

# Case Study Of U.S. Cotton Textile Industry

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## ABSTRACT

*Ever since its introduction to the United States, cotton has played an important role in the U.S. economy and its position in the international market. The success of cotton production in the U.S. has, in the past, served as a major boost for the American economy and a catalyst for industrial improvements and inventions. However, the global market for cotton fibers and cotton-based textile products has undergone a few changes over the past decades. Competition surrounding cotton has placed the industry under pressure and intense competition among the largest producers such as China, India, and Pakistan. Due to the increased competition of the cotton production and international trade of cotton in the global market alongside the decreased production of textile products, the U.S. cotton industry had to look beyond its own borders to meet the demands of the global textile market.*

*The purpose of this paper is to examine and discuss the important issues raised in the U.S. cotton textile industry and to look for the future of this industry. The case can be used as a tool to stimulate a critical evaluation of the industry and to facilitate discussion about the potential strategies to make the industry viable.*

**Keywords:** Cotton Textile Industry; Production; Consumption; International Trade

## INTRODUCTION

 ver the past decades, the global market for cotton fibers and cotton-based textile products has undergone quite a few changes. One of the most notable changes is the emergence of China as a dominant consumer and importer of cotton. It is projected that by 2015, China will import nearly half (47 percent) of the world's cotton production. Although the United States has long been a leading exporter of cotton over the past decades, India and Pakistan also have become among the world's largest producers of cotton, as well as exporters of cotton yarn and fabrics. We also can observe the rise in cotton production in several countries of West Africa in recent years. The rise of these countries has led to the increased competition of the cotton production and international trade of cotton in the global market. Since the decreased textile production in the United States has forced the U.S. cotton industry to look beyond its own borders to meet the demands of the global textile market, it is challenging for U.S. cotton industry to compete with other low-cost countries. Thus, this case study attempted to discuss the following issues:

- Cotton consumption and production trends in global market
- Impact of Cotton Production and International Trade on U.S. Textile and Apparel Industry and overall economy
- Major cotton producers around the world
- Technological innovations that impact on cotton production to date
- The future of cotton production in the United States - longevity/viability in global market

## COTTON CONSUMPTION AND PRODUCTION TRENDS IN GLOBAL MARKET

World cotton consumption has increased at an average annual growth rate of approximately 2% since the beginning of the 1940's. Developing countries accounted for 78% of global cotton consumption between 1981 and

1999, and above 80% since 2000. Based on ICAC figures, it is predicted that developing countries will absorb almost 94% of global cotton output by the end of this year (UNCTAD, 2011). The shift of cotton consumption to developing countries is mainly a reflection of rising wage levels in developed countries. Rising labor costs contributed to the shifting of cotton production and manufacture to low-cost economies—most notably, Asia. Nevertheless, the main cotton producing economies still account for a large part of consumption. According to ICAC data, China, the U.S., India, and Pakistan together accounted for more than 55% of global cotton consumption between 1980 and 2008 (UNCTAD, 2011).

The global market for cotton fibers and cotton-based textile products has undergone drastic changes during the past few decades. One of the most notable changes is China's emergence as the dominant consumer, importer, and producer of cotton. As such, China has been predicted to import around 47 percent of the world's cotton production by the year 2015. India and Pakistan have also entered the ranks of the world's largest producers of cotton, as well as exporters of cotton yarn and fabrics. With increasing competition among cotton producing nations, many of which take advantage of exceedingly low labor costs, the U.S. cotton industry has struggled to keep up. In response, the U.S. has shifted production outside its borders. Whereas cotton was grown in 90 countries in 2007, the four main cotton producing countries today are China, India, the U.S., and Pakistan (UNCTAD, 2011). The most recent statistics on cotton production show that China leads with 29%, followed by the U.S. (19.9%), India (14.2%), Pakistan (9.5%), Brazil (5%), and Turkey (4.8%). Figures also show a reduction in overall cotton production by 300,000 bales, as decreases for India and China are mostly offset by increases for Australia and Brazil (YnFx, 2011).

