	1,211	77%	78%	75%	73%	68%
Knit	1,072	1,363	1,433	1,257	1,089	69%	69%	66%	65%	61%
Woven	101	146	170	118	90	6%	7%	8%	6%	5%
Other	28	33	36	39	31	2%	2%	2%	2%	2%
Total	1,560	1,988	2,174	1,926	1,792	100%	100%	100%	100%	100%

Source: ADEX, based on Peru Custom's Data.

Note: Other Apparel includes exports reported under Chapter 63. This export data includes exports to Venezuela.

3. Product Upgrading in Apparel: High quality cotton apparel production in Peru is concentrated on high value basics, that is, high quality t-shirts (61%), sweaters (17%), trousers (7%), baby clothes (4%), and trousers (woven and knit) (4% each) (see Table 9). The share of the leading products remained fairly constant between 2007 and 2013. For example, the combined share of knit shirts and sweaters stayed at approximately 77% of the country's exports.

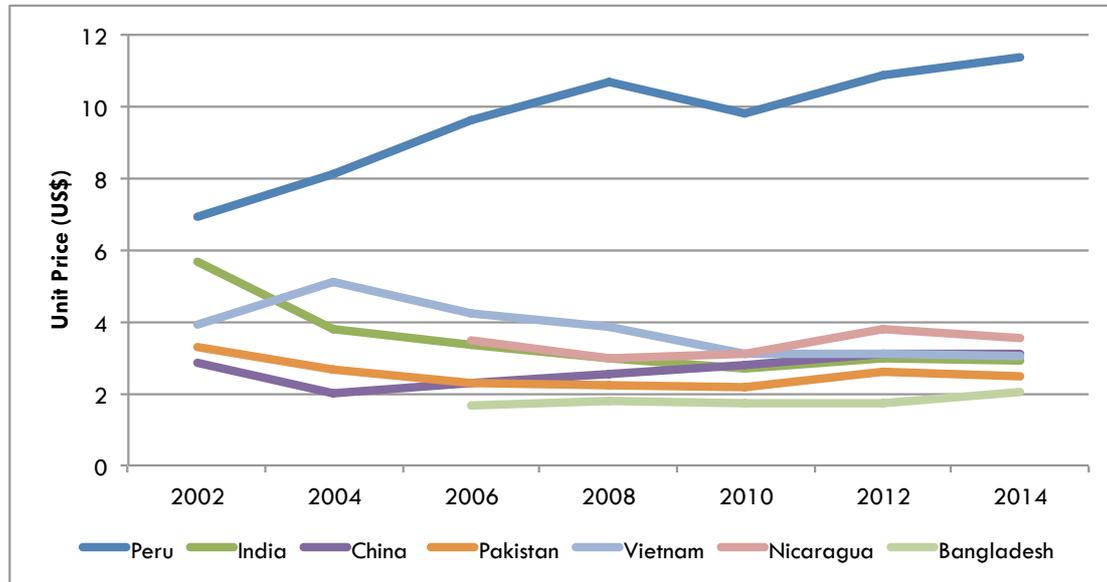
Table 9. Peru's Top 5 Cotton Apparel Trade, by Value, by Product Category, 2007-2013

	Value (US\$, millions)			Market Share (%)		
	2007	2009	2013	2007	2009	2013
Final Products	1,141	1,085	963			
Knit	1,064	988	890	93%	91%	92%
Knit Shirts	598	553	586	52%	51%	61%
Sweaters	326	276	164	29%	25%	17%
Baby	32	31	35	3%	3%	4%
Trousers	27	24	34	2%	2%	4%
Intimate Apparel	24	25	23	2%	2%	2%
Dresses & Skirts	14	22	21	1%	2%	2%
Misc Apparel	17	31	9	1%	3%	1%
Woven	78	97	73	7%	9%	8%
Trousers	33	38	35	3%	4%	4%
Woven Shirts	31	33	27	3%	3%	3%
Dresses & Skirts	4	6	3	0%	1%	0%
Baby	2	2	2	0%	0%	0%
Intimate Apparel	3	4	2	0%	0%	0%
Suits/Formalwear	3	5	2	0%	0%	0%

Source: UNCOMTRADE, HS92, relevant six-digit codes from HS61 and 62; retrieved on 1/14/15 (2013); exports represent world imports.

While the sector initially produced for a wide range of mass-market brands, today, a growing share of exports are for more exclusive brands (Field Research, 2015). This is reflected in the rise of the per unit price by almost 70% from US\$7.36 to US\$11.36 between 2000 and 2014 as shown in Figure 9. This strong upward tendency has not been seen amongst competitors, many of whom have followed a downward unit value trajectory, experiencing product downgrading.

Figure 10. Unit Price for Cotton Knit Apparel, Select Countries, 2002-2014



Source: (IDS, 2015).

Peru's product upgrading has been achieved in a large part as a result of the establishment of Devanlay (Lacoste) in Peru in the early 2000s. The firm entered Peru to tap into the local supply of high quality cotton. In doing so, the firm served as an anchor for the entry into the luxury brand segments. Devanlay's Peru model is to subcontract all production to local firms; these producers include Creditex, Nettelco and Textimax amongst others. This relationship directly contributed to product upgrading and quality improvements amongst these suppliers. At the same time, the demonstration effect resulted in other luxury brands including Armani, Lily Pulitzer, and Brooks Brothers, amongst others being attracted to work with local firms (Field Research, 2015). Overtime, the high quality production of the Peruvian operations has led these brands to expand production. This product upgrading into a higher value niche has allowed the country to continue be a player in the value chain despite general higher production costs. However, it has also required a restructuring of operations, favoring smaller firms, with fewer, but more highly qualified staff (Field Research, 2015). It has also placed firms in a position where functional upgrading becomes more difficult as design and marketing are the key core competencies of their buyers.

