ABSTRACT

BERDINE, MATTHEW PALMER. Measuring Productivity through Competitive Advantage. (Under the direction of Dr. Nancy Cassill & Dr. William Oxenham.)

The purpose of this research was to examine competitive advantages that increase a firm’s productivity. The conceptual framework used in this study to evaluate productivity was Michael Porter’s *Determinants of National Competitive Advantage* (1990). This conceptual framework defines the variables that influence competitiveness of firms within a nation’s industry. Another purpose of this research was to examine issues related to product cost and outsourcing decision making. This research study focused on two product categories; performance apparel and cotton bottom weights.

This research used a two-phase methodology. The first Phase was exploratory in nature and involved an analysis of production and import data for cotton bottom weights and performance apparel. An analysis of domestic and international competitors in each market was also conducted in Phase I to identify candidates for survey sample. In Phase I, a comparative cost analysis was conducted at the yarn, textile, and garment level. In addition, an examination of lead time on total product lifecycle cost was explored.

The second Phase of the research used a concurrent triangulation strategy to gather primary qualitative and quantitative data through an interview methodology. The interview was conducted using a researcher developed instrument which focused on five areas; each component of Porter’s *Determinants of National Competitive Advantage* (Factor Conditions; Demand Conditions; Firm Structure,
Strategy, Rivalry; and Related & Supporting Industries) as well as the sourcing criteria used by firms and issues related to product cost. Firms in both California and the Southeast were interviewed. Interviews were conducted with firms in all supply chain segments of both product categories of investigation – fiber/yarn, textile, apparel, and retail.

Cost analysis in Phase I indicated that the U.S. textile and apparel industry could not compete in terms of low cost when compared to foreign exporters such as China. In order to compete, U.S. textile and apparel firms must compete through competitive advantages that differentiate their product offering. Porter’s *Determinants of National Competitive Advantage* (1990) was useful in assessing these competitive advantages. Primary research revealed that these competitive advantages include customer service focus, marketing capabilities, manufacturing superiority, and innovative product driven by research-and-development. These competitive advantages increase productivity by providing unique and superior value to customers.

In addition, it was indicated that firms outsource manufacturing and raw materials to increase firm productivity. Quality, cost, and reliability of delivery were all indicated as important in terms of sourcing criteria.
Measuring Productivity through Competitive Advantage

By

Matthew Berdine

A thesis submitted to the Graduate Faculty of North Carolina State University
In partial fulfillment of the Requirements for the Degree of Master of Science

TEXTILES

Raleigh, North Carolina

2007

Approved by:

Dr. Nancy Cassill, Co-Chair

Dr. William Oxenham, Co-Chair

Dr. Michelle Jones, Committee Member
BIOGRAPHY

Matt Berdine was born and raised in San Diego, California. He moved to Greensboro in 1994 to pursue his undergraduate degree at the University of North Carolina at Greensboro. He achieved many honors at UNCG including the VF Corporation Scholarship, Johnston Scholarship from UNC-Chapel Hill, Senior of the year 2000 as well as the International Textile and Apparel London Summer Study Abroad Scholarship. He graduated UNCG in May of 1999 and attended the American University in London the summer of 1999. While in London he took courses in International Retailing and International Business.

Upon his return to the States he attended Saks Fifth Avenue’s Assistant Buyer Executive Training Program in New York City February of 2000. He was eventually placed as the assistant buyer for Saks Fifth Avenue’s men’s catalogue division. In addition, he held positions with Ralph Lauren Retail and Victoria’s Secret Direct.

In 2005, he moved to Raleigh to pursue his masters in Textile Technology and Management at North Carolina State University and The Institute of Textile Technology. The summer of 2006, he completed a sourcing internship with Lands’ End in kid’s swimwear. He has accepted a position at Lands’ End as the Associate Sourcing Specialist for Outerwear.
ACKNOWLEDGEMENTS

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CHAPTER 1
INTRODUCTION

The United States’ textile and apparel industry generates more than $360 billion each year in revenue and the current market situation is characterized by volatile demand, multiple trading partners, short product lifecycles, increased impulse purchases, unpredictable customers and offshore sourcing strategies (Singhal, 2003). In addition, there has been a dramatic increase in textile and apparel imports from low cost producing regions such as China. In order to remain competitive, United States textile and apparel companies must leverage and enhance their competitive advantages to maintain market share.

A competitive advantage enables a firm to operate in a more efficient or otherwise higher quality manner than its competitors which results in benefits accruing (Porter, 1990). A competitive advantage can be leveraged to increase the value of a firm’s product through product differentiation or a reduction in production costs; both cost reduction and product differentiation lead to higher firm productivity. Many U.S. textile and apparel companies are improving productivity by utilizing their competitive advantages in terms of raising product quality, adding desirable features, improving product features, or boosting production efficiency. These improvements are driven by a variety of business strategies such as market research, research and development, product development, customer service, and outsourcing.

The driving force behind a competitive advantage is innovation. Innovation can be manifested in terms of a new product design, a new production process, a
new marketing approach, or a new way of conducting training. In addition, some innovations create a competitive advantage by perceiving a new market opportunity or by servicing a market segment that others have ignored. Information plays a large role in this process of innovation and differentiation. Quality and features of products as well as the accompanying service that comes with the product determine the prices that a firm’s products can command in the marketplace (Porter, 1990).

Michael Porter’s (1990) *Competitive Advantage of Nations*, which is the conceptual framework for this study, depicts the variables that impact why particular industries thrive in certain countries despite increased levels of competition. This framework which is referred to as the *Determinants of National Competitive Advantage* (1990) sought to define the fundamental forces underlying competitive advantage.

This study which focused on productivity relates to the framework illustrated in Figure 1. Figure 1 depicts the four components of Michael Porter’s model:

1. **Factor Conditions**- The nation’s position in factors of production, such as labor and infrastructure.

2. **Demand Conditions**- The nature of home-market demand for the industry’s product or service

3. **Related and Supporting industries**- The presence or absence in the nation of supplier industries and other related industries that are supplementary

4. **Firm Strategy, Structure, and Rivalry**- The conditions in a nation governing how companies are created, organized and managed as well the nature of domestic rivalry (Porter, 1990).
Purpose of the Research

The purpose of this research was to determine where the U.S. textile industry can compete through increased productivity utilizing Porter’s four determinants of competitive advantage as the conceptual framework for data collection. This conceptual framework examined competitive advantages that increase productivity within a nation’s firms. This research provided insight into how these competitive advantages can be leveraged to enhance the performance of U.S. textile and apparel companies. In addition, this research provided an understanding into the key

Figure 1: Determinants of national competitive advantage.

components that are driving the competitiveness of the top textile and apparel exporting regions.

The overall research question for this study was: How can the U.S. Textile and Apparel Industry remain economically competitive in the face of global competition? Specific research questions developed from the overall research question are:

1. Where can the U.S. textile and apparel manufacturing sector effectively compete through increased productivity?
2. What are the U.S. textile and apparel industries competitive advantages in relation to other countries through a regional and global comparison?
3. What is the most significant contributor to final product cost when looking at Landed Duty Paid?

Figure 2 is a visual depiction of the research question, developed by the researcher, to guide the research.

![Figure 2: Visual depiction of research question.](image-url)
Research Objectives

The specific objectives of the research are:

*Phase I: Exploratory*

RO1: To conduct a comparative cross country cost analysis:

- RO1A: China
- RO1B: India
- RO1C: CAFTA region
- RO1D: Sri Lanka
- RO1E: U.S. (Southeast & California)

RO2: To provide a global overview of both the market and main competitors in;

- RO2A: Cotton bottom weights
- RO2B: Performance Apparel

*Phase II: Concurrent Triangulation*

RO3: To conduct in-depth case studies via primary sources to determine the business strategies that are being used to increase productivity by;

- RO3A: Fiber/Yarn Manufacturers
- RO3B: Textile Manufacturers
- RO3C: Apparel Manufacturers
- RO3D: Retailers

RO4: To examine where the U.S. competitive advantage is using Porter’s Four Determinates as the conceptual framework for organizing the data collected; looking at each component of his model;

- RO4A: Firm strategy, structure, and rivalry
RO4B: Demand conditions

RO4C: Related and supporting industries

RO4D: Factor conditions

RO5: To provide insight into product cost, sourcing strategies, and the criteria used by companies in outsourcing decisions.

Significance of Study

First, this research was significant because it examined competitive advantages that increase a firm’s productivity outside of the traditional manufacturing environment such as research and development, customer service, as well as marketing strategies. Further, one of the differentiating components of this study was that both quantitative and qualitative measures were considered in evaluating productivity, where most productivity studies only examine quantitative factors. These qualitative components that cannot be measured through traditional productivity measures contribute to a firm’s success or failure in the market based economy that now defines the competitive environment of the global textile and apparel complex. Second, this research was significant because it examined issues related to product cost. Finally, this research is significant because it provided insight into the leading textile and apparel exporting regions. Figure 3 was developed by the researcher to visually show the areas of investigation for this study.
Limitations of Study

1) This research was focused on two product categories: Cotton bottom weights and performance apparel. Results cannot be generalized to other product categories.

2) A non-probability convenience sample was used in this study. Results cannot be generalized to the entire population.

3) The questionnaire for this study included inquiries into various components of a firm’s business. With this in mind, there might be potential inability error in that respondents might not have had access to the complete data needed to answer certain questions.

4) There was potential for respondent bias depending on the willingness of respondents to disclose information in regards to actual and accurate business strategies.
Definition of Relevant Terms

**Bottomweight:** Fabric suitable for pants, skirts, winter dresses; usually weighs 6 oz./yd. (200g/sq m) or more (Tortora & Merkel, 1996).

**Competitive Advantage:** Is defined as a condition which enables a country or firm to operate in a more efficient or otherwise higher-quality manner than its competitors, and which results in benefits accruing (Porter, 1998).

**Competitive strategy:** A strategy which involves positioning a business in order to maximize the value of capabilities that distinguish it from its competitors (Porter, 1998).

**Demand conditions:** The nature of home-market demand for the industry’s product or service (Porter, 1990).

**Economic competitiveness:** The ability to sustain and grow a business within the global textile and apparel environment, through optimization of products, processes, and strategies to gain a competitive advantage (Cesca, 2005; Jones, 2005; Nowell, 2005).

**Factor Conditions:** The nation’s position in factors of production, such as labor and infrastructure (Porter, 1990).

**Firm strategy, structure, and rivalry:** The conditions in a nation governing how companies are created, organized and managed as well the nature of domestic rivalry (Porter, 1990).

**Performance Apparel:** Garments which meet the needs of the wearer's circumstances and defeat the risks of the outside environment. These properties
come from the garment construction, the fabric and trim specification, and/or fibers and chemical treatments (www.just-style.com, 2006).

**Productivity:**

1) The rate at which a company produces goods or services in relation to the amount of materials and number of employees needed

2) The efficiency with which goods are produced

3) The value of the actual output

4) The quality and features of the product produced (which determine the prices they can command)

5) Accompanying service provided to the product produced (Porter, 1990)

**Related and supporting industries:** The presence or absence in the nation of supplier industries and other related industries that are supplementary (Porter, 1990).
CHAPTER II
REVIEW OF LITERATURE

Conceptual Framework

The conceptual model for this research was Michael Porter’s *Determinants of National Competitive Advantage* (1990) as shown in Figure 4. According to Porter, the presence or absence of particular attributes in individual countries influences industry development. Porter describes these four attributes as factor conditions, demand conditions, related and supporting industry, and firm structure and rivalry. These four characteristics shape the environment in which firms compete in their global industries (Porter, 1990).

Figure 4: Determinants of national competitive advantage.

1. **Factor Conditions** – Is a country’s endowment of resources. Factor conditions includes the following:
   
a. **Human Resources** – The quantity of workers available, the skills possessed by these workers, wage levels, and the overall work ethic of the workforce together constitute a nation’s human resource factors.
   
b. **Physical Resources** - The availability, quantity, quality, and cost of land, raw materials, and other natural resources.
   
c. **Knowledge Resources** - The availability within a nation of a significant population with scientific, technical, and market-related knowledge.
   
d. **Capital Resources** – This component refers to the availability, amount, cost and types of capital available to the countries industries.
   
e. **Infrastructure Resources** – This includes a nation’s banking system, health care system, transportation system, and communication system (Porter, 1990).

2. **Demand Conditions** – This component entails the nature of home-market demand for the firm’s product and services. The composition of home demand determines how firms perceive, interpret and respond to buyer needs. Competitive advantage can be achieved when the home demand sets the quality standard and gives local firms a better picture of buyer needs, at an earlier time. (Porter, 1990).

3. **Related and Supporting Industries** - A nation has an advantage when it is home to internationally competitive industries in fields that are related, or in direct support of each other. Competitive supplier industries assist in driving the
competitiveness of their customers through the quality and innovation of their products. In addition, the contact and coordination between customers and suppliers allows firms optimize the value chain so that linkages between companies are optimized. Similar advantages accrue when there are internationally competitive and related industries in a nation that coordinate and share value chain activities. These centers of competitive advantage are known as clusters.

4. **Firm Strategy, Structure, and Rivalry**- Differences in management styles, organizational skills, and strategic perspectives create advantages and disadvantages for firms competing in different types of industries. In addition, domestic rivalry among firms keeps an industry dynamic and creates continual pressure to improve and innovate (Porter, 1990).

**Industrial Clusters**

The four components of the *Determinants of National Competitive Advantage* promote industries to form in geographically concentrated areas. These critical masses of companies are known as clusters. Companies located within these clusters are linked together through vertical and horizontal relationships. Once a cluster is formed, the whole group of industries becomes mutually supporting (Porter, 1998).

The external environment a company exists in is just as important as a firm’s internal environment in relation to competitiveness. Clusters promote both competition and cooperation among firms; firms compete within the cluster and proximity between firms allows for greater collaboration among members of the
same supply chain. Clusters enable companies to operate more productively in sourcing inputs, accessing information, technology and needed institutions. In addition, clusters minimize the need for inventory and assist in minimizing logistic costs (Porter, 1998).

Industry Competition

Michael Porter contends that a corporation is most concerned with the intensity of competition facing its products or services. The level of this intensity is determined by basic competitive forces which are depicted in his five forces model for industry competition as shown in Figure 5.

*Figure 5: Porter’s five forces model for industry competition.*

The collective strength of these forces determines the ultimate profit potential of an industry. In addition, these forces affect the level of competition companies’ face in a particular industry (Porter, 1980).

Some of the five forces can be attributed directly to the level of competition facing the U.S. textile & apparel industry. The *threat of new entrants* is high in terms of the apparel industry due to the labor intensive nature of apparel production as well as the relatively low capital requirements needed to partake in basic assembly. In reaction, many U.S. textile companies have moved away from commodity products into more Research and Development intensive segments that have high entry barriers with a low threat of new entrants (Cassill, 2005).

*Rivalry among existing firms* in the textile and apparel industry is incredibly high with many companies, from a wide range of countries competing for business globally. With this saturation of competitors and glut of product in the textile and apparel industry, consumers have been able to increase their “*bargaining power*”. Consumers often purchase higher quality imports at lower prices. Also, textile and apparel products face the *threat of substitute* products with other consumer goods competing for the discretionary income of consumers. In addition, U.S. retailers and apparel manufacturers are able to “bargain” with vendors throughout the globe to get product that meets their quality, delivery, and margin requirements (Cassill, 2005).
This increase in competition has lead to a significant decline in textile and apparel employment in the U.S. As shown in Table 1, in 1990 there were 2,250 textile and apparel plants in the U.S. employing 1,681,900 people. By 2005, there had been a 30% decline in the number of textile and apparel plants to 1,578 and a 60% decrease in employment to 666,000 workers. As seen in Table 1, apparel manufacturing has fared much worse in relation to textile manufacturing in the U.S. This is primarily due to the labor intensive nature of apparel manufacturing (Bureau of Labor Statistics, 2005).