### **China**

China has been producing cotton for more than 2,000 years and is the world's largest producer of cotton. The main cotton producing areas in China are the Yellow and Yangtze River Valleys, which together account for over three-fourths of China's cotton output. Although China has been producing cotton for a long time, it was not until 1953 that their cotton sector became fully centralized. Later, in the 1980's, China made changes to its cotton policy toward an increased market orientation (UNCTAD, 2011). For a time, Western countries were committed to importing pre-determined amounts of garments and textiles from select countries. Once these quotas were eliminated, however, China became the world's major producer of garments and textiles. While cotton production in China has always been substantial, China was not meeting its consumption needs and had to significantly increase its imports. Starting in 2006, China's imports dropped to allow for increased domestic production of cotton (Womack, 2007). Through price incentives and encouragements, China's government continues to work hard to increase cotton production.

### **India**

The world's second largest producer of cotton - India - has been playing an ever-important role in the world's cotton market as its cotton sector has undergone critical changes in recent years. Ever since India's government authorized the commercialization of cotton in 2002, cotton production has soared. From 2002 to 2006, production in India doubled from 11 million to 23 million bales. As predicted, in 2007 India overtook the U.S. to be the world's second largest producer. The recent increase in Indian cotton production has outpaced the domestic needs for cotton, which makes India the third largest exporter of cotton. It is remarkable, however, that just eight years ago India's cotton exports were insignificant (NationMaster, 2010).

### **The United States**

The U.S. is now the world's third largest producer of cotton, supplying around 20% of world output, and it remains the world's largest exporter of cotton, accounting for 25% of world exports. Cotton ranks fifth among agricultural commodities in the U.S. and has generated considerable revenue. Since WWII, cotton farming has been consolidated into larger firms primarily owned by individuals and families. The main cotton producing states include Texas, Mississippi, and California (UNCTAD, 2011). The decline in cotton production in the U.S. in 2007 was partly due to the introduction of additional corn subsidies for biofuel use which encouraged cotton farmers to switch crops. Decline in U.S. exports, on the other hand, is due to fewer imports from China and increased competition from India (USDA, 2011). Major export markets for U.S. cotton production include Japan, South

Korea, and other Asia Pacific Rim countries. Despite increasing local processing in developing countries, cotton is still the main traded agriculture raw material. In fact, 79% of U.S. exports are sent to Asia and 12% to Mexico. With 3.7 billion dollars and almost 3 million tons of cotton exported between 2002 and 2006, the U.S. remains the dominant exporter of cotton fiber.

### **IMPACT OF COTTON PRODUCTION AND INTERNATIONAL TRADE ON U.S. TEXTILE AND APPAREL INDUSTRY AND OVERALL ECONOMY**

Cotton production and international trade significantly affect the U.S. Textile and Apparel Industry as well as the overall economy. The success of cotton production in the U.S. has, in the past, served as a major boost for the American economy and a catalyst for industrial improvements and inventions. On the other hand, cotton production also fostered slavery and was a cause of the Civil War. The early ramifications of cotton production paved the way for what the industry is today. The labor-intensive textile industry led to the global shift of industrial production to low wage areas where labor can be brought for a fraction of first world wages. Popular retail brands, such as Nike, Gap Inc., Marks and Spencer, and Wal-Mart, now dictate prices and terms. These brand names are able to contract textile companies throughout the Global South and demand textile cotton production of high quality and low cost. Although the unemployed and poor welcome this work, the working conditions are often deplorable and offer very low wages (Swift, 2007). The backbreaking work, temperamental yields, production costs, uncertain market, poor wages, and working conditions and environmental fallout are all among the downfalls of cotton production.

The American economy is strongly affected by cotton production, especially since the U.S. is currently the third largest producer of cotton. Despite exporting the majority of its cotton production, the U.S. is still the world's largest consumer of cotton products. Import statistics, which are mentioned later, indicate a strong demand for cotton in the U.S. through demand for cotton content textiles. Because of this, there is a strong connection between the textile industry and cotton production. It is evident that problems in one industry can have damaging effects on another, such as the fall of U.S. textile manufacturing that has affected U.S. cotton markets. Likewise, U.S. cotton production affects allied industries up- and downstream. Gins, warehouses, input suppliers, and the few remaining textile firms are all adversely affected by contractions in U.S. cotton production (Womack, 2004). In addition, the reduction of cotton acres affects input prices because input manufacturers lose economies of scale. This transfers to dairy farmers, for example, who have to pay higher prices for cottonseed. Thus, it is clear the widespread impact cotton has on the entire American economy.