4. Upgrading into Fast Fashion Segment: Within the broader apparel industry, the emerging fast fashion segment offers a higher value proposition for firms who can rapidly, but cost effectively, turn around small orders to meet consumer demands for specific colors, sizes and designs. This market segment requires large numbers of small batches to meet high demand for particular items and buyers pay slightly higher unit value for this rapid service. Due to its geographic proximity to the US and its integrated supply chain, Peru can rapidly and relatively inexpensively respond to small size orders. Many of the apparel firms in Peru have thus begun upgrading into this product segment, and this shift is partly responsible for the increase in unit price per item illustrated in Figure 9 (Field Research, 2015). Upgrading

has been facilitated by the vertical integration of the sector, which has allowed firms quick access to inputs with reduced logistical costs and the adoption of a ‘just-in-time’ production model. As with the product upgrading for higher value brand in recent years, this has required factories to reorganize their operations into smaller teams, and in some cases, has contributed to an overall decrease in factory size (Field Research, 2015). It also requires increased operational flexibility, in particular with respect to a growing dependency on temporary contracts (Plank et al., 2012).

5. Increased Importance of Regional Markets: Exports are primarily destined for the US, Europe (Germany, Italy and the U.K) although the share of exports to regional markets, including Brazil, Colombia, and Venezuela has grown in recent years (see Table 10). Although precise export figures were not available to differentiate high value from short fiber cotton exports, it can generally be assumed that exports destined to the US and Europe are exclusively high quality cotton, while those destined for regional markets are based on more on imported short fibers, with a smaller participation of high quality cotton (Field Research, 2015). The US continues to be the most important client of Peruvian cotton apparel, buying US\$ 516 million in 2013, although its share for exports has been declining; in 2003, US imports represented 82% of Peru’s exports, while in 2013, it was only 54%. On the other hand, demand from the regional market has been expanding, particularly from Brazil, Venezuela, Argentina and Colombia. In 2013, Latin America imported close to US\$200 million in textile and apparel from Peru. Other important destinations of Peruvian cotton apparel include Germany, Canada and Italy.

Table 10. Peru's Top 10 Cotton Apparel Export Destinations, by Value, by Year, 2003-2013

Destination	Value (\$, Millions)						World Share (%)					
	2003	2005	2007	2009	2011	2013	2003	2005	2007	2009	2011	2013
World	615	994	1,141	939	1,055	963						
USA	504	779	779	555	628	516	82	78.4	68.2	59.1	59.6	53.6
Brazil	--	--	--	18	71	80	--	--	--	1.9	6.7	8.3
Venezuela	7	67	134	120	36	71	1.2	6.8	11.7	12.7	3.4	7.3
Germany	8	13	18	24	31	28	1.2	1.3	1.6	2.6	2.9	2.9
Canada	12	16	20	23	21	25	1.9	1.6	1.8	2.4	2.0	2.6
Argentina	--	--	--	--	38	24	--	--	--	--	3.6	2.5
Ecuador	--	--	--	--	--	24	--	--	--	--	--	2.5
Colombia	--	--	16	20	30	23	--	--	1.4	2.2	2.9	2.4
Italy	--	7	22	25	33	22	--	0.8	1.9	2.6	3.1	2.3
Chile	17	10	15	--	--	20	2.8	1.1	1.3	--	--	2.1
France	11	10	28	23	20	--	1.8	1.0	2.4	2.4	1.9	--
Spain	16	29	19	18	--	--	2.6	2.9	1.7	2.0	--	--
United Kingdom	10	11	19	18	23	--	1.6	1.1	1.7	1.9	2.2	--
Mexico	7	13	--	--	--	--	1.1	1.3	--	--	--	--
Netherlands	5	--	--	--	--	--	0.8	--	--	--	--	--
Top 10	596	957	1,069	842	931	833	96.9	96.3	93.6	89.7	88.3	86.4

Source: UNCOMTRADE, HS92, relevant six-digit codes from HS61 and 62; retrieved on 1/14/15 (2013); 3/1/15 (2003 and 2007); 6/20/14 (2005 and 2009); exports represent world imports

This shift towards regional markets has occurred amongst the large firms in addition to smaller operations, particularly since the economic crisis as these large firms have sought to diversify their markets and respond to slowing demand from their main market in the US. Of the top 17 exporters in 2012 (those accounting for 1% or more of Peru’s export value), the share of US sales declined from 90% in 2002 to 63% in 2012 (see Table 11). The share of

regional sales during this same period increased from just 1% to 23% (SUNAT, 2015). Furthermore, firm interviews suggested that the products of the top 17 exporters going to regional markets are the same as those going to the US (Field Research, 2015). This is supported by the results of the analysis of the top five products between the US and the leading regional market, Brazil in 2012, reveals that four out of the five are the same (SUNAT, 2015).