Some causes of this decline in employment outlined by the Markets & Management Studies program at Duke University are:

1. Emergence of “buyer driven” lead firms (Retailers) in global apparel and textile value chains.
2. Shifts in sourcing patterns of lead firms (retailers).
3. Rise in the manufacturing capabilities of firms globally.

### Table 1: Employment (in thousands) in the U.S. Textile and Apparel Industry

<table>
<thead>
<tr>
<th>Industry</th>
<th>Jan 1990</th>
<th>May 2005</th>
<th>Percent Change</th>
</tr>
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<tr>
<td>Total Manufacturing</td>
<td>17,796.0</td>
<td>14,263.0</td>
<td>-18%</td>
</tr>
<tr>
<td>Textiles &amp; Apparel (NAICS 313, 4, 5)</td>
<td>1,681.9</td>
<td>666.0</td>
<td>-60%</td>
</tr>
<tr>
<td>Textile mills (NAICS 313)</td>
<td>503.3</td>
<td>224.0</td>
<td>-55%</td>
</tr>
<tr>
<td>Textile product mills (NAICS 314)</td>
<td>215.7</td>
<td>172.9</td>
<td>-20%</td>
</tr>
<tr>
<td>Apparel (NAICS 315)</td>
<td>962.9</td>
<td>269.1</td>
<td>-72%</td>
</tr>
</tbody>
</table>

4. Global Phase-out of the Multi-Fiber Arrangement regime in 2005 has lead to a loss of trade protection formerly enjoyed by US textile and apparel companies and exposed them to the rigors of global competition (Markets & Management Studies Program-Duke University, 2005).

While import competition can be blamed for much of the job losses in textile & apparel manufacturing, it is equally discernable that increases in domestic competition, industry consolidation, and productivity gains from improved machinery and manufacturing processes have had a similar impact on employment (Markets & Management Studies Program-Duke University, 2005).

Industry Evolution

Over time industries evolve through a series of stages from growth through maturity to eventual decline. The strength of the “Five Forces” outlined by Porter varies according to the stage of industry evolution. The industry lifecycle (Figure 6) is useful for explaining and predicting trends among the five forces driving industry competition (Wheelen, 2000).
For example, when an industry is new, people often buy a product regardless of price because it fulfills a unique need. As new competitors enter the industry, prices drop as a result of competition. Companies then use economies of scale to reduce costs in relation to competitors. As an industry reaches maturity competitors within in an industry try to differentiate their products from one another in order to avoid competing on price. In the process, buyers also become more sophisticated as competition increases and make purchase decisions based on better information (Wheelen, 2000).
Productivity

As an industry reaches maturity, productivity takes on an increased importance as a competitive strategy. Productivity is traditionally defined in manufacturing terms as the rate at which a company produces goods or services, in relation to the amount of materials and number of employees needed. In order to more accurately capture productivity, the value of the finished product in the open market should be considered as well. Quality and features of products as well as the accompanying service that comes with the product determine the prices that a firm’s products can command in the marketplace (Porter, 1990).

Certain competitive advantages can increase the value of a firm’s product in relation to production costs; thus leading to an increase in productivity. A competitive advantage is defined as a condition which enables a country or firm to operate in a more efficient or otherwise higher-quality manner than its competitors, and which results in benefits accruing (Porter, 1998). A competitive advantage can be leveraged to increase the value of a firm’s product through product differentiation or a reduction in production costs; both cost reduction and product differentiation lead to higher firm productivity.

The driving force behind a competitive advantage is innovation. Innovation can be manifested in terms of a new product design, a new production process, a new marketing approach, or a new way of conducting training. In addition, some innovations create a competitive advantage by perceiving a new market opportunity or by servicing a market segment that others have ignored. Information plays a large role in this process of innovation and differentiation (Porter, 1990). Table 2 outlines
several definitions of productivity. The highlighted row is the operational definition of productivity for this study.

Table 2: Productivity Definitions

<table>
<thead>
<tr>
<th>Year</th>
<th>Author</th>
<th>Title</th>
<th>Definition/Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1965</td>
<td>Kendrick &amp; Kreamer</td>
<td>Total Productivity</td>
<td>Ratio of real gross output to a combination of all corresponding ratio for inputs: labor, capital, and intermediate products purchased outside the firm or industry¹</td>
</tr>
<tr>
<td>*</td>
<td>*</td>
<td>Total Factor Productivity</td>
<td>Ratio of the real product originating in the economy, industry, or firm to the sum of associated labor and capital (factor) inputs&quot;</td>
</tr>
<tr>
<td>1970</td>
<td>Dewitt</td>
<td>Personal Productivity</td>
<td>Revenues per employee; net earning per employee²</td>
</tr>
<tr>
<td>*</td>
<td>*</td>
<td>Capital Productivity</td>
<td>Revenues per stock holders equity $; operating income per stock holders equity $</td>
</tr>
<tr>
<td>*</td>
<td>*</td>
<td>Facilities Productivity</td>
<td>Revenues per plant and equipment $; operating income per plant and equipment $</td>
</tr>
<tr>
<td>1992</td>
<td>Hickman</td>
<td>Purchase Power Parity Rates (PPP)</td>
<td>Defined as the number of units of a given currency required to purchase the same amount of goods as a unit of the numaric currency and is measured by careful sampling of prices of matching categories of goods in the various countries³</td>
</tr>
<tr>
<td>2004</td>
<td>Wheelen</td>
<td>Gross Domestic Product (GDP)</td>
<td>GDP is used world wide and measures the total output of goods and services within a country's border⁴</td>
</tr>
<tr>
<td>1990</td>
<td>Porter</td>
<td>Productivity</td>
<td>1) The rate at which a company produces goods or services in relation to the amount of materials and number of employees needed 2) The efficiency with which they are produced 3) The value of the output 4) Quality and features of the product produced (which determine the prices they can command) 5) Accompanying service provided to the product produced⁵</td>
</tr>
</tbody>
</table>


**Productivity Measures at the National Level**

Gross National Product (GNP) and Gross Domestic Product (GDP) are key indicators of productivity growth and competitiveness at the national level. Gross National Product (GNP) is the total value of final goods and services produced in a year by a country’s nationals (including profits from capital held abroad). Gross Domestic Product (GDP) is the total value of final goods and services produced within a country’s border in a year. GDP counts income according to where it is earned rather than who owns the factors of production. GNP per person is often used as a measure of people’s welfare within a country (Lopez-Claros, 2006).

**Productivity Measures at the Firm-Level**

At the firm level there are both “hard” (quantitative) and “soft” (qualitative) indicators of productivity growth and increased competitiveness. The “hard” measures include: effective allocation of resources, rational investments, streamlining business processes, consistency of decisions, and effective quantitative assessments of historical data. “Hard” productivity measures also include the level of costs associated with both the raw material cost and labor costs, the amount of inventories, sales volume, the level of profit, the return on capital allocated to the firm’s operations, return on stock, market share, and the degree to which the needs of individual groups of buyers are met (Wysokinska, 2003).

“Soft” measures of productivity at the firm level include: motivation to initiate internal actions within a firm, knowledge, skills and experience, understanding and acceptance of the firm’s mission and strategic goals, corporate culture, internal
communication, qualitative evaluation of historical data and organizational flexibility. “Soft” productivity measures significantly impact upon the opinion of a product or service, a firm’s image, prestige and reputation, the qualitative attributes of products or services offered by a firm (Wysokinska, 2003).

Financial Indicators of Firm Productivity

Productivity at the firm level can be distinguished through a variety of financial ratios. Ratios exam the relationship between two numbers and allow a comparison between two companies within the same industry (Silbiger, 1999). Six ratios in particular can be used to evaluate a firm’s productivity from a macro standpoint. These ratios are indicative of a firm’s use of its resources:

Profitability Ratios

1. Return on Investment (ROI) or Return on total assets – Net profit after taxes/Shareholders equity
   a. Measures the rate of return on the total assets utilized in a company; A measure of management’s efficiency, it shows the return on all assets under its control regardless of source of financing.

2. Return on Sales (ROS) – Net Income/Sales
   a. Shows how much profits are generated by each dollar of sales.

3. Return on equity (ROE) – Net Income/ shareholders’ or owners equity

Activity Ratios

1. Asset Turnover – Sales/Total Assets
a. Measures the utilization of all the company’s assets; measures how many sales are generated by each dollar of assets.

2. Fixed Asset Turnover – Sales/Fixed Assets

a. Measures the utilization of the company’s fixed assets (i.e. plant and equipment); measures how many sales are generated by each dollar of fixed assets.

3. Basic Earning Power – Earnings Before Interest & Taxes (EBIT)/ Total Assets

a. Measures the utilization of a company’s assets; but takes out interest & taxes from the equation; allows a more accurate comparison between countries with different interest and taxation laws (Wheelen, 2004).

Productivity & Economic Growth

A nation’s standard of living depends on the capacity of its companies to achieve high levels of productivity and to increase productivity over time. Sustained productivity growth requires that an economy continually upgrade itself. A nation’s companies must relentlessly improve productivity in existing industries by raising product quality, adding desirable features, improving product technology, or boosting production efficiency. A nation’s firms must also develop the capabilities required to compete in more sophisticated industry segments, where productivity is generally higher (Porter, 1990).

The expansion of exports because of low wages and a weak currency, at the same time as the nation imports sophisticated goods that its firms cannot produce, does not increase the nation’s standard of living. The ability to export many goods
produced with high productivity, allows a nation to import many goods involving lower productivity; this translates into higher national productivity (Porter, 1990).

A steady increase in productivity has many benefits for a country’s economy. Increased productivity results in the conservation of scarce resources per unit of output; it helps to mitigate inflation by offsetting rising wage rates and other input prices; and it increases the international competitiveness of domestic production (Porter, 1990).

International trade allows a nation to raise its productivity by eliminating the need to produce all goods and services within the nation itself. A nation can thereby specialize in those industries and segments in which its firms are relatively more productive and import those products and services where its firms are less productive than foreign rivals; thus leading to an increase in the productivity of a nation’s economy (Porter, 1990). This has been one of the driving forces of the outsourcing of many non-value aspects of both textile and apparel manufacturing.

Apparel Manufacturing Productivity Measurements

With the labor intensive nature of apparel manufacturing, labor productivity is often used to measure efficiency. Productivity again is expressed as a ratio between output and the inputs used. Labor productivity can be measured in a number of ways:

1. Number of pieces per labor cost (compensation cost)
2. Value of finished goods (FOB) per labor hour (Earnings per hour)
3. Number of finished pieces per hour (Kuruppu, 2006).
Labor Productivity

The comparative cost advantage of taking business to low-wage countries, where unit labor costs in manufacturing are lower is not always more cost effective. Savings through lower wages are often adjusted for in terms of lower productivity in comparison to U.S. manufacturing. Benefits from low wages must be combined with technology and innovation to actualize cost advantages of lower wages (Van Ark, 2007).

When looking at wages in isolation as shown in Figure 7, it would appear that the U.S. could not be cost competitive from a labor standpoint. When comparing labor costs across countries, it is also important to look at the productivity rates of the countries as well. Figure 8 displays the productivity of spinning lbs versus operator hours. When looking at the two charts in tandem, it is discernable that while China has more competitive wages; the level or productivity is significantly lower in comparison to the United States.

A way to measure labor productivity is through a ratio known as Unit Labor Cost. Unit labor cost (ULC) is defined as the average labor compensation per unit of output and is measured as the labor compensation per employed person (or per hour worked) relative to output per employed person (or per hour worked) for the aggregate manufacturing sector (Van Ark, 2007). There are large differences in ULC between emerging economies, the variation in ULCs in manufacturing ranges from 20% of the U.S. level for China and India to almost the equal levels for Mexico (Van Ark, 2007).
Figure 7: Labor costs in the textile industry (U.S. $/hour)


Figure 8: Comparative labor productivity (spinning lbs./operator hr.)

Competitive Advantage

A competitive advantage is defined as a condition which enables a country or firm to operate in a more efficient or otherwise higher quality manner than its competitors, and which results in benefits accruing. Competitive advantages usually originate in a core competency. A company's core competency is the one thing that a company can do better than its competitors. A competitive advantage can entail a variety of company characteristics; for example, customer focus, brand equity, product quality, Research and Development focus. To be effective a competitive advantage must be:

1. Difficult to mimic
2. Applicable to multiple situations
3. Unique
4. Sustainable
5. Superior to the competition (Porter, 1998)

At the heart of a competitive advantage is a firm's positioning in the marketplace as defined by their marketing strategy. There are two basic types of competitive advantages: lower cost and differentiation. Lower cost is the ability of a firm to design, produce, and market a comparable product more efficiently that its competitors. At prices at or near competitors, lower cost translates into superior returns. Differentiation is the ability to provide unique and superior value to the buyer in terms of product quality, special features, or after-sale service. Differentiation allows a firm to command a premium price, which leads to superior profitability provided costs are comparable to competitors (Porter, 1985).
Competitive advantage of either type translates into higher productivity than that of competitors. The low-cost firm produces a given output using fewer inputs than competitors require. The differentiated firm achieves higher revenues per unit than competitors (Porter, 1985). These strategies can be seen in Figure 9.

Figure 9: Porter’s generic strategies for competitive advantage.


Michael Porter’s Generic Strategies also takes into account a firm’s competitive scope or the breadth of the firm’s target within its industry. A firm must choose the range of products it will produce, the distribution channels it will employ, the types of buyers it will serve, the geographic areas in which it will sell, and the array of related industries in which it will compete (Porter, 1985).

The ultimate value a firm creates is measured by the amount buyers are willing to pay for its product or service. A firm is profitable if this value exceeds the collective cost of performing all the required activities. To gain competitive advantage over its rivals, a firm must either provide comparable buyer value but perform activities more efficiently than its competitors (lower cost), or provide
activities in a unique way that creates greater buyer value and commands a premium price (differentiation) (Porter, 1985).

**Innovation**

Firms create competitive advantages by perceiving or discovering new and better ways to compete in an industry and bringing them to market which is ultimately an act of innovation. *Innovation* includes improvement in technology and better methods of doing things. Innovation can be manifested in product changes, process changes, new approaches to marketing, new forms of distribution, and new conceptions of scope. Innovation is the result of organizational learning as well as from research and development. Innovations lead to shifts in competitive advantage. The most typical causes of innovations that shift competitive advantage are:

1. New Technologies
2. New or shifting buyer needs
3. The emergence of a new industry segment
4. Shifting input costs or availability
5. Changes in government regulation (Porter, 1990)

**Economic Competitiveness**

The Organization for Economic Co-operation and Development (OECD) defines economic competitiveness as “the ability of a firm or nation to confront international competition and to secure the sustainability of a relatively high rate of return on the factors of production” (2005, www.oecd.org). A further OECD definition stresses “that competitiveness is the ability to generate sustainable and relatively
higher revenues from the factors of production and high employment as a result of exposure to international competitiveness" (2005, www.oecd.org). In addition, OECD defines being competitive as "steadily growing real income and living standard increases" (2005, www.oecd.org).

A country’s political and business climate have a strong affect on its economic competitiveness. To be competitive, a nation must focus its efforts on innovation and increasing the value added components of its exports. A reliance on cheap labor or natural resources in producing inexpensive products does not create sustainable economic growth. Competitiveness is driven by strategies that are less dependent on cost advantages and are directed towards higher value, greater market orientation and increased productivity (Kuruppu, 2006).

Textile and Apparel Value Chain

![Textile and Apparel Value Chain Diagram]

*Figure 10: Textile & apparel value chain.*

Figure 10 outlines the textile and apparel value chain. The value chain describes the full range of activities that firms and workers do to bring a product from its conception to its end use and beyond. This includes activities such as design, production, marketing, distribution and support to the final consumer. The activities that comprise a value chain can be contained within a single firm or divided among different firms. Value chain activities can produce goods or services, and can be contained within a single geographical location or spread over wider areas (Gereffi, 2005).