Fluctuations in cotton prices have a tremendous effect on the apparel and textile industry. Over the past two centuries, cotton production has shifted from a few major producers, like England and the United States and even the "Indies", and is now a market flooded with several centers of production around the world. In many cases, the price of cotton is an accepted measure of the morale and climate of the industry for a given period. Each cent per bale determines costs and retails prices for every textile company. According to Koray Caliskan in his book *Market Threads*, the price of cotton includes far more components than meet the eye and that many consumers do not even consider. In his book he explains even after "cotton is grown, ginned, and brought to the market after being standardized by biologists, agricultural engineers, genetic engineers, and market experts, other factors begin to exert an influence on the making of the price" (Caliskan, 2010, p.39). Caliskan goes on to explain that while the actual production factors, like the ginning and quality of fiber, are important, what sometimes dictates the price more dramatically are what the traders on the market do and do not know about all the exporters. Traders of cotton futures speculate what cotton's price should be based on what they project the production level to be globally, consumer demand, and other predictions and assumptions. However, for example, in China's case - the world's largest producer of cotton, they are considered the "black box" when it comes to knowledge about their cotton production levels which, in turn, creates even higher speculation and can affect what price level is determined (Caliskan, 2010, p.40). According to an article entitled "Inflation Looms over Apparel Industry" from WWD in March, the price of raw cotton is hitting historic heights. According to the article, the price of raw cotton hit \$2.33 a pound in February when the long-term average had been only about 65 cents a pound. These increases also were seen across wool and synthetic fibers indices. This increase in cotton prices is due to many factors, including a rigid global supply, flooding in Pakistan this past year that ruined a large portion of their crop, and speculating investors on Wall Street. The article goes on to explain that the speculation about the prices and level of the price will not lessen until the fall crop is harvested - around September and October in the western hemisphere (Ellis, 2011).

## **TECHNOLOGICAL INNOVATIONS IN COTTON PRODUCTION**

The way cotton is planted, grown, and harvested today has evolved and gone through many changes over the many thousands of years cotton has been used to create widely used products. The first major innovation that completely revolutionized the speed and efficiency of cotton production was the cotton gin, invented in 1793 by Eli Whitney. It was designed to separate raw cotton fibers from the seeds and other impurities during collection and prior to the formation of bales. Dating back to the Industrial Age, mechanical spinning machines and mechanical looms have enabled the industry to grow out of the cottage industry with production being completed by hand or with primitive tools to mass scale production machines achieving economies of scale. To satisfy demand across the globe, machines have transformed a mostly manual process into a mechanical one that can turn lint into spun cotton rapidly before transferring it to other stages of production. Still more revolutionary is that technology, like global positioning devices, can guide planting designs and gins and other harvesting mechanisms run completely by computers (Giesen, 2009).

The most contemporary advancement is genetically modified cotton that is engineered to ward off insects and decrease the usage of harmful pesticides. Genetically modified cotton is a widely debated topic since many people are opposed to the manipulation of the plant's genetic structure by scientists. Nevertheless, genetically modified cotton has been used since the latter part of the 1980s to protect cotton crops from pests, such as the bollworm. Since then, the genetically modified seed has spread to cotton producers internationally and has decreased the amount of harmful pesticides that pollute the soil and groundwater. Genetically modified cotton not only is praised by many for helping prevent pollution and environmental damage, but it also decreases the high costs farmers incur when they are planting and harvesting cotton. Farmers spend less on ground preparation; since the genetically modified cotton seeds need less irrigation, less land can be devoted to cotton and more land can be used by these farmers for either more cotton or more crop variety, and less money is spent on pesticides. Genetically modified cotton has been advertised to consumers, farmers, and manufacturers, and increased the demand for cotton. It has also been advertised to developing countries that did not have the capital to begin planting and harvesting natural cotton, allowing cotton to continue its longevity in the market and sustain its development and growth throughout the world (Morse & Mannion, 2009).