Table 11. Top Five Export Destinations, Top 17 Exporters 2002-2012

Year	Value (US \$ Millions)						Share (%)					
	2002	2004	2006	2008	2010	2012	2002	2004	2006	2008	2010	2012
Total	212	392	528	593	551	602						
USA	190	363	462	478	408	380	90%	93%	88%	81%	74%	63%
Brazil	--	--	--	--	30	52	--	--	--	--	5%	9%
Venezuela	--	--	20	23	14	44	--	--	4%	4%	3%	7%
Italy	--	--	--	13	16	20	--	--	--	2%	3%	3%
Canada	3	5	7	--	--	14	1%	1%	1%	--	--	2%
Argentina	--	--	--	--	--	--	--	--	--	--	--	--
Germany	4	2	--	--	--	--	2%	1%	--	--	--	--
Colombia	--	--	--	10	--	--	--	--	--	2%	--	--
Mexico	--	--	5	--	--	--	--	--	1%	--	--	--
United Kingdom	3	3	--	--	11	--	1%	1%	--	--	2%	--
France	5	--	11	15	--	--	2%	--	2%	2%	--	--
Spain	--	8	--	--	--	--	--	2%	--	--	--	--
Top Five	205	381	505	539	479	510	97%	98%	96%	91%	87%	84%

Source: SUNAT, 2015.

Note: Top 17 Exporters in chapters 61 and 62; Exporters accounting for 1% or more of Peru's export value.

6. Value Capture in the High Quality Cotton GVC: Peru captures an important share of the value added in the production of these different apparel items, compared to other countries that operate in the broader T&A industry, as a result of its vertical integration. Backward linkages into the agricultural and textile production stages of the chain is not common for developing countries in the apparel sector. Bangladesh and Turkey, for example, do not produce raw cotton; other countries, such as those in Central America import all of the inputs – including textiles and only operate in the CMT segments of the chain (Frederick et al., 2014). However, in the last decade, with an increasingly quantity of cotton fiber being imported, the portion of foreign-value added in its apparel exports is beginning to grow. In 2012, raw cotton imports from the US accounted for 12% of the imports of the top seventeen apparel exporters. Total imports (excluding capital equipment and office supplies) as a percentage of exports for these firms, however, came to just 4%, highlighting the value contributions of the other stages of the value chain in the country.²² The most important imports for 2012 are detailed in Table 12.

²² This figure excludes capital and construction equipment and office supplies imports listed in HS2012 categories 49, 82, 84, 85, 90 and 96.

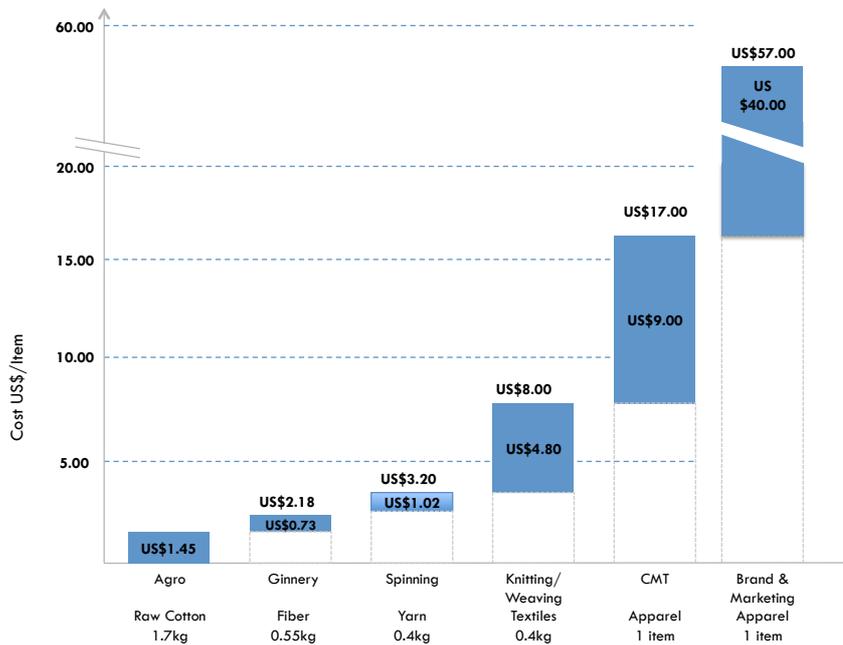
Table 12. Top 10 Imports for the High Quality Cotton Sector

Inputs	Value (US\$)	Share	Imported from
Woven fabrics and cotton yarn	8,918,542	29%	India, USA
Cotton (not carded or combed)	3,541,317	12%	USA
Machinery and mechanical appliances	3,132,999	10%	USA, China, Italy, France, Germany, Brazil, Spain, Portugal
Yarn and sewing thread of artificial staple fibres	2,498,891	8%	Indonesia, Thailand
Special woven fabrics, including embroideries in the piece, labels and badges	2,435,140	8%	China, France, Hong Kong, Italy
Paper or paperboard labels	2,345,898	8%	China, Hong Kong, Germany
Tanning or dyeing extracts and pigments	1,838,981	6%	Switzerland, Korea, India, Thailand
Miscellaneous manufactured articles, including slide fasteners and buttons	1,714,864	6%	China, France, USA, Taiwan, Hong Kong, Vietnam
Apparel and clothing accessories of plastic and packing articles (bags, spools, cops, bobbins, tape)	843,147	3%	France, China, Hong Kong
Yarn and sewing thread of man-made filaments	577,365	2%	Korea, Taiwan, Germany
Electrical machinery, equipment and parts	499,333	2%	Germany, USA, Italy
Others	2,161,455	7%	
TOTAL	30,507,931		

Source: (SUNAT, 2015).