The textile and apparel value chain has several discernable product distinctions. The most common classification is in terms of fiber type. There is a major difference in the manufacturing process utilized between mills creating man-made fibers and natural fibers. The next common classification system is in terms of fabric construction process. Weaving, knitting, and non-wovens all vary in terms of capital and labor requirements. One further distinction that is used to segment the value chain is through the actual final product. For example, a textile mill commonly specializes in making one particular fabric type such as denim or corduroy (Gereffi, 2005).

Textile and Apparel Supply Chain

Textiles provide the major input to the clothing industry, creating vertical linkages between the two industries forming a supply chain. A supply chain is defined as the network of retailers, distributors, transporters, storage facilities and
suppliers that participate in the sale, delivery and production of a particular product (Wheelen, 2004).

At the micro level, textile and apparel manufacturing are increasingly integrated through vertical supply chains that involve distribution and sales activities (Nordas, 2004). Increasingly, the supply chain from sourcing of raw materials via design and production to distribution and marketing is being organized as an integrated production network. Production is sliced into specialized activities and each activity is located where it can contribute the most value to the end product (Nordas, 2004). When the location of each activity is being made cost, quality, reliability of delivery, access to quality inputs and transport and transaction costs are important variables (Nordas, 2004).

Figure 11: Textile and apparel supply chain.

The supply chain in the textile and clothing sector is illustrated in Figure 11. The dotted lines represent the flow of information, where the solid lines represent the flow of goods. The direction of the arrows indicate a demand-pull driven system. The information flow starts with the customer and forms the basis of what is being produced when. Information flows directly from the retailers to the textile plants in many occasions (Nordas, 2004).

Supply Chain Actors

Retailers

Several key technologies have lead to changes in modern retailing. These technologies have in turn, lead to drastic changes throughout the textile and apparel supply chain. These technological advancements include:

1. Bar codes, bar-code scanning equipment, and related technologies that allow rapid, automatic identification of products and packages.

2. Electronic information transfers

3. Computer memory and the expansion of computing capabilities through the use of personal and network systems

4. Automated distribution operations drawing on scanners for automated identification, and computer controlled conveyance and sorting systems (Hwang, 1998).

Modern or “Lean” retailing involves combining these technologies in order to sell products based on current demand information while minimizing inventories (Hwang, 1998). These technologies enable retailers to monitor which products sell and which do not down to the color and size level. The data created is utilized in
adjusting the supply of garments in relation to consumer tastes as the information becomes available (Nordas, 2004)

In recent years, retailers in the clothing sector increasingly manage the supply chain of the clothing and textiles sectors. For example Wal-Mart insists that suppliers implement information technologies for exchange of sales data, standards for product labeling and methods of material handling. This quick replenishment of apparel, in turn allows the retailer to offer a broad variety of fashion without holding excess amounts of inventory (Nordas, 2004). This has shifted the competitive advantage of suppliers from being mainly a question of production costs to becoming a question of costs in combination with lead time and flexibility. Clothing is increasingly considered as a perishable good where time to market matters (Nordas, 2004).

While computers have been around for several decades improvements are only beginning to be realized in relation to productivity. Thomas Friedman explains this delay between adoption and realization of benefits “because it always takes time for all the flanking technologies, and the business processes and habits needed to get the most of them, to converge and create the next productivity breakthrough” (2005). He further stated that “big spurts in productivity come when a new technology is combined with new ways of doing business (2005)”. 

Retailers used to be garment manufacturer’s main customers, but in recent years they have now become their competitors. This trend is known as vertical retailing. By mid-1990’s, retailers accounted for approximately one half of all apparel imported into the U. S. A diverse array of national department stores (e.g. JC
Penney and Sears), discount chains (e.g. Wal-Mart, Target), and specialty retailers (e.g. Gap, The Limited Inc) have taken on manufacturing responsibilities to produce private label or store-brand lines. Today, retailers’ overseas offices are actively involved in product design, fabric selection and procurement, and monitoring contracted sewing as well as other production functions handled by offshore manufacturers (Gerrefi, 2005).

The United States consumes extreme amounts of textile and apparel products. This is because the average citizen has high purchasing power parity at $40,100 per capita (CIA, 2005). The average U.S. citizen’s disposable income was valued at $28,227 dollars per year in 2003 and is predicted to increase (Census, 2005). This is very important to the retail clothing industry. Figure 12 shows U.S. retail clothing sales by type of business from 1999-2005.
Figure 12: U.S. retail clothing sales.


**Apparel Manufacturer**

Lean retailing has imposed a number of requirements on manufacturers, which have pushed some of the work and related costs up the supply chain to apparel manufacturers. Apparel manufacturers can absorb the costs, thus receiving lower margins or reduce costs by improving productivity. Another cost saving option is to past costs further up the supply chain to the textile sector (Nordas, 2004).

In examining apparel manufacturers it is important to discern between contractors and apparel brand marketers. Brand marketers have well known brands
but do no actual production; in this sense brand marketers are similar to vertical retailers. These companies include Liz Claiborne, Nike and Reebok (Gerrefi, 2003).

Vertical retailing has increased the level of competition facing apparel brand marketers. In order to deal with this competition, brand marketers have adopted several strategies. One strategy is the reassigning of non-value added functions (such as pattern grading, marker making and sample making) to contractors reducing their purchase and redistribution activities. Value added components such as research and development and merchandising are kept in house. This relationship is demonstrated in Figure 13.

Figure 13: Pre-production, manufacturing, and post production in term of added value.

Table 3: *The Cost Structure of Apparel Manufacturing*

<table>
<thead>
<tr>
<th>Country</th>
<th>Unskilled Labor</th>
<th>Skilled Labor</th>
<th>Capital</th>
<th>Total Value added</th>
<th>Intermediate Inputs (Raw Materials)</th>
<th>Of which imported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>25.9 %</td>
<td>5.0 %</td>
<td>10.2 %</td>
<td>41.2 %</td>
<td>58.8 %</td>
<td>19.8 %</td>
</tr>
<tr>
<td>USA</td>
<td>21.0 %</td>
<td>5.8 %</td>
<td>5.8 %</td>
<td>32.6 %</td>
<td>67.4 %</td>
<td>13.8 %</td>
</tr>
<tr>
<td>France</td>
<td>21.6 %</td>
<td>4.7 %</td>
<td>8.8 %</td>
<td>35.0 %</td>
<td>65.0 %</td>
<td>24.3 %</td>
</tr>
<tr>
<td>Italy</td>
<td>14.3 %</td>
<td>3.1 %</td>
<td>16.4 %</td>
<td>33.8 %</td>
<td>66.2 %</td>
<td>13.5 %</td>
</tr>
<tr>
<td>Japan</td>
<td>21.9 %</td>
<td>4.0 %</td>
<td>11.2 %</td>
<td>37.1 %</td>
<td>62.9 %</td>
<td>7.8 %</td>
</tr>
<tr>
<td>Hong Kong, China</td>
<td>22.6 %</td>
<td>7.9 %</td>
<td>12.9 %</td>
<td>43.4 %</td>
<td>56.6 %</td>
<td>13.0 %</td>
</tr>
<tr>
<td>Korea</td>
<td>15.0 %</td>
<td>2.9 %</td>
<td>4.7 %</td>
<td>22.6 %</td>
<td>77.4 %</td>
<td>15.9 %</td>
</tr>
<tr>
<td>Chinese Taipei</td>
<td>20.8 %</td>
<td>3.5 %</td>
<td>6.0 %</td>
<td>30.3 %</td>
<td>69.7 %</td>
<td>10.9 %</td>
</tr>
<tr>
<td>China</td>
<td>18.2 %</td>
<td>2.5 %</td>
<td>12.2 %</td>
<td>32.9 %</td>
<td>67.1 %</td>
<td>5.7 %</td>
</tr>
<tr>
<td>India</td>
<td>21.1 %</td>
<td>2.9 %</td>
<td>7.8 %</td>
<td>31.8 %</td>
<td>68.2 %</td>
<td>1.8 %</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>9.0 %</td>
<td>1.2 %</td>
<td>3.8 %</td>
<td>14.0 %</td>
<td>86.0 %</td>
<td>40.4 %</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>21.1 %</td>
<td>3.2 %</td>
<td>9.9 %</td>
<td>34.1 %</td>
<td>65.9 %</td>
<td>28.9 %</td>
</tr>
<tr>
<td>Morocco</td>
<td>14.6 %</td>
<td>2.1 %</td>
<td>10.9 %</td>
<td>27.6 %</td>
<td>72.4 %</td>
<td>37.9 %</td>
</tr>
</tbody>
</table>


Table 3 shows the cost structure of apparel manufacturing, given as percentages of total product cost. Table 3 demonstrates the unskilled labor intensity of the clothing sector. For example, as shown in Vietnam the value-added share is very low in comparison to other countries and the percent imported in terms of raw materials is very high in comparison to other countries. The Vietnamese structure illustrates the ease of entry into the clothing sector for poor countries that lack an industrial base, including suppliers of inputs (Nordas, 2004). It is distinguishable that Vietnam is importing cut and sewn pieces and then assembling them into finished garments. India and China have very low import shares, which demonstrates that
most of the supply chain from textiles to clothing is located within the country (Nordas, 2004). Also shown here is that raw materials account for approximately 60% or higher of the gross value of the sector’s production in all countries shown (Nordas, 2004).

**Differentiated vs. Commodity Apparel**

In the high-quality fashion market, the industry is characterized by modern technology, relatively well paid workers and designers and a high degree of flexibility (Nordas, 2004). This segment of the market is often Research and Development (R & D) intensive. The competitive advantage of firms in this market segment is related to the ability to produce designs that capture tastes and preferences – in addition to cost effectiveness. This segment of the market is often able to achieve higher per unit margins. This specific segment of the clothing industry is largely located in developed countries and often in limited geographical areas or clusters within developed countries (Nordas, 2004).

The other major market segment is mass production of lower-quality and/ or standard products such as t-shirts, uniforms, or white underwear. Manufacturers for this market segment are largely found in developing countries, often in export processing zones and/ or under so called outward processing agreements with major importers (Nordas, 2004).

**Textile Manufacturing**

The textile industry is more capital intensive in relation to the apparel industry and is highly automated (Nordas, 2004). The textile industry consists of spinning, weaving and finishing. The lead time in the textile sector is quite long and the capital
intensity of the industry results in relatively large minimum orders. The textile industry is traditionally seen as less flexible in terms of adjusting to consumer tastes during a season than the clothing and retail sectors (Nordas, 2004).

The textile sector is less unskilled labor intensive than the clothing sector as shown in Figure 14. This is representative of the level of automation in textile manufacturing. Generally the machinery requires a certain skill level to operate. Some countries such as Vietnam, which is believed to have lower labor costs actually have higher percentage labor costs when compared to China; this could be attributed to higher productivity in Chinese textile manufacturing. Also shown here is that the largest cost component in textile manufacturing is intermediate inputs or raw materials followed by unskilled labor costs and then capital (Nordas, 2004).

![The cost structure of the textile industry, selected countries, 2001 (percent of gross output)](image)

**Figure 14:** The cost structure of the textile industry, selected countries.

A study conducted by Dodd (2002), investigated the cost components of both rotor and ring spun yarn in relation to various countries. They disproved the general belief that labor cost is always the main determinant of final product cost.

Figure 15: Rotor spun yarn costs for 2001.


As seen in Figure 15, raw material costs were generally the same. The main difference between countries can be observed in both capital and labor costs. Indonesia had the cheapest labor cost, but also had the highest yarn cost. The capital cost offset the savings achieved through low labor cost. This proves that every component has an effect on the final product cost (Dodd & Oxenham, 2002).
Outsourcing

The flow of trade, which is observed at the national level, is driven by textile and apparel manufacturers as well as retailers. Companies use a variety of sourcing strategies. Some retailers have established their own buying offices overseas to handle the outsourcing of their product and other companies utilize sourcing agents to handle the intricacies of the sourcing process. Li & Fung (Trading) Ltd. Of Hong Kong, is one of the largest international sourcing agents in the world. Li & Fung functions as the link between its customer and its international supply network. Li & Fung and other sourcing agents offer their customer base “full-package” sourcing options which includes a wide variety of services including: product development, raw material sourcing, production planning, factory sourcing, manufacturing control, quality assurance, export documentation, and shipping consolidation (Abernathy, 2005).

The sourcing choices of U.S. firms arise from the drivers of profitability: cost considerations related to acquiring factors of production balanced against factors affecting revenue, including pricing, marketing, and distribution. This consideration leads U.S. retailers and apparel manufacturers to weigh familiar issues of labor, material, and shipping costs as well as costs related to tariffs and the presence of quotas in selecting sources (Abernathy, 2005).

The U.S. International Trade Commission outlined factors that affect sourcing strategies of U.S. apparel companies and retailers in its report “Assessment of the Competitiveness of Certain Foreign Suppliers to the U.S. Market” (USITC, 2004). These factors include a country’s business climate, infrastructure conditions,
proximity to market, market access, labor and management, raw material inputs, and level of service provided and the reliability of suppliers. These factors are listed in Table 4.

Table 4: Factors that Influence Sourcing Strategy

<table>
<thead>
<tr>
<th>Business climate</th>
<th>Labor and management</th>
<th>Raw Material inputs</th>
<th>Level of service and reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Political stability</td>
<td>• Availability of workers</td>
<td>• Access to quality and cost competitive yarn and fabric production</td>
<td>• Reputation in terms of product quality and on-time delivery</td>
</tr>
<tr>
<td>• Security of production and shipping</td>
<td>• Compensation rates</td>
<td>• Tariffs on imports of raw materials</td>
<td>• Level of service provided (full-package versus assembly)</td>
</tr>
<tr>
<td>• Transparent and predictable legal, commercial, and regulatory system</td>
<td>• Labor skills and productivity</td>
<td>• Availability of capital</td>
<td>• Existing business networks (supply chain linkages)</td>
</tr>
<tr>
<td>• Free trade zones</td>
<td>• Availability of qualified management</td>
<td>• Rules of origin for trade preference</td>
<td></td>
</tr>
<tr>
<td>• Favorable exchange rate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Market demand and economic growth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Infrastructure and proximity to market</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Roads, ports, rail and airports for moving goods</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Shipping time and cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Proximity to major markets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Market access</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Preferential access in major markets</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Manufacturing and Shipping Costs**

Wage rates are a major determinant in developing a sourcing strategy because of the labor intensive nature of apparel manufacturing. This gives a competitive advantage to producers in developing countries. The benefit attributed to wage rate is dependent on how labor intensive a specific product is. This can be seen in comparing labor costs across different types of garments (Abernathy, 2005).