Spreading information about genetically modified cotton is not the only way to ensure cotton's permanence in the textile industry. Educating the world on the importance of cotton to the environmental efforts in disaster clean-up and everyday environmental sustainability can increase awareness of all of the significant ways cotton contributes to the world. Cotton has been used in many ways in connection to the 2010 Deepwater Horizon oil spill in the Gulf of Mexico. Cotton is very absorbent; in fact, raw cotton can naturally absorb "as much as 21 grams of petroleum per gram of fiber" ("The Role of Cotton in the Deepwater Horizon Clean-Up", 2011). Since cotton can float on the water's surface, it is very useful in absorbing the oil and continuing to float, thus simplifying clean-up. Cotton has been used in many water-based clean-ups and will continue to be one of the most used fibers in clean-up efforts around the world ("The Role of Cotton in the Deepwater Horizon Clean-Up", 2011).

As such, keeping cotton and cotton-based textile products viable in the global market is a very important step since cotton production and manufacturing is a great source of employment and industry for many people and countries. The United States has been at the forefront of technology when it comes to modifying cotton genetically to save money on pesticides and irrigation, as well as using cotton in unconventional ways, such as soaking up oil after the Deepwater Horizon oil spill. Marketing cotton fibers and textile products wisely can help cotton create more longevity in the global market as well as maintain its high volume of production and stimulate demand for the ever-important fiber.

## **FUTURE OF U.S. COTTON PRODUCTION**

Increasing competition from international markets has pushed the United States into the third position behind China and Pakistan and further competition is expected from West African countries entering the market. Nevertheless, the United States is encouraged to meet the challenges in the global market and succeed despite the new entries into this industry.

New technologies that are being developed to increase sustainability and environmentally-friendly farming and production of cotton offer great potential in differentiating U.S. cotton from global competition. Advancements in technology have allowed new strains of the cotton crop to be developed which has created a new market for United States cotton nationally and abroad. These new technologies do not just end with different cotton varieties; they also extend to new environmentally sustainable production practices as well as processing and manufacturing advancements that have changed the way cotton is used and developed.

In addition to sustainable harvesting and expanding environmental research and practices, new changes in the logistics efforts of the cotton industry can encourage growth and a promising future for the United States' cotton industry. The process of cotton goes through - as it moves from planting, harvesting, through production and manufacturing - changes from producer to producer and from country to country. Oftentimes, companies decide to collaborate to create a value chain, "a vertical alliance or strategic network between a number of independent business organizations within a supply chain". This value chain is beneficial to the organizations since common strategies, shared goals, and benefit and risk sharing occurs and provides a way to increase competition and earnings between the two. The United States' cotton industry has adopted many aspects of this value chain model, but many changes can still be made in order to gain the benefits of the collaboration. Such changes could be the electronic fiber selection programs that are just used in textile mills and are not utilized in the most beneficial way. These systems can be used further to optimize logistics and change shipping measures in order to gauge greater capacity. Similarly, a coordinated strategy involving ginners, merchants, warehouse managers, and end users could increase the effectiveness of warehouse filling since warehouses are filled with bales not based on quality since information is not passed on to the managers. This could greatly improve logistics in terms of orders and is a great example of how a value chain implemented in the cotton industry can cut costs and improve productivity (Kenkel & Kim, 2008).

Advertising nationally, as well as globally, can raise awareness about new efforts to protect the environment and the advantages of new developments in ethically grown cotton. By advertising this to not only customers of finished goods and services that use cotton, but to international buyers, the future of the cotton industry in the United States could have a more promising future as well as an impact on the economies of new products globally.

The future of cotton production and its longevity in the global market is subject to many different factors, such as economic conditions, and weather variables; yet it is certain that cotton will not disappear nor fade away during our lifetime. Finding new ways to market and educate the world of its benefits will ensure its longevity and presence for generations to come.

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