Figure 10 illustrates the distribution of value added in the different stages of the value chain for a woven men's dress shirt in Peru, based on the operations of a large exporter firm. Raw cotton represents around 2.5% of the total value of the apparel item. As the cotton is processed first in the ginnery, then in the mill to produce the yarn, these two stages together sum another 3% of the apparel. The textile stage, in this case woven, adds a further 8.5% of the value and the fabrication of the item, 16%. The foreign retailers/brands account for around 60-70% of the item's final value (Field Research, 2015).

Figure 11. Example of Average Woven Cotton Value Added Per Item in Peru, Large Exporter Firm



Source: (Field Research, 2015).

7. Limited Learning in the Domestic Market for Functional Upgrading: In the broader apparel market, several firms have functionally upgraded into the marketing and sales segment of the value chain, the most well-known of which is Topy Top which had 5 own brands and 57 stores in Peru, Ecuador and Venezuela (Consortio Cluster Development, 2013). However, there has been limited “learning in the domestic market” for high quality cotton apparel, and only one major pima apparel manufacturer, Creditex, has done so to date. Between 2005 and 2012, Creditex established three own brands (M.Bo, Marc Boehler and Norman & Taylor) and approximately seven retail outlets serving the local markets. The firm noted that this remains a small part of their overall business (Consortio Cluster Development, 2013; Field Research, 2015).

3.4. High Quality Cotton Industry Institutionalization in Peru: An Assessment for Local Context for GVC Upgrading

This value chain involves a range of very diverse actors from the agricultural and industrial sectors. While there is some cohesion of stakeholders at individual stages of the value chain, there is limited vertical coordination beyond commercial relationships. Currently, there is no single institution that groups all of the actors and that can strategize about the sector goals, and there is limited appreciation of the importance of the sector’s vertical integration for its competitiveness. Table 13 highlights the main industry stakeholders in Peru and describes the role each plays in shaping the industry dynamics at the local level.

Table 13. Primary Stakeholders in the Mining Equipment GVC in Peru

Stakeholder	Description	Level of Importance	Power and influence
Large and Medium manufacturing companies (yarn, textiles, apparel)	Many of these companies are vertically integrated and manufacture textiles and apparel; others are dedicated in the yarns segment. These companies are focus almost exclusively on the export market.	High	High
High quality cotton producers	These are individual small farmers. They sell their cotton to formal ginneries that support them (some of these ginneries are owned by textile and apparel manufacturing companies). Sometimes these farmers side-sell their cotton to informal ginneries to obtain higher prices.	High	Medium
Cotton Producers - ANPAL	Producers of raw materials for the sector; largely lack organization; ANPAL is the national association but not entirely representative of producers.	Medium	Medium
IPA (Founded 1997)	Focuses on the development of new genetic cotton varieties; first variety developed was IPA-59. Organization is supported by a variety of actors in different stages of the value chain.	Medium	Medium
SNI Textile Committee	Committee within the broad national association representing a wide range of sectors within the country.	Medium	Low
ADEX (Exporters Association)	Represents exporters at the national level; two relevant sector-specific committees, Textiles Committee & Apparel Committee.	Medium	Low
PREVEX (Sociedad Peruana de Exportadores de Prendas de Vestir)	A newly created industry association specifically to represent the interests of the industry (textiles and apparel stages only). Established in response to need for more direct representation and influence than offered by SNI/ADEX.	Low	Low
Ministry of Agriculture	Sets policy that affects the production of cotton in the country (e.g. subsidies, reconversion program, productivity bonus, etc.)	High	High
PROMPERU	National export promotion agency; tends to focus on SMEs.	Medium	Low
Educational Institutions	SENATI offers technical education programs for the yarn, textile and apparel segments of the chain, although many companies need to provide training in-house to supplement this. In the agricultural segments of the chain however, there are very few programs.	Low	Low

Source: Authors.

Notes: The level of importance describes the relevance of the actor in the operation of the value chain activities. Power and influence describes the level of control the actor has over the value chain operations and development.

Many of the apparel firms are based fairly close to each other in a small number of neighborhoods in Lima such as Ate (Consortio Cluster Development, 2013) -- where Creditex, Nettalco, and another boutique firm, Cotton Project, all have their operations -- and the area of Gamarra; although this location is dominated by firms serving the domestic and regional short fiber cotton markets (Field Research, 2015). The yarn operations are generally more geographically dispersed, while cotton production mostly takes place in Ica, followed by smaller plantation areas in Piura and Lambayeque (MINAGRI, 2012, 2015). This geographic distribution contributes to poor coordination amongst the value chain actors. While there is some degree of coordination at each of the different stages of the value chain, overall, there is limited understanding of the need to coordinate the chain as a whole in order to improve the sector's competitiveness. For example, to date, there has been a somewhat

adversarial relationship between yarn producers and others in the value chain (both upstream and downstream), while problems in the agricultural sector generally are considered by the industry to be the domain of the government. Coordination amongst the large apparel producers is undermined by the fact that they compete to supply a very small number of buyers.