Table 5: *Comparison of Suppliers’ Manufacturing and Shipping Costs for Men’s Cotton Jeans and Cotton Ring-Spun T-Shirt -2002*

<table>
<thead>
<tr>
<th>Garment Producer / Exporter</th>
<th><strong>Single Pair of Men’s Jeans</strong></th>
<th><strong>Cotton Ring-Spun T-Shirt</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabric Source</td>
<td>Mexico</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>Total Fabric Cost per Garment</td>
<td>$3.80</td>
<td>$4.23</td>
</tr>
<tr>
<td>Fabric Price/Linear Yard (incl. Shipping)</td>
<td>$2.50</td>
<td>$2.78</td>
</tr>
<tr>
<td>Fabric Yield/garment (Linear Yd.)</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Trims Cost per garment (incl. Pocketing/Thread)</td>
<td>$1.05</td>
<td>$1.10</td>
</tr>
<tr>
<td>Wage Rate</td>
<td>$2.45</td>
<td>$0.92</td>
</tr>
<tr>
<td>Labor Cost (Cut, Make, Finish)</td>
<td>$2.35</td>
<td>$2.17</td>
</tr>
<tr>
<td>Profit per Garment</td>
<td>$0.72</td>
<td>$0.75</td>
</tr>
<tr>
<td>FOB Cost</td>
<td>$7.92</td>
<td>$8.25</td>
</tr>
<tr>
<td>Shipping Cost per Garment</td>
<td>$0.04</td>
<td>$0.07</td>
</tr>
<tr>
<td>Total Manufacturing &amp; Shipping</td>
<td>7.96</td>
<td>8.32</td>
</tr>
</tbody>
</table>


As shown in Table 5 the labor cost between a pair of jeans and t-shirt is vastly different. In both instances China’s low wage rate contributes to a lower FOB cost. A second cost factor highlighted above is the price of procuring fabric as shown in *total fabric cost per garment*. China, which has a growing textile industry, is able to
secure lower cost fabric than its competitors using U.S. fabric. The final component outlined in Table 5 is shipping costs; the shipping cost of the T-shirt is more significant to the final product cost because of the lower overall cost in comparison to the final jean cost (Abernathy, 2005).

The total cost for product landing on U.S soil does not end with the components listed in Table 5. The policy costs listed in Table 6 can often comprise the largest cost differentials among producers from different countries. In the jeans example listed in Table 6, duty and quota charges account for 46% of the total landed cost of a coastal Chinese producer in 2003 (Abernathy, 2005).

**Landed Cost**

Total landed cost is the sum of all costs associated with making and delivering products to the point where they produce revenue. The obvious components that factor into landed cost are:

1. Cost of goods as quoted.
2. Transport costs and external warehousing costs.
3. Inventory holding costs (how many weeks of inventory held and what it costs to hold these inventories & opportunity cost).
4. Applicable duties and taxes.
5. Cost of agents or intermediaries (brokers, freight forwarders, etc.)

Less obvious components of landed cost include:

1. Future exchange rate risks after establishing the supplier relationship.
2. Physical and time distance between supplier and destination point.
3. Cost of maintaining relationship.

5. Cost of stockout.

6. Reliability of suppliers (% on time deliveries) (Younkin, 2007).

Quota and Duty Costs

Table 6: Comparison of Suppliers’ Total Landed U.S. Cost for Men’s Cotton Jean and Cotton Ring Spun T-shirt

<table>
<thead>
<tr>
<th>Garment Producer / Exporter</th>
<th>Single Pair of Men’s Jeans</th>
<th>Cotton Ring-Spun T-Shirt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabric Source</td>
<td>Mexico</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>Manufacturing &amp; Shipping Cost per Garment</td>
<td>$7.96</td>
<td>$8.32</td>
</tr>
<tr>
<td>Relevant Trade Agreement</td>
<td>NAFTA</td>
<td>CBPTA</td>
</tr>
<tr>
<td>2003 Quota Cost</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2003 Duty Cost into U.S.</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2003 Total Landed Cost</td>
<td>$7.96</td>
<td>$8.32</td>
</tr>
<tr>
<td>Duty Cost into U.S. (Absent Quota Cost)</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>Total Landed Cost (Absent Quota Cost)</td>
<td>$7.96</td>
<td>$8.32</td>
</tr>
</tbody>
</table>


The first policy cost shown in Table 6 arises from quotas. Pre-2005, each nation distributed quota amongst apparel producers within a country based on the bilateral agreement between the U.S. and that particular country. As a result, global manufacturers paid substantial fees to acquire quota. As a result, prior to 2005, Mexico and Nicaragua were lower cost suppliers of jeans relative to China because of their preferential treatment under regional trade agreements. These quota fees have since been eliminated except in instances where safeguards have been initiated. Duty costs however will remain in place post-2005. The duty cost is more
substantial to the final product cost of the lower cost t-shirt in comparison to the cost of the jeans (Abernathy, 2005).

**Lead-Time and Inventory Holding Costs**

**Table 7: Comparison of Suppliers’ Inventory Related Costs for Men’s Cotton Jeans and Cotton Ring-Spun T-Shirt**

<table>
<thead>
<tr>
<th>Garment Producer / Export</th>
<th>Single Pair of Men’s Jeans</th>
<th>Cotton Ring-Spun T-Shirt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabric Source</td>
<td>Mexico</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>Total Landed Cost</td>
<td>$7.96</td>
<td>$8.32</td>
</tr>
<tr>
<td>Absent Quota Cost</td>
<td>NAFTA</td>
<td>CBFTA</td>
</tr>
<tr>
<td>Relevant Trade Agreement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Cycle Time (in Weeks)</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Inventory Carrying Cost Rate</td>
<td>18%</td>
<td>18%</td>
</tr>
<tr>
<td>WIP Inventory Carrying Cost</td>
<td>$0.11</td>
<td>$0.14</td>
</tr>
<tr>
<td>Finished-Goods (FG) Inventory (in Weeks)</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>FG Inventory Carrying Costs</td>
<td>$0.11</td>
<td>$0.14</td>
</tr>
<tr>
<td>Total Cost</td>
<td>$8.18</td>
<td>$8.60</td>
</tr>
<tr>
<td>Value of Apparel at Risk (Dollars/Weekly Single Unit Demand)</td>
<td>$65</td>
<td>$65</td>
</tr>
</tbody>
</table>


A final consideration in sourcing decisions is lead time. Table 7 outlines the lead times associated with the three sourcing scenarios; Mexico has the shortest lead time with four weeks versus eleven weeks for Chinese goods. Work-in-process inventory (WIP), which increases with lead time, are carried by the supplier and represent capital tied up in the production process itself. WIP costs are three times higher for the Chinese producer versus the Mexican producer. When planning safety stocks necessary for insuring against fluctuations in demand, longer lead times
translate into larger finished-goods inventory (FGI). For example, if a branded jeans manufacturer had a negotiated fill rate with a retailer; it must carry higher FGI inventories to insulate itself from fluctuations in demand to meet the established service level. The final lead time consideration is inventory-at-risk which takes into account unanticipated product obsolescence or cancellation. With a decline in demand, a company using Chinese goods would face liquidating 11 weeks of product at a discounted price (Abernathy, 2005).

Product Fashion Content

In addition, a product’s fashion content influences sourcing decisions in terms of the period of the products salability. For a single season, more fashion oriented product, traditional cost factors and tariffs influence sourcing decisions more often. For products where retailers and suppliers seek ongoing replenishment direct costs related to labor, textile inputs, shipping, and tariffs are balanced against the costs associated with lead times, inventory, and their associated risks. This relationship between proximity and the fashion orientation of a product in determining a sourcing location can be seen in Table 8 comparing the Top 20 exporters to the U.S of t-shirts versus dresses during the period Jan-Aug 2005 (Abernathy, 2005).
Table 8: Top 20 exporters to U.S. – T-shirts & Cotton Dresses

<table>
<thead>
<tr>
<th>#</th>
<th>Country</th>
<th>Volume (000s)</th>
<th>Value ($000s)</th>
<th>Unit Price (per Dz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Honduras</td>
<td>27,414</td>
<td>448,380</td>
<td>$16</td>
</tr>
<tr>
<td>2</td>
<td>El Salvador</td>
<td>22,290</td>
<td>274,105</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>Mexico</td>
<td>19,671</td>
<td>389,698</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>China</td>
<td>8,433</td>
<td>155,761</td>
<td>18</td>
</tr>
<tr>
<td>5</td>
<td>Dominican Rep</td>
<td>7,138</td>
<td>120,774</td>
<td>17</td>
</tr>
<tr>
<td>6</td>
<td>Haiti</td>
<td>4,578</td>
<td>66,032</td>
<td>14</td>
</tr>
<tr>
<td>7</td>
<td>Guatemala</td>
<td>4,534</td>
<td>109,585</td>
<td>24</td>
</tr>
<tr>
<td>8</td>
<td>Pakistan</td>
<td>2,635</td>
<td>54,917</td>
<td>21</td>
</tr>
<tr>
<td>9</td>
<td>Peru</td>
<td>2,504</td>
<td>102,509</td>
<td>41</td>
</tr>
<tr>
<td>10</td>
<td>Bangladesh</td>
<td>2,411</td>
<td>31,785</td>
<td>13</td>
</tr>
<tr>
<td>11</td>
<td>India</td>
<td>2,314</td>
<td>63,332</td>
<td>27</td>
</tr>
<tr>
<td>12</td>
<td>Canada</td>
<td>2,186</td>
<td>72,936</td>
<td>33</td>
</tr>
<tr>
<td>13</td>
<td>Nicaragua</td>
<td>1,310</td>
<td>24,607</td>
<td>19</td>
</tr>
<tr>
<td>14</td>
<td>Thailand</td>
<td>1,182</td>
<td>26,083</td>
<td>22</td>
</tr>
<tr>
<td>15</td>
<td>Turkey</td>
<td>1,148</td>
<td>33,864</td>
<td>29</td>
</tr>
<tr>
<td>16</td>
<td>Vietnam</td>
<td>917</td>
<td>31,685</td>
<td>33</td>
</tr>
<tr>
<td>17</td>
<td>Cambodia</td>
<td>915</td>
<td>23,370</td>
<td>25</td>
</tr>
<tr>
<td>18</td>
<td>Jamaica</td>
<td>918</td>
<td>17,453</td>
<td>19</td>
</tr>
<tr>
<td>19</td>
<td>Macau</td>
<td>912</td>
<td>36,017</td>
<td>40</td>
</tr>
<tr>
<td>20</td>
<td>Indonesia</td>
<td>873</td>
<td>23,438</td>
<td>27</td>
</tr>
</tbody>
</table>

Sub-Total: 114,363 $2,106,411 $18


The list of top twenty sources of T-shirts into the U.S. has high concentrations of supplier nations proximate to the U.S. In contrast, dresses, which are expensive to produce and not typically replenished are usually manufactured in and around Asia. Figure 16 shows that in 2003 Mexico and the Caribbean basin region provided a higher amount of replenishable product in comparison to other regions (Abernathy, 2005).
Figure 16: 2003 replenishable apparel imports, by region.


As shown in Figure 16, the use of Mexico and the Caribbean Basin region for the manufacturing of replenishable product has been beneficial for U.S textiles. This can be seen by looking at the trade figures on textile exports from the U.S. to Mexico and Caribbean nations versus U.S. textile exports to countries in Asia. As shown in Figure 17, the value of U.S. textile exports to Mexico is equivalent to 40% of the apparel imports from Mexico in comparison to only two percent of the value imported from China. This is reflective of public policies such as the CAFTA Agreement that requires the use of U.S. textile to qualify for duty-free entrance into the U.S. (Abernathy, 2005).
Regions of Investigation

China

The United States Trade Commission released a report in January 2004 on the Assessment of the Competitiveness of Certain Foreign Suppliers to the U.S. Market concluding that “China is expected to become the supplier of choice for most U.S. importers (the large apparel companies and retailers) because of its ability to make almost any textile and apparel product at any quality level at a competitive price” (USITC, 2004). Trade data from the first few months following the end of quotas seems to confirm this view of the post-2005 world: Apparel imports from China increased in the first eight months of 2005 by 85% and in some categories such as cotton shirts by over 250% over levels in 2004 (Abernathy, 2005).

China is the world’s largest producer and exporter of textiles and apparel and has invested in more spinning and weaving equipment than any other country during
the last five years. Moreover, China’s huge supply of inexpensive labor and skilled sewers, coupled with access to indigenous raw materials has enabled the Chinese textile and apparel industries to remain highly price competitive and attract foreign direct investment (USITC, 2004).

Since the late 1970s, China has reformed its economy and started transformation from a planned centralized economic structure into a globally oriented market system with various extents of autonomy. In the process, the economic structure of China is experiencing significant amounts of change. One such change is the emergence of industrial clusters of various products, for instance, women’s wear in Hangzhou, men’s wear in Wenzhou, socks in Ningbo, necktie in Chengzhu and knitted products in Zhangcha. In each of these, localities, hundreds and even thousands of enterprises of various sizes have been formed and clustered together (Zhang, 2004).

Under a separate Memorandum of Understanding between the U.S. and China, a bilateral mechanism remains in affect until December 31, 2008 to protect the domestic U.S. textile and apparel industry from Chinese imports. This safeguard mechanism allows the U.S. to seek to extend quotas with China for specific goods where the elimination of such restrictions would result in “market disruption” Safeguard provisions have been initiated 34 times since the phase out of the Multi-Fiber-Agreement for various product categories (Abernathy, 2005).

India

India is regarded as a major sourcing alternative to China (USITC, 2004). India has remained competitive after quota removal in 2005 because of its large relatively low-cost labor force, a large domestic supply of fabrics, and the industry’s
ability to manufacture and produce a wide range of fabrics. Retailers describe Indian firms as innovative, particularly in design functions. Poor infrastructure and an inefficient bureaucracy were cited as concerns by a study conducted by the United Stated Trade Commission. Another concern revealed by this study was the lack of transparency in legal requirements. The U.S. firms in this study also indicated that India has poor infrastructure, including no deep water ports and an antiquated railroad network (USITC, 2004).

India’s relatively low labor costs are partially offset by lower productivity levels. The U.S retailers interviewed by the USITC indicated that productivity levels were 20-25% below those in China. India has a very large pool of skilled and unskilled workers employed on a 48-hour, 6-day work week. Indian firms also have well-educated management and technicians (USITC, 2004).

India ranks among the world’s largest producers of cotton, cotton yarn, and manmade fibers. With exception of yarn spinning, an area of competitive strength for Indian firms, India’s textile industry is highly fragmented. The weaving, dyeing, finishing, and processing segments are considered the weakest links. The size and quality however of Indian textile production has made Indian suppliers a major source for both woven and knit products (USITC, 2004).

The textile sector has contributed significantly to India’s growth in recent years. The Index of Industrial Production showed textile products, including cotton apparel as one of the lead sectors. The trend in both production and installed capacities have both been positive in recent years. In 2005, the capacity in spindles and rotors increased by .65% and .52% respectively. In 2005, India’s total exports increased by 24% where textile exports declined by 3% (ITMF, 2005).
India’s technical/performance textile segment is seen as a way to counteract this recent decline in textile exports. The performance textile segment is going to see a boost in coming years with the Indian government identifying this as a major opportunity for growth. The government has formed a committee of experts on technical textiles. In 2006, India’s market share in the technical/performance segments stood at 6%. Currently, India is investing heavily in research and development efforts to increase their market share in this expanding market (Karachi, 2006).

CAFTA Region

On August 2, 2005 President Bush signed the CAFTA-DR agreement that allowed apparel produced in the Central American nations and the Dominican Republic, under a U.S. yarn forward rule to enter the U.S. duty free. Many apparel companies utilize this preferential access into the U.S. for a portion of their product needs. For example, Target Sourcing Services, sources 11% of their product from the CAFTA region (Fidley, 2007). Table 9 is a SWOT analysis in terms of sourcing in the CAFTA region completed by the American Apparel Producers’ Network.
Table 9: SWOT Analysis of Sourcing in CAFTA Region

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Proximity</td>
<td>1. Limited needle capacity (Vs. Asia)</td>
</tr>
<tr>
<td>2. Quality within core products</td>
<td>2. Limited full-package sourcing</td>
</tr>
<tr>
<td>(cotton, basics, etc)</td>
<td>3. Higher initial cost</td>
</tr>
<tr>
<td>3. Duty free status</td>
<td>4. Lack of innovation</td>
</tr>
<tr>
<td>4. Balanced sourcing</td>
<td>5. Supply chain players disconnected</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Collaborative supply chain</td>
<td>1. Asian prices drop w/ WTO</td>
</tr>
<tr>
<td>reduction</td>
<td>2. Asia negate lead time advantages</td>
</tr>
<tr>
<td>2. Electronic communication with U.</td>
<td>3. Asian firm's add value beyond price</td>
</tr>
<tr>
<td>S. customer</td>
<td></td>
</tr>
<tr>
<td>3. Demonstrate innovation</td>
<td></td>
</tr>
<tr>
<td>4. Cost effective expediting</td>
<td></td>
</tr>
</tbody>
</table>


Dominican Republic

Textile and apparel imports account for $2.1 billion in export earnings; which is more than one-third of the Dominican Republic’s exports. The textile and apparel industry is integral to the Dominican Republic’s economic livelihood and is currently in a state of flux. The Dominican Republic industry benefited from protection in terms of trade agreements from quota costs. With the phase out of quotas in 2005, companies in the Dominican Republic are competing directly with apparel exporters in Asia. In order to remain competitive, the Dominican Republic must find new market niches and provide value-added services rather than just competing through basic cut-&-sew manufacturing (Todaro, 2007)

A new garment preproduction training center located in the Santiago Industrial Free Trade Zone is teaching apparel workers how to design and create patterns and make samples and markers so the firms they work for can meet
heightened competition. This $1.2 million facility will help Dominican apparel companies to not only retain clients, but also penetrate new markets and acquire new clients (Todaro, 2007).

**El Salvador**

Currently, more than 260 textile and apparel companies are located in El Salvador. The country offers a variety of services including embroidery, industrial laundry, dyeing and finishing, cutting rooms and packaging. The majority of development in the textile and apparel industry in El Salvador happened between 1990 and 2000 driven initially by access preferences to the United States under the Caribbean Basin Trade Partnership Act (CBTPA). The area has witnessed the incorporation of larger value-added processes as well as diversification by allowing cutting, sewing, and use – under quota of knits manufactured in the region using U.S. thread (Todaro, 2007).

In El Salvador, 50 percent of the apparel manufactured uses U.S. fabric; 40% from Asia and only 10% in terms of locally made fabrics. The fabric deficit in the region is an opportunity for development. Local manufacturing is appealing when looking at man-made fibers which are subject to a 32-percent import tariff to enter the U.S (Todaro, 2007).

**Guatemala**

There are 200 apparel manufacturers, 50 textile manufacturers and 250 corresponding accessory and service firms in Guatemala. The country’s specialties include a variety of apparel items from jeans to knits. Guatemala’s five year plan in terms of textiles and apparel is to consolidate through higher value-added and
differentiated products by focusing in mid-high and more specialized niche markets (Todaro, 2007).

Textile mills have invested more than $40 million this year to expand and increase yarn spinning capabilities, as well as dying and finishing. In addition, weaving and knitting capacities have been improved. These improvements have lead to a total of over $500 million in foreign and local capital investment (Todaro, 2007).

_Honduras_

There are 131 apparel manufacturers, 16 textile manufacturers, 21 industrial parks and 65 service firms in Honduras. An increasing amount of textile mills are being established in Honduras. Some examples of companies with manufacturing facilities in Honduras include Parkdale Mills, Anvil Knitwear, and Gildan activewear. Many firms in Honduras are creating vertically integrated enterprises in industrial parks. These industrial parks provide full-package sourcing for their customers (Todaro, 2007).

_Nicaragua_

Nicaragua has the most competitive wages in Central America - $0.76 per hour. Nicaragua received a competitive advantage as the only Central American country to negotiate a nine-year tariff preference level (TPL), allowing its textile industry to use 100 million SMEs of fabric from any part of the world to manufacture garments in Nicaragua and still meet rule of origin requirements for duty-free access into the U.S (Todaro, 2007)
Sri Lanka

Sri Lanka’s textile and apparel exports are expected to be $4.7 billion in 2007 (Apparel Industry of Sri Lanka, 2004). Textiles and apparel are the largest contributors to Sri Lanka’s national economy; comprising 6 per cent of total GDP. These industries account for 33% of manufacturing employment and employ 350,000 people. A total of 64% of industrial exports are driven by textile and apparel exports. The United States Trade Commission stated in January 2004 in the Assessment of the Competitiveness of Certain Foreign Suppliers to the U.S. Market that Sri Lanka “is expected to be a niche supplier for specialty or fashion goods, hosiery, and women’s intimate apparel such as bras and underwear” (USITC, 2004).

Sri Lanka has a liberalized open economy and allows 100% foreign ownership and there are no restrictions in terms of earnings, fees, and capital. U.S. companies such as Hanes Brands, Kellwood, MAST Industries, and American Eagle have investments in Sri Lanka. In addition, companies such as Lands’ End and Victoria’s Secret secure their product needs from manufacturers in Sri Lanka. The main product categories manufactured in Sri Lanka are active wear, sportswear, children’s wear, & intimates. These product categories comprise 80% of the 850 textile and apparel manufacturing facilities in Sri Lanka (Apparel Industry of Sri Lanka, 2004). Sri Lanka lacks domestic textile resources. In 2004, Sri Lanka, imported $1.2 billion in fabric for use in apparel. The majority of fabric is imported from surrounding areas such as Hong Kong, Taiwan, India, and China (Apparel Industry of Sri Lanka, 2004).

In the study conducted by the USITC, Sri Lanka was reported as having a favorable business environment, including a functioning rule of law, corporate
executives educated in the United States and the United Kingdom, and the use of English as the language of business. This report also stated that Sri Lanka has low industrial labor productivity resulting from relatively high employee absenteeism and turnover. Industry sources also described Sri Lanka as having poor infrastructure, in part because of the damage inflicted during the long period of civil unrest (USITC, 2004).

California

California’s textile and apparel industry dates back to the early 1850’s. In the late 1990s, California and the Los Angeles area in particular, overtook New York as the hub of U.S. garment production. Although much apparel production has moved offshore in recent decades, California continues to lead the nation in apparel production jobs with more than 120,000 apparel workers (United States Department of Labor, 2003). California also has a significant textile-manufacturing sector. Concentrated in Los Angeles and surrounding cities, the industry focuses primarily on knits and some carpet manufacturing. In addition, California’s southern San Joaquin Valley is one of the top cotton producing area in the nation and is well known for its consistent high quality Pima cotton (Rucker, 2004).

A study conducted by the University of California at Davis in 2004, which used Department of Commerce and Labor data combined with state and industry statistics for the local textile and apparel industry, indicated a trend that differed markedly from those in the nation as a whole in terms of manufacturing employment. Textile and apparel manufacturing employment has grown in California where as noted previously it has shrunk in the U.S. as a whole (Rucker, 2004).
The Bureau of Labor Statistics data charted in Figure 18 indicates textile employment in California has increased 88% from 1975 to 2003. In the same time period, more than half of U.S. textile jobs were lost. Much of the increase in the California textile sector can be accounted for by an increase in jobs in knitting mills. During this same period, apparel manufacturing employment increased 13% in California versus nearly a 60% decline in U.S. employment in apparel manufacturing as indicated in Figure 19; however California has started to see a decline in apparel manufacturing (Rucker, 2004).
The California textile and apparel industry has access to low-cost immigrant labor. It has been suggested that reliance on the large pool of legal and undocumented immigrants is the primary cause of low wages in L.A.’s textile and apparel industries. This belief is part true; wages for California’s apparel workers have remained stagnant and have occasionally lost ground over the past 27 years. Apparel manufacturing wage rates remain below the national average hourly wage and fail to keep up with inflation. However, as shown in Figure 20, knit workers have seen increases in their hourly pay (Rucker, 2004).
The California apparel industry is differentiated from the rest of the U.S. by reason of its much greater concentration on casual, outdoor, sports-oriented fashions and the appeal of its products to a rather more youthful clientele (Scott, 2002). One of the differentiating factors of apparel manufactured in Southern California is the status of the clothing industry as a cultural-products sector embedded in the wider cultural economy of Los Angeles (Scott, 2002). The presence of the entertainment and media industries in Los Angeles bolsters the image of product manufactured in Los Angeles.

The Southern California Apparel industry is characterized by a gathering together of many small and medium-sized producers. There are a few large manufacturers present in Southern California; over 50 per cent of all establishments
in Southern California can be accounted for by firms with just 1-9 employees (Scott, 2002). The industry tends to function as a cluster of companies with shifting sub-contracting and service relationships. These relationships are represented by either competitive arm’s length dealings, while others involve more collaborative interactions. This cluster in Los Angeles is marked by a division among manufacturers (who engage in design, research and, marketing activities, but do no actual cutting) and contractors (who take on cutting or sewing work on a fee-for-work basis) (Scott, 2002). Figure 21 shows the location of clothing manufacturing establishments in Southern California.

Figure 21: Los Angeles textile and apparel cluster.

American Apparel

The most notable exception in the decline of U.S. textile manufacturing plants is American Apparel. American Apparel is the largest apparel manufacturer operating in America. All of its goods are made at its U.S. plants which employ more than 2,000 workers. The firm’s downtown Los Angeles factory has an output of over one million garments per week. American Apparel maintains distribution warehouses in Montreal, Quebec and Frankfurt Germany, as well as a wholesale office in the U.K. Ambitious expansion plans call for over 100 stores worldwide by the end of 2006 and nearly 1,000 by the end of 2008 (Plunkett Research, 2006)

Product Categories of Investigation

Cotton Bottomweights Market

Some of the sample for this study will come from the Cotton Bottomweights market. Bottomweights are defined as fabric that is used in the production of pants, shorts, and skirts. The Cotton Bottomweights market also includes those suppliers (fiber/yarn, textile mills, apparel manufacturing, and retailers) of these products.

The Cotton Bottomweights market was chosen because it is an important product category for U.S. Manufacturers, as U.S. manufacturers have significant market share in the U.S. market. Although import penetration continues to rise in the bottomweights market, the domestic industry has a significant presence in this market with fabric and finished goods. In addition, this research allows for the opportunity to extend previous research completed by Institute of Textile Technology Fellows; this market was one of two focus markets (bottomweights and bed-bath) in
a study completed in 2005 (Cesca, 2005; Jones, 2005; Nowell; 2005) and a study of niche markets (Allen, 2006).

*Performance/Technical Apparel*

Performance apparel represents one of the fastest growing sectors of the international textile and clothing industry. Performance apparel is defined as garments which meet the needs of the wearer’s circumstances and defeat the risks of the outside environment. These properties come from the garment construction, the fabric and trim specification, and/or fibers and chemical treatments (www.just-style.com, 2006).

Market growth is being fuelled by the emergence of new fibers, new fabrics and innovative process technologies. New high-tech fabrics are being developed for a wide range of active sports such as aerobics, athletics, running, cycling, hiking, mountaineering, swimming, sailing, wind surfing, ballooning, parachuting, snowboarding, and skiing. The market is also being boosted by changes in consumer lifestyles. People are living longer and spending more time on leisure activities (www.just-style.com, 2006).

In order to avoid commoditization, many textile firms have shifted their product lines into performance segments as well as non-apparel related markets such as automotive and medical end uses. These areas are much more capital and research intensive; thus able to command higher margins then commodity product (Gereffi, 2005).
CHAPTER III
RESEARCH METHODOLOGY

Purpose of the Research

The purpose of this research was to determine where the U.S. textile industry can compete through increased productivity utilizing Porter’s *Four Determinants of Competitive Advantage* (1990) as the conceptual framework for data collection. This conceptual framework examines competitive advantages that increase productivity within a nation’s firms. This research provided insight into how these competitive advantages could be leveraged to enhance the performance of U.S. textile and apparel companies. In addition, this research provided an understanding into the key components that are driving the competitiveness of the top textile and apparel exporting regions.

The overall research question for this study was: How can the U.S. textile and apparel industry remain economically competitive in the face of global competition?

Specific research questions developed from the overall research question are:

1. Where can the U.S. textile and apparel manufacturing sector effectively compete through increased productivity?
2. What are the U.S. textile and apparel industries competitive advantages in relation to other countries through a regional and global comparison?
3. What is the most significant contributor to final product cost when looking at Landed Duty Paid?
Figure 22 is a visual depiction of the research question, developed by the researcher, to guide the research.

![Diagram of research question]

Research Objectives

The specific objectives of the research were:

*Phase I: Exploratory*

RO1: To conduct a comparative cross country cost analysis;

- RO1A: China
- RO1B: India
- RO1C: CAFTA region
- RO1D: Sri Lanka
- RO1E: U.S. (Southeast & California)

RO2: To provide a global overview of both the market and main competitors in;

- RO2A: Cotton bottom weights
- RO2B: Performance Apparel
*Phase II: Concurrent Triangulation*

RO3: To conduct in-depth case studies via primary sources to determine the business strategies that are being used to increase productivity;

- RO3A: Fiber/Yarn Manufacturers
- RO3B: Textile Manufacturers
- RO3C: Apparel Manufacturers
- RO3D: Retailers

RO4: To examine where the U.S. competitive advantage is using Porter's Four Determinates as the conceptual framework for organizing the data collected; looking at each component of his model;

- RO4A: Firm strategy, structure, and rivalry
- RO4B: Demand conditions
- RO4C: Related and supporting industries
- RO4D: Factor conditions

RO5: To provide insight into product cost, sourcing strategies, and the criteria used by companies in outsourcing decisions
Figure 23 was developed by the researcher to visually show the areas of investigation for this study.

Figure 23: Visual depiction of the areas of investigation.

Research Design

Strategy

Mixed Methods

This research used a mixed methods approach in that the primary and secondary data collection consisted of both qualitative and quantitative approaches. The concept of mixing quantitative and qualitative methods was developed in 1959 by Campbell and Fiske. This method of data collection recognizes that there are weaknesses inherent in each type of data. By combining both quantitative and qualitative data, researchers can neutralize the weaknesses involved in each single method of data collection (Creswell, 2003).

Another advantage of the mixed methods approach is that results from one method can help develop or inform the other method. Mixed methods allow research to be conducted using both open and closed ended questions. Also, multiple forms
of data are collected and statistical and text analyses can be performed. By
combining these methods, the researcher can provide a comprehensive analysis of
the research problem (Creswell, 2003).

Table 10: Decision Criteria for Determining a Mixed Methods Strategy of Inquiry

<table>
<thead>
<tr>
<th>Implementation</th>
<th>Priority</th>
<th>Integration</th>
<th>Theoretical Perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>No sequence</td>
<td>Equal</td>
<td>At Data Collection</td>
<td>Explicit</td>
</tr>
<tr>
<td>Concurrent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sequential</td>
<td>Qualitative</td>
<td>At Data Analysis</td>
<td></td>
</tr>
<tr>
<td>Qualitative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sequential</td>
<td>Quantitative</td>
<td>With Some Combination</td>
<td></td>
</tr>
<tr>
<td>Qualitative</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


The criteria for selecting the mixed methods approach used in this study is
shown in Table 10. The priority for collection of qualitative and quantitative data is
equal, the data will be integrated as both primary and secondary data are collected,
and the theoretical perspective is explicit, a theory guided the research (Creswell,
2003). The theoretical perspective that is used in this study is Porter’s *Determinants of National Competitive Advantage*. Porter (1990) presents the theory that the
presence or absence of particular variables influence the competitiveness of firms
within an industry. Porter describes these attributes as - factor conditions, demand
conditions, related and supporting industry, and firm strategy structure and rivalry. These four characteristics shape the environment in which firms compete in their global industries (Porter, 1990). The components of this model were tested in this research study.

Two Phases: Exploratory and Concurrent Triangulation

This research was conducted in two phases. The first phase (Phase I) was exploratory in nature. The main objective of exploratory research is to provide insight and understanding in regard to the problem confronting the researcher. The main purpose of this phase was to isolate key variables and relationships for further examination (Malhotra, 2004). The first stage involved a comparative cross country cost analysis using both primary and secondary sources (RO1). In addition, a trade analysis was performed of both cotton bottom weights as well as performance apparel (RO2).