While there are several associations in Peru with the mandate to represent the industry, none of these is comprehensive of the value chain. SNI represents all of the manufacturing segments of the stage, and given its broader agenda it is believed by many industry actors that their efforts in supporting the sector are limited in their effectiveness (Field Research, 2015). ADEX has provided another forum to support the sector’s export agenda, however, the agricultural sector is unrepresented. Finally, IPA appears to be the most representative organization, however, it has a very narrow mandate focused on genetic development. As a result of this lack of coordination, it has been difficult for the sector as a whole to fully articulate its challenges and lobby for appropriate policy change.

Overall, there is limited appreciation of the entire value chain and the affect of changes in one stage on the others, particularly with respect to the link between the agricultural and the industrial stages. The actions taken by the Ministry of Agriculture regarding cotton, for example, have great repercussions for the textile and apparel sector. However, they are not analyzed in that context and new policies are taken in isolation, based on the political momentum of the current administrators (Field Research, 2015). This also occurs with manufacturing operations in which the discussions are held only among peer firms and not upstream or downstream actors. These factors limit the development of the sector.

3.5. Advantages and Constraints for the High Quality Cotton Textile and Apparel Industry in Peru

Peru’s has a long tradition with important participation in the high quality cotton textile and apparel GVC, and strong links to the US market. However, several constraints have begun to undermine the sector’s growth in recent years. This section discusses the advantages and constraints of Peru’s current economic, social and institutional context for continued competitiveness in the value chain.

Table 14. Advantages and Constraints

Advantages	Constraints
Experience in apparel	Rising labor costs
Integrated supply chain	High levels of bureaucracy & lack of coordination
Proximity & access to key market	Costly logistics
High potential for increased cotton yields	Dependence on small-scale agriculture

Advantages

- **Experience:** Peru has a rich history of T&A production with deep traditions and skills (see Box 2), which provides the country with an excellent base for the production of high quality textiles and final products. Over the past fifteen years, Peruvian firms have begun to leverage this strength for their development. This is evident in the unit price of Peruvian products which was five times the world per unit price for the US in 2014 (IDS, 2015).

Box 2. Ancient History of Textile and Apparel Production in Peru

Fine textile production is a millennial tradition in Peru, dating back more than 2,500 years, when cotton was first domesticated in the country. It played a central role in society and daily life in ancient Peru. Cotton clothes were not only utilitarian but they had a symbolic and ceremonial purpose, oftentimes indicating power or religious beliefs. Garments achieved their highest technical and artistic levels during the height of the Paracas civilization in the Ica Valley, between 600-150 BC. Made from camelid wool and cotton, the extraordinary Paracas textiles were finely woven and brightly colored, indicating religious beliefs as well as social status and authority. Later cultures, including the Wari and Chancay, continued this tradition, producing very fine and high complex textiles, including muslins, tapestries and brocades, using a variety of techniques.

During the pre-Hispanic Andes period, cloth continued to be the most valued item from an economic, political and religious perspective. Like their predecessors, the Incas employed cloth both as a utilitarian good and medium of taxation as well as a sign of wealth and political favor. The form and decoration of cloth itself denoted components of social identity such as gender, ethnicity or social status. For instance, feathers, vicuña and metals were materials reserved for political elites. An intricate repertoire of techniques was used for making and developing cloth, including tapestry, double and triple-cloth, and warp-patterned weaves. During the Spanish conquest the European foot pedal loom was introduced and European fashions and knitting became predominant. However, pre-Hispanic weaving techniques are still in use today in some parts of Peru.

“The value attributed to textiles by pre-Columbian societies can be compared to the importance given to gold and silver. Textiles served as much more than clothing; they were also a medium for spreading religious ideas and for transmitting messages to the next world when they were employed to wrap the mortal remains of the dead. They also served as exquisite gifts for the rulers of these societies, as well as to denote social status” (Museo Larco, Peru)

Source: (Costin, 1998).

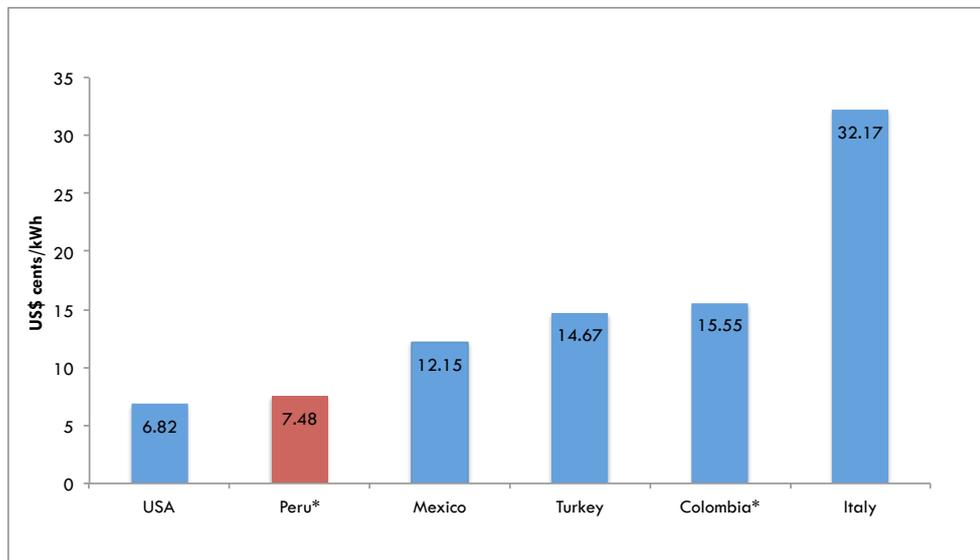
Integrated Supply Chain: Peru’s integrated supply chain from agricultural production through the completion of the final product provides it with important advantages. In particular, the proximity of the different stages of the chain²³ reduce logistics costs and allow manufacturers to respond rapidly to orders as they can easily coordinate between yarn and textile producers to supply inputs required for the final good. Together with its proximity to its key market, the US, and its capacity to produce small lots, this integrated supply chain allows Peruvian manufacturers to participate in the higher value ‘fast fashion’ market segment which is shielded from low-cost Asian competitors. Furthermore, buyers value having all stages of the chain in one location; Lily Pulitzer, for example, values the relatively short flying time between the company’s Philadelphia head office and Lima which makes it very easy for product development, design and production teams to meet with those at the factories and mills in Peru (Donaldson, 2014). This allows them to closely monitor quality in all stages of the chain by visiting just one location.