The second phase (Phase II) of this study used a concurrent triangulation strategy. This strategy shown in Figure 24, involves collecting quantitative (QUAN) and qualitative (QUAL) data simultaneously and comparing results from analysis of each type of data. This strategy was selected because it offers the ability to confirm, cross-validate, or corroborate findings within a single study (Creswell, 2003). Phase II addressed research objectives RO3-RO5.
Figure 24: Concurrent triangulation strategy.


*Phase I: Exploratory*

In Phase I, both quantitative and qualitative data was collected in regards to countries competing in cotton bottom weights and performance apparel. In addition, data was collected on companies competing in these product categories via secondary resources for sample identification purposes. In addition, cost data was gathered from primary and secondary sources. Phase I involved four steps. The data collection methodology of each step is listed below. Table 20 summarizes all four steps of Phase I and their contribution to the research.

*Data Collection: Phase I (Step 1)*

Secondary sources were used to develop an understanding of U.S and international production, sales and import/export trends for cotton bottom weights and performance apparel. In terms of performance apparel, the researcher investigated trade data in relation to synthetics due to the fact that performance apparel as a product category could not be isolated in itself, as the category involves
a variety of fabrications and end-uses. This was done as to cover both cotton and synthetic trade and production data. Data was compiled from sources specific to each category. For cotton bottom weights, data was used from sources specific to cotton products such as the International Cotton Advisory Committee and Cotton Incorporated. In terms of synthetics, trade and production data was compiled from the Fiber Economics Bureau. Trade and production data was gathered for both categories from the Census Bureau, OTEXA, and Plunkett Research.

Data from each region of investigation was compiled into excel spreadsheets; tables and figures were then created for examination. Data was examined in terms of each segment of both product supply chains at the fiber, yarn, textile, and apparel levels. Production and import trends were reported on as observed in terms of the tables and figures. Areas of investigation were excluded at various supply chain segments if they were not a significant producer or exporter in that area.

Data Collection: Phase I (Step 2) – Sample Identification

This process of sample selection was necessary in order to complete steps 2-4 of Phase I and also to identify companies for primary research in Phase II.

The identification of sample for this study included the following process:

1. The researcher started initially by identifying the sample for the cotton bottom weight supply chain.

2. The researcher examined each member of the bottom weight population developed by Allen (2006) to determine if they were qualified to be included in sample for this research. The population developed by Allen (2006) included firms in all bottom weight segments; fiber/yarn, textile, apparel, and retail.
3. The researcher examined each company in this population through a subjective analysis of their website as well as through the profile of each company on Mergent Online.

4. Some members of the population developed by Allen (2006) were disqualified if they did not compete in cotton-based products. The study conducted by Allen (2006) included all bottom weight companies regardless of fiber type (wool, synthetic, cotton, etc).

5. The researcher examined each NAICS code listed in Table 11 to determine additional companies to be included in the cotton bottom weight population for this study outside of the initial population developed by Allen (2006). Mergent On-Line was used to identify these additional members included in the population.

6. In addition, companies from Sri Lanka, India, China, as well as the CAFTA region that competed in each NAICS code listed in Table 11 were added to the population for this study.

7. A different strategy was used to identify companies competing in the performance apparel segment. While completing the analysis of the bottom weights population developed by Allen (2006), it was found that some of these companies and/or performed in the performance apparel segment as well.

8. NAICS codes specific to outerwear, underwear as well as knit and woven tops were compiled to further develop the performance apparel population (Table 13).

9. The researcher then consulted on-line data bases such as Mergent On-line, Davison’s Textile Blue Book and the individual company’s website to determine
companies competing in performance apparel in these additional NAICS codes listed in Table 13.

10. The complete population for both product categories by supply chain segment are listed in Appendix A.

11. The researcher then examined companies identified as population for both product categories through a subjective analysis of their website as well as through their bluebook and Mergent Online description. Companies were chosen in terms of sample for this study if they meet one or several of these requirements:

   A. Innovation in terms of product development
   B. Vertical integration – backwards and/or forwards
   C. Significant market share
   D. Leadership in their respective market
   E. Companies that compete in niche markets

12. The researcher choose to conduct primary interviews in two areas of investigation: California and the Southeastern part of the U.S. The sample was narrowed down further in terms of primary research to companies located in these areas.
Table 11: NAICS Codes: Bottomweights Market

<table>
<thead>
<tr>
<th>NAICS Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>313111</td>
<td>Yarn Spinning Mills</td>
</tr>
<tr>
<td>313112</td>
<td>Yarn Texturizing, Throwing, and Twisting Mills</td>
</tr>
<tr>
<td>323221</td>
<td>Cellulosic Organic Fiber Manufacturing</td>
</tr>
<tr>
<td>313222</td>
<td>Noncellulosic Organic Fiber Manufacturing</td>
</tr>
<tr>
<td>313210</td>
<td>Broadwoven Fabric Mills</td>
</tr>
<tr>
<td>313311</td>
<td>Broadwoven Fabric Finishing Mills</td>
</tr>
<tr>
<td>315211</td>
<td>Men's and Boys' Cut and Sew Apparel Contractors</td>
</tr>
<tr>
<td>315212</td>
<td>Women's, Girls' and Infants' Cut and Sew Apparel Contractors</td>
</tr>
<tr>
<td>315224</td>
<td>Men's and Boys' Cut and Sew Trouser, Slack, and Jean Manufacturing</td>
</tr>
<tr>
<td>315225</td>
<td>Men's and Boys' Cut and Sew Work Clothing Manufacturing</td>
</tr>
<tr>
<td>315228</td>
<td>Men's and Boys' Cut and Sew Other Outerwear Manufacturing</td>
</tr>
<tr>
<td>315239</td>
<td>Women's and Girls' Cut and Sew Other Outerwear Manufacturing</td>
</tr>
<tr>
<td>315291</td>
<td>Infants' Cut and Sew Apparel Manufacturing</td>
</tr>
<tr>
<td>448110</td>
<td>Men's Clothing Stores</td>
</tr>
<tr>
<td>448120</td>
<td>Women's Clothing Stores</td>
</tr>
<tr>
<td>448130</td>
<td>Children's and Infants' Clothing Stores</td>
</tr>
<tr>
<td>448140</td>
<td>Family Clothing Stores</td>
</tr>
<tr>
<td>448190</td>
<td>Other Clothing Stores</td>
</tr>
<tr>
<td>812331</td>
<td>Linen Supply</td>
</tr>
<tr>
<td>812332</td>
<td>Industrial Launderers</td>
</tr>
</tbody>
</table>

Table 12: NAICS Codes: Performance Apparel

<table>
<thead>
<tr>
<th>NAICS Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>313241</td>
<td>Weft Knit Fabric Mill</td>
</tr>
<tr>
<td>313249</td>
<td>Other Knit Fabrics and Lace Mills</td>
</tr>
<tr>
<td>313312</td>
<td>Textile and Fabric Finishing (excluding Broadwoven) and other finished textiles</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NAICS Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>315191</td>
<td>Outerwear Knitting Mills</td>
</tr>
<tr>
<td>315192</td>
<td>Underwear and Nightwear Knitting Mills</td>
</tr>
<tr>
<td>315221</td>
<td>Men's and Boys' Cut and Sew Underwear and Nightwear Manufacturing</td>
</tr>
<tr>
<td>315231</td>
<td>Women's and Girls' Cut and Sew Lingerie, Loungewear, and Nightwear Manufacturing</td>
</tr>
<tr>
<td>315232</td>
<td>Women's and Girls' Cut and Sew Blouse and Shirt Manufacturing</td>
</tr>
<tr>
<td>315299</td>
<td>All Other Cut and Sew Apparel Manufacturing</td>
</tr>
</tbody>
</table>


Sample 1: Fiber/Yarn Population- Cotton Bottom Weights

1. Identify companies competing in the chosen NAICS sectors as fiber/yarn producers of cotton bottom weights. These companies are listed in Appendix A1.

2. Determine company location; for cross country cost analysis as well as financial ratios in order to evaluate factor deployment.

3. A total of 33 companies were identified in the fiber/yarn cotton bottom weights segments in terms of the regions of investigation.

4. Determine sample for primary research in the Southeastern United States and California meeting the following criteria:
   a. Innovation in terms of product development
   b. Vertical integration – backwards and forwards
   c. Significant market share
   d. Leadership in their respective market
e. Companies that compete in niche markets

5. This resulted in a sample of 6 companies (Figure 25; Table 13).

Figure 25: Fiber/yarn sample selection process – cotton bottom weights.

Table 13: Fiber/Yarn Sample – Cotton Bottom Weights

<table>
<thead>
<tr>
<th></th>
<th>Innovation</th>
<th>Vertical Integration</th>
<th>Market share</th>
<th>Leadership in market</th>
<th>Niche Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Yarn</td>
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<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Parkdale Mills</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>RL Stowe Mills</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Textiles</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Spinning</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIFI Inc</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
Sample 2: Fiber/Yarn Population- Performance Apparel

1. Identify companies competing in the chosen NAICS sectors as fiber/yarn producers of performance apparel. These companies are listed in Appendix A2.

2. Determine company location; for cross country cost analysis as well as financial ratios in order to evaluate factor deployment.

3. A total of 69 companies were identified in the performance apparel segments in terms of the regions of investigation.

4. Determine sample for primary research in the Southeastern United States and California meeting the following criteria
   
   a. Innovation in terms of product development
   
   b. Vertical integration – backwards and forwards
   
   c. Significant market share
   
   d. Leadership in their respective market
   
   e. Companies that compete in niche markets

5. This resulted in a sample of 5 companies (Figure 26; Table 14).
Figure 26: Fiber/yarn sample selection process – performance apparel.

Table 14: Fiber/yarn Sample – Performance Apparel

<table>
<thead>
<tr>
<th></th>
<th>Innovation</th>
<th>Vertical Integration</th>
<th>Market share</th>
<th>Leadership in market</th>
<th>Niche Market</th>
</tr>
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<tr>
<td>UNIFI, Inc</td>
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<td>X</td>
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</tr>
<tr>
<td>Milliken</td>
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<td>X</td>
<td>X</td>
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<tr>
<td>Invista</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Parkdale Mills</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Stowe-Pharr</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Sample 3: Textile Population – Cotton Bottom Weights

1. Identify companies competing in the chosen NAICS sectors as textile producers of cotton bottom weights. These companies are listed in Appendix A3.

2. Determine company location; for cross country cost analysis as well as financial ratios in order to evaluate factor deployment.
3. A total of 69 companies were identified in the cotton bottom weights textile segment in terms of the regions of investigation.

4. Determine sample for primary research in the Southeastern United States and California meeting the following criteria:
   a. Innovation in terms of product development
   b. Vertical integration – backwards and forwards
   c. Significant market share
   d. Leadership in their respective market
   e. Companies that compete in niche markets

5. This resulted in a sample of 11 companies (Figure 27; Table 15).

![Diagram](image)

*Figure 27: Textile sample selection process – cotton bottom weights.*
Table 15: Textile Sample – Cotton Bottom Weights

<table>
<thead>
<tr>
<th></th>
<th>Innovation</th>
<th>Integration</th>
<th>Market share</th>
<th>Leadership in market</th>
<th>Niche Market</th>
</tr>
</thead>
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<tr>
<td>Edmund Kim International</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>David Textiles Inc</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Avondale</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITG-Cone Denim</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Gayley &amp; Lord Swift Denim</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITG-Burlington Industries</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Dan River</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mount Vernon Mills</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Delta Woodside Industries</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Inman Mills</td>
<td></td>
<td></td>
<td></td>
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<td>X</td>
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<td>PDQ Sewing</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Sample 4: Textile Population - Performance Apparel

1. Identify companies competing in the chosen NAICS sectors as textile producers of performance apparel. These companies are listed in Appendix A4.

2. Determine company location; for cross country cost analysis as well as financial ratios in order to evaluate factor deployment.

3. A total of 58 companies were identified in the textile performance fabric segments in terms of the regions of investigation.

4. Determine sample for primary research in the Southeastern United States and California meeting the following criteria:
a. Innovation in terms of product development
b. Vertical integration – backwards and forwards
c. Significant market share
d. Leadership in their respective market
e. Companies that compete in niche markets

5. This resulted in a sample of 14 companies (Figure 28; Table 16).

Figure 28: Textile sample selection process – performance apparel.
Table 16: Textile Sample – Performance Apparel

<table>
<thead>
<tr>
<th>Textile Sample</th>
<th>Innovation</th>
<th>Vertical</th>
<th>Market</th>
<th>Leadership</th>
<th>Niche</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Soccer Co Inc</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antex Knitting Mills</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Broadway Albion Knitting Mills-Uniforms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Bgreen/Cotton Knit Trading inc</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Edmund Kim International</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metropolitan Industries</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Popular Textile Group</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nanotex</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Texollini Inc</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Textile Unlimited Inc</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITG-Burlington</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Milliken</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Invista</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Malden Mills</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Sample 5: Apparel Population –Cotton Bottom Weights

1. Identify companies competing in the chosen NAICS sectors as apparel producers of cotton bottom weights. These companies are listed in Appendix A5.

2. Determine company location; for cross country cost analysis as well as financial ratios in order to evaluate factor deployment.

3. A total of 54 companies were identified in the cotton bottom weight apparel segments in terms of the regions of investigation.
4. Determine sample for primary research in the Southeastern United States and California meeting the following criteria:
   a. Innovation in terms of product development
   b. Vertical integration – backwards and forwards
   c. Significant market share
   d. Leadership in their respective market
   e. Companies that compete in niche markets

5. This resulted in a sample of 23 companies (Figure 29; Table 17).

Figure 29: Apparel sample selection process – cotton bottom weights.
<table>
<thead>
<tr>
<th>Company Name</th>
<th>Innovation</th>
<th>Vertical Integration</th>
<th>Market share</th>
<th>Leadership in market</th>
<th>Niche Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guess Inc?</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Levi Strauss &amp; Co</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Mossimo Inc</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Quicksilver, Inc</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Tarrant Apparel Group</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Rsv Sport Inc – LEI Jeans</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>AZ3 Inc BCBG</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>L’koral Incorporated-Seven Jeans</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Rampage Clothing Company</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Leon Max Inc – Max Studio</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Cintas Corp</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Kellwood</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Hartmarx Corp</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Jones Apparel Group</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Liz Claiborne Inc</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Oxford Industries</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Polo Ralph Lauren</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>VF Corp</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Williamson-Dickie</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Dualstar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Columbia Sportswear</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Innovo Group – Joe’s jeans</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Perry Ellis International</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
Sample 6: Apparel Population – Performance Apparel

1. Identify companies competing in the chosen NAICS sectors as apparel producers of performance apparel. These companies are listed in Appendix A6.

2. Determine company location; for cross country cost analysis as well as financial ratios in order to evaluate factor deployment.

3. A total of 35 companies were identified in the performance apparel segments in terms of the regions of investigation.

4. Determine sample for primary research in the Southeastern United States and California meeting the following criteria:
   a. Innovation in terms of product development
   b. Vertical integration – backwards and forwards
   c. Significant market share
   d. Leadership in their respective market
   e. Companies that compete in niche markets

5. This resulted in a sample of 12 companies (Figure 30; Table 18).

Figure 30: Apparel sample selection process – performance apparel.
Table 18: *Apparel Sample – Performance Apparel*

<table>
<thead>
<tr>
<th></th>
<th>Innovation</th>
<th>Vertical Integration</th>
<th>Market share</th>
<th>Leadership in market</th>
<th>Niche Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Apparel</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Quicksilver Inc</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Volcom Inc</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>K2 Inc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vans-VF Corp</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>OP</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Hanes Brands-Champion</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Authentic Fitness-Speedo</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Patagonia</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Raj Manufacturing</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Barco Uniforms</td>
<td>X</td>
<td></td>
<td>x</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Russell corporation</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Nike</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

**Sample 7: Retail Population – Cotton Bottom Weights & Performance Apparel**

1. Identify companies competing in the chosen NAICS sectors as apparel producers of cotton bottom weights or performance apparel. These companies are listed in Appendix A7.
2. Determine company location; for cross country cost analysis as well as financial ratios in order to evaluate factor deployment.
3. A total of 106 companies were identified as retailers of cotton bottom weights or performance apparel in terms of the regions of investigation.
4. Determine sample for primary research in the Southeastern United States and California meeting the following criteria:
a. Innovation in terms of product development
b. Vertical integration – backwards and forwards
c. Significant market share
d. Leadership in their respective market
e. Companies that compete in niche markets

5. Due to the lack of retailers headquartered in the areas of investigation, industry leaders were added back into the sample.

6. This resulted in a sample of 19 companies (Figure 31; Table 19).

*Figure 31: Retail sample selection process.*
Table 19: Retail Sample

<table>
<thead>
<tr>
<th></th>
<th>Innovation</th>
<th>Vertical Integration</th>
<th>Market share</th>
<th>Leadership in market</th>
<th>Niche Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>A &amp; F</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Belk</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Charming Shoppes</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Cintas</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Gap</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>JC Penney</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Kohl’s</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Lands’ End</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Limited Brands</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Nordstrom</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Sears</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Wal-Mart</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Pacific Sunwear California</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Wet Seal Inc</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Hot Topic Inc</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Fashion 21 Inc</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Draper’s Rossmoor</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Fredrick’s of Hollywood</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Data Collection: Phase I (Step 3)

Yarn and textile cost data was retrieved from the 2006 International Production Cost Comparison report produced by the International Textile Manufacturers Federation. Cost data was tabulated for India, China, as well as the U.S. in excel spreadsheets. These spreadsheets were in turn made into charts for examination. In terms of fiber, data was gathered on synthetics and cotton based products. In terms of, fabric formation process, data was gathered on both knit and wovens. In addition, the cost structure between cotton ring and rotor spun yarn was examined.
Also, finished garment cost data was gathered as well. One respondent provided cost data for two cotton bottom weight items. The cost data compared product cost between China and Guatemala. In addition, this respondent shared sourcing simulator data that provided insight into total product lifecycle costs, as opposed to just initial-markup and gross margin information. This sourcing simulator data created a hypothetical sourcing situation comparing CAFTA and China for a like performance apparel item.

**Data Collection: Phase I (Step 4)**

In Phase I (Step 4), six ratios were calculated for cotton bottom weight companies from India, China, and the U.S. The researcher compiled financial data for three separate supply chain segments for each country - yarn, textile, and apparel. Data was gathered from Mergent On-Line which is a database that contains the financial data reported on by various companies. The following data points were entered into an excel spreadsheet; sales, total assets, net fixed assets, net income, owners equity, EBIT, and number of employees. Ratios were calculated from these data points as follows:

*Profitability Ratios*

1. Return on Investment (ROI) or Return on total assets – Net profit after taxes/Shareholders equity
2. Return on Sales (ROS) – Net Income/Sales
3. Return on equity (ROE) – Net Income/ shareholders’ or owners equity

*Activity Ratios*

4. Asset Turnover – Sales/Total Assets
5. Fixed Asset Turnover – Sales/Fixed Assets
6. Basic Earning Power – Earnings Before Interest & Taxes (EBIT)/ Total Assets

The researcher was subject to use financial data from public companies only. This proved a problem when looking at domestic fiber/yarn and textile companies as many of the main competitors in these segments are private. Formulas were entered into excel in order to calculate ratios. Data was analyzed to determine if there were any trends in terms of productivity by country and by industry segment. This analysis can be found in Appendix J.

Table 20 summarizes the sources used as well as the contribution of each step of research in Phase I.
Table 20: Phase I Instrument: Secondary Data Collection

<table>
<thead>
<tr>
<th>Step</th>
<th>Process</th>
<th>Sources Used</th>
<th>Contribution</th>
</tr>
</thead>
</table>
| 1    | Conduct comparative cross country cost analysis | • ITMF data  
• Market research reports:  
  o Abernathy, 2004  
  o USITC, 2004  
• Cost data provided by respondents | • Provided insight into components that configure product cost  
• Identified issues related to cost competitiveness and sourcing  
• Provided insight in terms of the cost structure of regions investigated |
• OTEXA data  
• Fiber Organon  
• International Cotton Advisory Committee  
• Cotton Incorporated import/export data | • Identified production and import/export trends in relation to cotton bottom weights and performance apparel (synthetics) (RO1)  
• Identified key regions that are competitive in cotton bottom weights and synthetics  
• Determined regions to investigate |
| 3    | Perform market analysis of the Cotton Bottom weights and performance apparel industries to determine top candidates for survey sample | • Company websites  
• US Census Bureau data  
• Mergent Online  
• Davison’s Textile Blue Book  
• Trade journals  
• Bottom weight population developed by Allen (2006)  
• NAICS Website | • Identified NAICS codes in order to define the cotton bottom weight and performance apparel segments  
• Identified major companies involved in manufacturing and retailing of cotton bottom weights and performance apparel for sample identification (RO2)  
• Identified market characteristics specific to both categories  
• Identified sales data as well as other company information:  
  o Location  
  o Manufacturing locations  
  o Product mix |
| 4    | Calculate financial ratios for both domestic and international firms | • Mergent Online  
• Plunkett Research company profiles  
• Yahoo Finance | • Provided insight into factor conditions (use of resources)  
• Identified possible recommendations for future research with financial data |
Phase II: Concurrent Triangulation – Deductive and Inductive Logic

Data Collection: Phase II

Companies that were identified for participation in the study during Phase I were contacted via phone and email. A letter (Appendix C) was sent to all companies identified as sample. The letter explained the purpose of the study, the type of respondent desired as well as requesting the company’s participation in the research. Follow up emails and phone calls were made in attempt to set up visits or conference calls.

Based on the results of Phase I, the research sample consisted of 90 companies involved in either the fiber/yarn, textile, apparel or retail segments of cotton bottom weights and performance apparel. All 90 companies were contacted either by phone or email. Out of the 90 firms contacted, 13 choose to participate in this research study. Table 21 summarizes the companies that participated in this research study. Overall, 20 executives were interviewed from 13 companies. Table 21 highlights each companies location (South-East or California), product category, executive’s title as well as the company’s position in the supply chain.
Table 21: Sample Description

<table>
<thead>
<tr>
<th>Company Code</th>
<th>Product Category</th>
<th>Segment Code</th>
<th>Location</th>
<th>Respondent</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company A</td>
<td>Performance Apparel</td>
<td>Fiber/Yarn</td>
<td>1</td>
<td>Executive A</td>
<td>Director of Supply Chain Management</td>
</tr>
<tr>
<td>Company B</td>
<td>Performance Apparel</td>
<td>Textile</td>
<td>2</td>
<td>Executive B1</td>
<td>Business Manager- Workwear</td>
</tr>
<tr>
<td>Company C</td>
<td>Performance Apparel</td>
<td>Textile</td>
<td>2,3</td>
<td>Executive C</td>
<td>Product Development Manager - Men's Apparel</td>
</tr>
<tr>
<td>Company D</td>
<td>Performance Apparel</td>
<td>Textile</td>
<td>2</td>
<td>Executive D</td>
<td>Owner</td>
</tr>
<tr>
<td>Company E</td>
<td>Performance Apparel</td>
<td>Apparel</td>
<td>3</td>
<td>Executive E1</td>
<td>Men's Product Line Manager</td>
</tr>
<tr>
<td>Company F</td>
<td>Performance Apparel</td>
<td>Apparel</td>
<td>2,3,4</td>
<td>Plant Tour</td>
<td>na</td>
</tr>
<tr>
<td>Company G</td>
<td>Performance Apparel</td>
<td>Apparel</td>
<td>2,3</td>
<td>Executive G1</td>
<td>Vice President of Customer Operations</td>
</tr>
<tr>
<td>Company H</td>
<td>Performance Apparel</td>
<td>Apparel</td>
<td>3</td>
<td>Executive H</td>
<td>Senior Director of Marketing &amp; Merchandising</td>
</tr>
<tr>
<td>Company I</td>
<td>Performance Apparel/ Cotton Bottom Weights</td>
<td>Retail</td>
<td>4</td>
<td>Executive I</td>
<td>Sourcing Director - Swim &amp; Sweaters</td>
</tr>
<tr>
<td>Company J</td>
<td>Cotton Bottom Weights</td>
<td>Fiber/Yarn</td>
<td>1</td>
<td>Executive J</td>
<td>Vice President of Logistics</td>
</tr>
<tr>
<td>Company K</td>
<td>Cotton Bottom Weights</td>
<td>Textile</td>
<td>2</td>
<td>Executive K1</td>
<td>Director of Product Development</td>
</tr>
<tr>
<td>Company L</td>
<td>Cotton Bottom Weights</td>
<td>Textile</td>
<td>2</td>
<td>Executive L1</td>
<td>Vice President of Manufacturing</td>
</tr>
<tr>
<td>Company M</td>
<td>Cotton Bottom Weights</td>
<td>Apparel</td>
<td>3</td>
<td>Executive M</td>
<td>Merchandise Manager</td>
</tr>
</tbody>
</table>

After setting up visits and conference calls, both qualitative and quantitative data were collected during Phase II using a questionnaire developed by the researcher. A questionnaire in interview form was used to gather primary data in phase II. A mixed methods approach is appropriate in that both structured, close-ended and non-structured, open-ended questions were used. The information obtained by the researcher provided qualitative data as well as quantitative data that was statistically analyzed. A questionnaire was chosen in terms of data collection.
because it translates the research objectives directly into specific questions that can be answered; thus providing insight into the research objectives (Malhotra, 2004). Deductive logic was used to gather quantitative data and inductive logic was used to collect qualitative data.

*Deductive Logic*

![Deductive Logic Diagram]

*Figure 32: Deductive model of research.*


Quantitative data was gathered during Phase II of the research using deductive logic shown in Figure 32. Deductive logic was used to test the competitive advantage variables outlined in Porter’s *Determinants of National Competitive Advantage* (1990). According to Michael Porter the presence or absence of these variables influences individual firm competitiveness (RO3, RO4). In addition, sourcing and product cost variables were tested using deductive logic (RO5). These variables were determined as relevant in terms of the research conducted in the Review of Literature; specifically “The future of the apparel and textile industries:
“Prospects and choices for public and private actors” (2005) and Textiles & apparel: Assessment of the competitiveness of certain foreign suppliers to the U.S. market (2004). Research questions were developed to test these three groups of variables; Competitive Advantage Variables, Sourcing Criteria Variables, and Product Cost Variables. The variables for each grouping are listed below:

**Competitive Advantage Variables**

1) Marketing  
2) Location  
3) Customer service  
4) Relationship with suppliers  
5) Research & Development  
6) Production efficiency

**Sourcing Criteria Variables**

1) Cost  
2) Reliability of delivery  
3) Product quality  
4) Full-package sourcing  
5) Lead-time  
6) Flexibility
Product Cost Variables

1) Freight/Shipping/Transportation
2) Raw Materials
3) Unskilled labor
4) Skilled labor
5) Capital
6) Research & Development

Instrument Development: Deductive Questions

The questionnaire developed by the researcher to test these variables utilized comparative and non-comparative scaling techniques. In rank order scaling, respondents are presented with several items simultaneously and asked to order or rank them according to some criterion. Rank order scaling forces respondents to discriminate among the selected items (Malhotra, 2004). The Competitive Advantage Variables were listed and the respondents were asked to rank these variables in terms of the importance to the success of their firm. This strategy was also used to rank the Sourcing Criteria Variables.

Due to the sensitivity of obtaining actual purchase order data, a constant sum scaling technique was used to test the Product Cost Variables. In constant sum scaling, respondents allocate a constant some of points with respect to some criterion (Malhota, 2004). Respondents were given a total of 10 points and then asked to allocate these points in relation to the components that configure product cost. The more points allocated to a specific attribute, indicated the weight in terms of importance to final product cost when looking at landed duty paid.
In addition, Likert scales were used to obtain non-comparative information. Non-comparative scaling techniques do not compare the object being rated either to another object or to some specified standard; they evaluate only one object at a time. Likert scales require respondents to indicate a degree of agreement or disagreement with each series of statements about specific attributes (Malhorta, 2004). A five point scale was used to test the Competitive Advantage Variables and the Sourcing Criteria Variables.

Table 22 displays a cross reference between the research variables and the scaling technique used to measure these variables in the instrument developed by the researcher; it also provides the corresponding question number. The questionnaire instrument can be found in Appendix B.

Table 22: Research Variables – Scaling Technique Cross Reference

<table>
<thead>
<tr>
<th>Variables</th>
<th>Rank Order Scaling</th>
<th>Constant Sum Scaling</th>
<th>Likert Scale – Noncomparative Scaling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitive Advantage Variables</td>
<td>Q22</td>
<td></td>
<td>Q23</td>
</tr>
<tr>
<td>Sourcing Criteria Variables</td>
<td>Q25</td>
<td></td>
<td>Q26</td>
</tr>
<tr>
<td>Product Cost Variables</td>
<td></td>
<td>Q24</td>
<td></td>
</tr>
</tbody>
</table>
Inductive Logic

Figure 33: Inductive model of research.


Qualitative data collection for Phase II of this study utilized inductive logic as modeled in Figure 33. Inductive logic was used to provide insight, in terms of research objectives RO3-RO5. Research questions were developed to address each component of the *Determinants of National Competitive Advantage* (1990). In addition, research questions using inductive logic were developed to inquire about sourcing strategies and issues related to product cost. In addition, respondents were given a map to indicate the flow of goods from both their suppliers and to their customers. This provided insight into the supply chain of the companies interviewed.

Instrument Development: Deductive Questions

Open-ended questions were used to gain qualitative data in regard to the subject of investigation. Open-ended questions require respondents to answer in their own words. These unstructured questions have a much less biasing influence
on responses when compared to closed-end type questions. Respondents are free to express any view. Their comments and explanations can help bring insight to the data collected from closed-end type questions (Malhorta, 2004).

Respondents were asked to map-out their supply chain to show the flow of their goods. They were asked to indicate both the flow of goods from suppliers to their organization as well the flow of goods to their customers. Respondents indicated the direction of the flow of goods with arrows. Codes were used to indicate nodes of the supply chain. Red & blue colored arrows were used to indicate either different supply chains that coexist for one company or to indicate the flow of inputs & outputs from one company. The designation of codes and colors are located in the key for each map. The researcher transcribed these supply chain maps and they can be seen in Appendix I.