Free Trade Agreement with the US: The apparel industry is also supported by the country’s free trade agreement with the U.S. which provides ‘yarn forward’ tariff free access; as another buyer highlighted, the 40% price differential between Peru and other low cost locations is reduced to just 15-20% as a result of Peru’s trade agreement with the US, combined with superior quality (Donaldson, 2014). The Trans Pacific Partnership, however, has the potential to greatly reduce this advantage, particularly by reducing tariffs for Vietnam if the yarn-forward rule is not applied (O’Rourke Group, 2014).

²³ Many of these firms are also geographically clustered in the same areas of Lima further facilitating coordination.

Low Energy Costs: Furthermore, the sector faces lower energy costs than in many other competitors (see Figure 11), given that this accounts for 35% and 20% of costs in yarn and textile, this is a strong advantage (Farole & Winkler, 2014). In particular, its energy costs are significantly below both Italy and Turkey.

Figure 12. Industrial Electricity Prices, 2013 (US\$ cents/kWh)



Source: Authors elaboration based on (International Energy Agency, 2014) and (Osinermin, 2013)
 Note: * Data from second trimester 2013.

- High Potential for Increased Yields of High Quality Cotton:** Despite declining production over the past thirty years, Peru has considerable potential to produce high yielding high quality cotton. Even with the low investments in cotton production, the national ELS average yields (2012: 2,530kg/ha (Cillóniz, 2012)) are as high or higher than those in other producing countries such as Israel (2012: approximately 2,000kg/ha) (Cotlook, 2013). The experience of the few larger producers in Peru with over 100 ha using modern agricultural techniques such as drip irrigation, and using the new varieties produced by IPA, have demonstrated that cotton production in the country can be both highly productive and profitable, with yields of over 4,600 kg/ha compared to the US average of 3,300kg/ha (Field Research, 2015); (Cotlook, 2014). The new variety has a shorter production cycle of 6 months, allowing for two harvests per year, with lower relative investment costs compared to other crops.²⁴ Peru's coastal climate, combined with the expansion of the country's irrigation infrastructure to overcome the country's water issues,²⁵ offers favorable conditions for cotton production. This provides an advantage over competitors in the U.S. where the sector is plagued by yet another drought year (Cotton Council International, 2014).

²⁴ Although there are a growing number of crops in Peru which offer higher returns, such as grapes, avocados and blueberries, many of these crops have high investment requirements and the crop only begins to pay two to three years later. IPA 59 offers a low investment crop with returns within six months.

²⁵ Insufficient or inconsistent water supply has been considered one of the main problems for cotton production (MINAGRI, 2012).

Constraints

Agricultural Production

- **Dependence on Small-Scale, Traditional Cotton Production:** Cotton production in Peru over the past thirty years has depended on small-scale production. Small producers face numerous constraints to improving their production: First, due to the lack of land title, the majority of producers cannot use their land as guarantees for credit, this results in them having limited capital to invest in improved technologies and production techniques, such as drip irrigation and fertilizer. Second, the dismantling of the cooperative system means that producers have little bargaining power either in the purchase of inputs and thus often must face a premium (USDA, 2012). It has also resulted in widely varying quality across producers and increased transaction costs for the local yarn industry (Field Research, 2015). It is sometimes more cost-effective for a yarn producer to order cotton fibers from the US than it is to buy in-country, despite having to assume shipping costs. Third, they often lack knowledge regarding modern agricultural practices required to improve productivity and crop quality. The continued use of seeds from their cotton harvest, for example, results in degradation of plant quality and lower yields, yet it is common practice across the small-scale sector in Peru. Fourth, contract enforcement with these producers is increasingly difficult due to both informal producers and informal ginneries which facilitate side-selling.
- **Lack of Investment in New Seed Varieties:** The cotton sector in the country has seen limited investment in the development of new and improved varieties to enhance productivity (USDA, 2012). This has partly been the result of the lack of control of the use of certified seeds in the sector, which has reduced the economic viability of private investment in new varieties, as well as a lack of government spending on R&D (Field Research, 2015). Investment has been limited; the most promising commercial efforts so far have been led by IPA; the annual research budget for this organization is approximately US\$100,000 – a fraction of the funds spent annually in the US in genetic development for high quality cottons. As a result, it has taken fifteen years for the organization to develop two new varieties, IPA-59 and IPA-9 (Field Research, 2015).
- **Inconsistent Policies Regarding Cotton Production:** Over the past two decades, there have been no consistent government policies regarding the cotton sector. Some policies have been pro-cotton production, including subsidies and productivity incentives, while others have encouraged producers to abandon cotton production and shift to more profitable crops (Gestión, 2014b; MINAGRI, 2014b, 2014b). Neither of these two policy extremes have had a long-term strategy and as a result they have been short-lived. Policy changes can in part be attributed to the changes of leadership in the Ministry of Agriculture that usually occur relatively frequently. The current policy -- which includes a productivity bonus for those improving their year-on-year yields between 54 and 70 quintal/ha and incentives for crop conversions for those failing to reach minimum thresholds (Andina, 2014) -- fails to reward those who make the greatest advancements in their productivity as those achieving yields over 70 quintal/ha are not eligible for the bonus, creating a perverse incentive for those producers to report lower yields. Furthermore, these policies have been designed in isolation of the rest of the sector – that is, little attention has been paid to the role that local cotton production plays in the economic viability of the textile and apparel sector.

Manufacturing process

- **Rising Labor Costs and Shortage of Qualified Human Capital for Higher Value Activities:** With rising employment rates in Peru it is becoming more and more difficult to attract human capital to the sector, particularly in centers such as Lima and thus labor costs are increasing (Field Research, 2015). The textile and apparel sector is not very attractive today, and many workers prefer other activities, especially in retail. One firm interviewed mentioned that in the past when they announced they were hiring, they would have a long line of people waiting outside the factory. Today, they have to actively recruit new workers (Field Research, 2015). Labor costs in Peru in 2014 are considerably higher than other countries in the industry. These labor costs are further increased by the additional benefits required by Peruvian labor laws, including distribution of dividends, 30 days paid vacation and two months additional salary per year (Field Research, 2015). Furthermore, there is a lack of available qualified labor at most levels, with shortages being most acute in higher value added activities including design and marketing and those within the spinning stages of the chain.
- **Logistics (Transportation, Customs):** Inadequate port and highway infrastructure increases costs of trade, eroding the ‘fast fashion’ advantages of the country’s proximity to its key markets and the sector’s ability to rapidly produce clothing. Despite recent expansions, the principal port for the industry, Callao, continues to be overwhelmed as a result of the economy’s ongoing export growth causing shipping delays. Transportation costs can be up to twice that of shipping from Chile (Field Research, 2015). The challenges of the limited infrastructure at the port are exacerbated by over-centralization in Lima, which puts additional pressure on the road infrastructure. For example, apparel exporters located in areas such as Ate, some 30 km from in Callao and with high congestion, firms note that transport to the port and airport in Callao can take one to two hours.
- **Tax and Bureaucratic Burdens:** The textile and apparel sector globally is one that benefits considerably from tax incentives; it is not uncommon for country’s to offer complete tax holidays to the industry, such as in Nicaragua (Frederick et al., 2014). Peru is one of the few countries operating without these benefits; corporate tax rates are approximately 34% (Field Research, 2015). Unlike the largely informal domestic T&A sector,²⁶ exporters are typically formally registered and are subject to high levels of scrutiny from the tax agency, SUNAT. Several interviewees highlighted that they have administrative personnel permanently hired to respond to SUNAT queries augmenting the total labor costs and eroding sector competitiveness. Furthermore, the lack of specialization of the customs staff has caused important delays and costs for processing exports. For example, one firm highlighted that a shipment of pants using a particular knit technique, named after a luxury brand, was delayed by customs’ officials insisting that the value of the exports were much higher than reported as they believed the description applied to the brand and not the production techniques (Field Research, 2015).²⁷

²⁶ Estimates suggest that 70% of the sector operates informally. Informal firms pay neither income tax nor social benefits for employees.

²⁷ In practice, there is mechanism referred to as the “drawback”, by which exporters can apply for the refund of customs duties paid upon the importation of intermediate goods, raw materials or inputs consumed during the production process of exported goods, has served to compensate firms for these administrative burdens, however, this is in the process of being phased out, decreasing from 5% to 4% in 2015, and it is expected to decrease to 3% in 2016 (Field Research, 2015).

4. Recommendations: Potential Upgrading Trajectories and Supportive Policy Actions

4.1. Recommended Upgrading Trajectories

Peruvian textile and apparel sector has been an iconic industry for the country for the past two decades, however, it has reached a turning point. Strong growth of the sector up until 2008 was based on strong local cotton production linked to manufacturing of yarn, fabrics and garments. Rising labor costs at home, declining cotton production, and global competition require Peru's textile and apparel sector to establish a new strategy moving forward. The sector needs a holistic upgrading approach that tackles both cotton agricultural production and innovative product and process upgrading in order to re-position the country as a niche leader not only of high quality cotton, but also of a place of quality production sought by luxury brands. This should highlight three key factors that combine to drive the country's competitiveness – high quality cotton, integrated supply chain and high quality production.

Process and product upgrading in the agricultural sector: There is a pressing need to improve the local cotton supply, both in terms of quality and quantity. The global production of ELS and LS cotton is declining slowly, and combined with the Californian drought, this will further tighten supply forcing up prices. The supply of high quality cotton is essential to Peru's yarn and textile producers because of the 'yarn-forward' agreement with its key export markets. This means that in order to enter these markets tariff free, apparel must be made of yarn produced either in Peru or be from the destination market. Although these mills can use shorter cotton fiber inputs, this increases the production costs for the yarn mills, further increasing costs for the textile manufacturers. Production that is not absorbed by the local textile and apparel industry can be exported.

- **Process upgrading:** The adoption of modernized large-scale production of pima cotton including irrigation, up-to-date techniques, integrated pest management and mechanization is important for quickly increasing the availability of high quality cotton.
- **Product upgrading:** Cotton producers need to use certified seeds in order to increase productivity and quality. Small producers typically harvest the seeds from their cotton crops for replanting. Increased use of the IPA varieties can help not only to increase total production, but also shortens the cultivation period by 3 months, allowing producers to rotate cotton production with that of other crops.

Product upgrading in apparel: As labor costs rise, Peru needs to continue its shift towards supplying high value brands. In particular, it should move towards brands differentiated by unique characteristics in their production. For example, it should target firms requiring brilliant textiles and high quality production such as Lily Pulitzer, value the characteristics of high quality cotton that allow it to evenly absorb and retain colors as well as fine craftsmanship. Others such as Lacoste seek durability and softness in their cotton textiles, while also requiring fine attention to detail manufacturing.

Consolidation as a fast-fashion supplier: Peru can continue to build on the upgrading initiatives to date as a rapid supplier of small batches for the fast-fashion segment leveraging its geographic proximity to and free trade agreement with the US market and its integrated supply chain which allows for fast turn around. Peru has competitive advantages in this segment over other lower-cost competitors in Asia because of its proximity to market, and over Central American producers due to its superior quality, particularly for higher value brands. This should be supported by improvements in transportation and customs efficiency.

Functional upgrading in apparel: In the medium to long term, Peru can explore upgrading into the design and branding segments of the chain, as they have done so successfully in the alpaca apparel production. There are already Peruvian alpaca brands that have emerged as globally recognized brands, such as Kuna and Sol Alpaca which showcase authentic elements of the country's apparel traditions. Emerging Peruvian designers can be connected to the high quality cotton value chain that is simultaneously upgrading to serve global luxury brands.

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6. Appendix

Table 15. US Exports of High Quality Cotton, 2011-2014

Destination	2013/14	2012/13	2011/12	2010/11
Belgium	0.1	0.1	1.6	0.7
Germany	16	15.4	11.5	20.4
Italy	2	1.5	3.1	6.2
Portugal	0	0	0	0
Switzerland	0.9	2.3	3	0.3
Turkey	27.5	37.3	15.9	4.2
Other Western Europe	0	1	0.4	0
Europe Totals	46.5	57.6	35.5	31.8
Bangladesh	12.1	27.9	14.4	8.7
China	391.6	451	298.7	188.9
India	78.7	126.2	76.6	72.3
Indonesia	30.5	33.1	29.7	38.7
Japan	16.3	15.1	14.2	42.7
Korean Republic	10	9.7	18.6	18
Pakistan	26.9	63.8	100.3	47.9
Taiwan	3	3.8	5.8	11.8
Thailand	23.2	25.6	13.5	16.3
Other Asia and Oceania	0.5	0.1	1.1	1.7
Asia Totals	592.8	756.3	572.9	446.7
Brazil	0.5	1.4	0.4	0.7
Canada	0	0	0	0
Chile	0	0	0	0
Ecuador	0	0	0	0
Guatemala	0.3	0.5	0.4	0.2
Honduras	1.3	0.4	0.3	0.6
Mexico	2.6	3.1	3.8	2.7
Peru	22.9	14.5	27.2	33.4
Salvador	0	0	0	0
Venezuela	0	0	0	0
Western Hemisphere Totals	27.6	19.9	32.1	37.6
Rest of World	15.3	32.8	9	7.4
World Totals	681.7	866.3	649.6	523.8

Source: Supima, 2015. Based on USDA-FAS U.S. Export Sales – June 18, 2015
1996 - 2015 sales listed in thousand running bales

* 2014/15 sales listed in running bales through June 11, 2015

Table 16. Characteristics of Peru's High Quality Cotton Varieties

	Tanguis	Pima	Del Cerro	Aspero
Growing period (days)	260 - 280	235 – 250	180 - 190	240 - 250
Fiber length (mm)	29.4 - 32.5	33.3 - 36.5	33.3 - 36.5	26.2 - 27.0
Resistance (lbs/sq.inch)	86,000 - 88,000	92,000 - 95,000	92,000 - 95,000	80,000
Micronaire (units)	4.6 - 5.8	3.5 - 4.2	3.6 - 3.8	6.5
Color	white	white/beige	white	white/beige

Source: (USDA, 2012).

Table 17. Structure of Export Sector, By Export Value

Firm Export Level	Number of Firms	Total Exports (US\$ million)	Share of Total Exports
<US\$50,000	1,156	15	0.8%
US\$50,000 to US\$1 million	1,163	333	19%
US\$1 million to US\$10 million	156	461	26%
>US\$10 million	33	986	55%
Total	1,352	1,780	100%

Source: (ADEX, 2015).