Table 23 demonstrates the question type as well as the corresponding Phase II research objective of each question in the instrument developed by the researcher. The research instrument can be seen in Appendix B.
Table 23: Research Objectives - Questionnaire Cross Reference

<table>
<thead>
<tr>
<th>Question #</th>
<th>Question Type</th>
<th>Instrument Question Related to Research Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Instrument Question Related to Research Objectives</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RO3</td>
</tr>
<tr>
<td>1</td>
<td>Open-ended</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Open-ended</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Open-ended</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Open-ended</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Open-ended</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Open-ended</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Open-ended</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Open-ended</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Open-ended</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Open-ended</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Open-ended</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Open-ended</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Supply Chain Map</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Open-ended</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Open-ended</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Rank-Order</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Likert Scale</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Constant-sum</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Rank-Order</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Likert Scale</td>
<td></td>
</tr>
</tbody>
</table>

Data Analysis

First, quantitative data was transcribed and coded. Next, the data was grouped according to sector category (Fiber/Yarn, Textile, Apparel, and Retail). In addition, data was grouped by location (Southeast or California) and product category (Cotton Bottom Weight or Performance Apparel). The mode was calculated for rank order questions which produced ordinal data. The mean was calculated in terms of constant sum and Likert scale questions because they provided interval data (Malhotra, 2004). Analysis of the statistics generated occurred in aggregate as well as between sector, location and product category.
In terms of open-ended responses, the researcher developed templates to contain open-ended responses in relation to each corresponding research objective. These research objectives in specific are: RO4A - Firm strategy, structure, & rivalry (Appendix D), RO4B - Demand conditions (Appendix E), RO4C - Related and supporting industries (Appendix F), RO4D - Factor conditions (Appendix G), and RO5 - Product cost and sourcing decision criteria (Appendix H). These templates are demonstrated below (Tables 24-28):

Table 24: **RO4A- Firm Strategy, Structure, & Rivalry Response Template**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Strategies</td>
<td></td>
</tr>
<tr>
<td>Research &amp; Development</td>
<td></td>
</tr>
<tr>
<td>Management Style</td>
<td></td>
</tr>
<tr>
<td>Marketing</td>
<td></td>
</tr>
<tr>
<td>Local Competition</td>
<td></td>
</tr>
</tbody>
</table>

Table 25: **RO4B – Demand Conditions Response Template**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of Company</td>
<td></td>
</tr>
<tr>
<td>Local Consumption</td>
<td></td>
</tr>
</tbody>
</table>

Table 26: **RO4C – Related & Supporting Industries Response Template**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship with suppliers</td>
<td></td>
</tr>
<tr>
<td>Relationship with customers</td>
<td></td>
</tr>
</tbody>
</table>

Table 27: **RO4D – Factor Conditions Response Template**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>How does your organization manage capital and labor?</td>
<td></td>
</tr>
<tr>
<td>How does your organization measure its productivity?</td>
<td></td>
</tr>
</tbody>
</table>
Data collected using deductive and inductive logic was analyzed in the following stages:

1. Interview results were transcribed;
2. Qualitative and quantitative data were analyzed in tandem (concurrent triangulation) to determine U.S. firm’s competitive advantages, issues related to product cost, and finally sourcing criteria:
3. Results were reported on (Chapter IV);
4. A summary in terms of the results were made (Chapter V).

**Operational Definitions**

Variables tested using deductive logic through quantitative questions are defined below. These variables may have different meaning in terms of various organizations. They are defined in order to remain consistent when describing the variables to respondents. This was done as to avoid introducing additional bias into the study.
**Bottomweight**: Fabric suitable for pants, skirts, winter dresses; usually weighs 6 oz./yd. (200g/sq m) or more (Tortora & Merkel, 1996). [Demographic].

**Capital**: Property, plant, & equipment (Wheelen, 2004) [Q18].

**Clusters**: are geographic concentrations of interconnected companies and institutions in a particular field, which constitute a critical mass (Porter, 1990) [Q5, Q6, Q8, Q9].

**Competitive strategy**: A strategy which involves positioning a business in order to maximize the value of capabilities that distinguish it from its competitors (Porter, 1998) [Q1].

**Cost**: The value given up in order to receive goods or services; the total dollar amount invested in a product (Glock, 1990) [Q19, Q20].

**Customer Service**: is the provision of service to customers before, during and after a purchase (Porter, 1990) [Q8, Q9, Q16, Q17]

**Demand conditions**: The nature of home-market demand for the industry’s product or service (Porter, 1990) [Q6, Q7]

**Factor Conditions**: The nation’s position in factors of production, such as labor and infrastructure (Porter, 1990) [Q10, Q11].

**Firm strategy, structure, and rivalry**: The conditions in a nation governing how companies are created, organized and managed as well the nature of domestic rivalry (Porter, 1990)[Q1-Q5,Q16, Q17].

**Flexibility**: Working with customers in terms of delivery time & the size of each manufacturing run (Berdine, 2007) [Q19, Q20].
Free on Board Cost (FOB): The cost of goods prior to shipping costs such as freight, duty, and quota costs (Glock, 1990) [Q14, Q18].

Freight: Transport costs (Younkin, 2007) [Q18].

Full Package Sourcing: A sourcing strategy used in which one entity of the supply chain takes full responsibility for managing the entire supply chain. That company is responsible for sourcing and/or manufacturing every aspect of a product, as well as getting that product to the customer (Nowell, 2005) [Q19, Q20].

Innovation: is defined as improvements in technology and better methods of doing things. Innovation can be manifested in product changes, process changes, new approaches to marketing, new forms of distribution, and new conceptions of scope. Innovation is the result of organizational learning as well as from formal Research and Development. Innovations lead to shifts in competitive advantage (Porter, 1990) [Q2, Q8, Q9].

Landed Duty Paid (LDP): The cost of goods up to the time they are delivered to the distribution center of the sourcer. Includes duty, freight, and quota costs (Glock, 1990) [Q14, Q18].

Lead Time: The amount of time between placing an order and merchandise delivery (Glock, 1990) [Q19, Q20].

Location: The immediate location of a firm’s headquarters (Southern California or Southeast) (Berdine, 2007) [Q16, Q17].

Performance Apparel: Garments which meet the needs of the wearer’s circumstances and defeat the risks of the outside environment. These properties
come from the garment construction, the fabric and trim specification, and/or fibers and chemical treatments (www.just-style.com, 2006) [Demographic].

Production Efficiency: Ratio of real gross output to a combination of all corresponding ratio for inputs: labor, capital, and intermediate products purchased outside the firm (Kendrick & Kreamer, 1965) [Q16, Q17].

Productivity:
1) The rate at which a company produces goods or services in relation to the amount of materials and number of employees needed
2) The efficiency with which goods are produced
3) The value of the actual output
4) The quality and features of the product produced (which determine the prices they can command)
5) Accompanying service provided to the product produced (Porter, 1990) [Q15].

Raw Materials: The input that is transformed into the finished good through the manufacturing process (Berdine, 2007) [Q18].

Related and supporting industries: The presence or absence in the nation of supplier industries and other related industries that are supplementary (Porter, 1990) [Q8, Q9].

Reliability of Delivery: On time delivery of goods at the level of quality as negotiated (Berdine, 2007) [Q19, Q20].

Management Style: Approach adopted by managers in exercising authority, encouraging participation in decision-making, motivating staff, delegating authority, communication information and maintaining control (Silbiger, 1990) [Q3].
Marketing: Is the process of focusing the resources and objectives of an organization on environmental opportunities and needs. This process encompasses concepts, tools, theories, practices, procedures, and experience (Keegan, 2002) [Q4].

Product Quality: Degree or grade of excellence; Perceived level of value (Glock, 1990) [Q19, Q20].

Research & Development: Research and development (R&D) activities comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications (Federal Office of Management & Budget, 2007) [Q2].

Skilled Labor: Labor with technical training (Berdine, 2007) [Q18].

Sourcing: The process of determining how and where manufactured goods or components will be obtained (Dickerson, 1999) [Q11, Q12, Q19, Q20].

Unskilled Labor: Labor without technical training (Berdine, 2007) [Q18].
CHAPTER IV

RESULTS

The results of the Phase I secondary data collection was analyzed in relation to each step outlined in Table 20. The following results begin with a trade and production analysis of both cotton bottom weights and performance apparel and ends with the attempted financial ratio analysis of the cotton bottom weight firms in the United States, China, and India. The data set for this analysis can be found in Appendix J.

Phase I Results: Trade Analysis of Product Categories of Investigation (Step 1)

*Cotton Bottom Weights*

Table 29: *Quantity of U.S. Production of Apparel by Type of Fabrics-Cotton Products* (Thousands of units)

<table>
<thead>
<tr>
<th>Category</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Men's &amp; Boy's</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dress &amp; sport trousers</td>
<td>64,695</td>
<td>58,349</td>
<td>unavailable</td>
<td>unavailable</td>
<td>unavailable</td>
</tr>
<tr>
<td>Jeans</td>
<td>183,807</td>
<td>176,743</td>
<td>155,043</td>
<td>117,884</td>
<td>115,812</td>
</tr>
<tr>
<td>Jean-cut casual slacks</td>
<td>15,183</td>
<td>12,201</td>
<td>11424</td>
<td>unavailable</td>
<td>unavailable</td>
</tr>
<tr>
<td>Shorts</td>
<td>49,727</td>
<td>45,573</td>
<td>34,765</td>
<td>23,726</td>
<td>20,632</td>
</tr>
<tr>
<td>Sweatpants</td>
<td>unavailable</td>
<td>8,211</td>
<td>2,348</td>
<td>unavailable</td>
<td>unavailable</td>
</tr>
<tr>
<td>Workpants</td>
<td>5,774</td>
<td>5,386</td>
<td>4,582</td>
<td>4,458</td>
<td>4,716</td>
</tr>
<tr>
<td><strong>Women's &amp; Girl's</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shorts</td>
<td>54,950</td>
<td>60,212</td>
<td>56,754</td>
<td>25,031</td>
<td>15,684</td>
</tr>
<tr>
<td>Skirts</td>
<td>9,525</td>
<td>7,997</td>
<td>8,388</td>
<td>10,505</td>
<td>10,274</td>
</tr>
<tr>
<td>Jeans</td>
<td>132,730</td>
<td>94,112</td>
<td>72,373</td>
<td>62,274</td>
<td>54,141</td>
</tr>
<tr>
<td>Slacks</td>
<td>42,172</td>
<td>38,106</td>
<td>33,341</td>
<td>25,217</td>
<td>25,695</td>
</tr>
<tr>
<td>Sweatpants</td>
<td>7,232</td>
<td>unavailable</td>
<td>unavailable</td>
<td>unavailable</td>
<td>unavailable</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>565,795</td>
<td>506,890</td>
<td>379,018</td>
<td>269,095</td>
<td>246,954</td>
</tr>
</tbody>
</table>

Unavailable = Withheld to avoid disclosing data for individual companies.

As can be seen in Table 29, U.S. production of bottomweights has decreased from 565 million units in 2001 to 246 million units in 2005. This represents a 56.3% decrease over a 5 year period. As shown in Figure 34, imports have increased 26.4% from 2.5 billion in 2001 to 3.4 billion units in 2005. Also shown in Figure 34 is that exports of U.S produced cotton bottom weights have continued to decline to almost non existent levels. This shift in domestic production as well the level of imports can be explained by many things including new trade legislations as well as the movement towards global sourcing by apparel manufacturers and retailers.

![U.S. Bottom Weights Exports/Imports](image)

**Figure 34:** U.S. bottom weights exports/imports.

As shown in Table 29 in 2005, jeans comprised the biggest segment of U.S. cotton bottom weight production with 68% of the U.S. production of total cotton bottom weights. Shorts comprised the second biggest segment of U.S cotton bottom weight production in 2005 at 15% of total cotton bottom weight production (Cotton Incorporated, 2007).

*Figure 35: Top 8 exporters of cotton bottoms into the U.S.*


Figure 35 illustrates the top 8 exporters into the U.S. in 2006 in terms of cotton bottom weights looking at dollar value. Mexico is the most significant exporter into the U.S. market with over 2 billion dollars in volume. Many U.S. companies
utilize preferential access to the U.S market under provisions of the North American Free Trade Agreement (NAFTA). However as shown in Figure 36 and Figure 37 Mexico has begun to lose market share in the cotton bottom weights market. This can be partially explained by the phase-out of the multi-fiber arrangement in 2005 as well as rising wage rates in Mexico. Hong Kong is the second most significant exporter of cotton bottoms into the U.S. market with a little over 1 billion in volume in 2006 (Cotton Incorporated, 2007).

**Figure 36:** Men’s & boy’s cotton bottoms – top 8 2006 exporters to the U.S. in dollars 1998-2006

When looking specifically at men’s and boy’s cotton bottoms as shown in Figure 36, Mexico has been the dominate exporter into the U.S. market from 1998-2006. In 2006, it is projected that Mexico will account for 1.3 billion dollars of exports into the U.S. market. As stated previously, U.S. textiles are more often used in products manufactured in this hemisphere under preferential trade agreements in comparison to items imported from Asia. Bangladesh was the second most significant exporter into the U.S market for men’s and boy’s cotton bottoms with 600 million dollars in 2006. Hong Kong and China were tied for third place with around 300 million dollars in exports in terms of men’s and boy’s cotton bottoms in 2006 (Cotton Incorporated, 2007).

**Figure 37:** Women’s & girl’s cotton bottom – top 8 2006 exporters to the U.S.

When looking specifically at women’s and girl’s cotton bottoms, as shown in Figure 37, Mexico has been the main exporter into the U.S. market until the phase out of the Multi-Fiber arrangement in 2005. In 2006, Hong Kong surpassed Mexico as the most significant exporter into the U.S. market for women’s and girl’s cotton bottoms seven out of the top eight cotton bottom exporting countries experienced growth in 2005. China experienced the most significant growth in 2005 in terms of men’s and boy’s cotton bottoms into the U.S market with a 388% increase from 180 million dollars in value to around 700 million dollars. This number is projected to decrease slightly in 2006 (Cotton Incorporated, 2007)

*Imports of Men’s & Boys Cotton Bottoms in U.S. Dollars for Areas of Investigation*
Figure 38: Imports of men’s & boys cotton bottoms in U.S. dollars for areas of investigation.


Figure 38, shows the imports of men’s and boy’s cotton bottoms into the U.S. for the areas of investigation of this study. The CAFTA region in aggregate is the most significant exporting region into the U.S. with a little under 800 million dollars in total exports into the U.S. market in 2006. However, the CAFTA region has experienced some decline in its volume after the phase out of the Multi-Fiber Arrangement where other regions have seen increases in their exports of men’s and boy’s cotton bottom into the U.S. market. The most notable increase has been seen in China with an almost 400% increase from 100 million dollars in exports in 2004 to almost 400 million dollars in 2005 (Cotton Incorporated, 2007).
Figure 39: Imports of women’s & girl’s cotton bottoms in U.S. dollars for areas of investigation.


Figure 39, shows the imports of women’s and girl’s cotton bottoms into the U.S. for the areas of investigation of this study. The CAFTA region was the most significant exporter into the U.S. in terms of women’s and girl’s cotton bottoms until 2005 when both Hong Kong and China surpassed the CAFTA region in terms of dollar volume. The most notable increase has been seen in China with an almost 466% increase from 150 million dollars in exports in 2004 to almost 700 million dollars in 2005. India and Sri Lanka both have seen notable increases in their exports to the U.S market; Sri Lanka’s exports of women’s and girl’s cotton bottoms was just under 300 million in 2006 and India’s exports totaled around 200 million in the same year (Cotton Incorporated, 2007).
Figure 40: Percentage of 2005-2006 cotton output by region.


Figure 41: Cotton fiber production by region.

As shown in Figure 40, China, India, and the U.S. together account for 60% of the global output of cotton in 2005-206. As can be seen in Figure 41, China has remained the most globally significant producer of cotton fiber from 1996-2005. China's volume has increased overall by about a 1/3 from over 4 million metric tons in 1996 to just below 6 million metric tons in 2005. The U.S has maintained significant market share in the cotton fiber segment of the cotton product supply chain in comparison to other segments. Over half of the cotton fiber produced in the U.S. is exported to other regions to be spun into yarn. India also has seen growth in its cotton fiber production from 3 million metric tons in 1996 to just under 4 million metric tons in 2005. Both Sri Lanka and the CAFTA region lack a significant cotton fiber industry and are more often used in the cut and sew component of production.

![Cotton Yarn Production by Region](image)

**Figure 42**: Cotton yarn production by region.

As shown in Figure 42, China far surpasses both India and the U.S. in cotton yarn production. China’s production of cotton yarn has increased from 5 million metric tons in 1996 to 11 million metric tons in 2005. India has remained relatively constant in term of its cotton yarn production since 1996 averaging around 2 million metric tons each year. The U.S. has seen a decline in its cotton yarn production in recent years. In 1996, U.S. production of cotton yarn averaged around 2 million metric tons and in 2005 production averaged around 1 million metric tons (International Cotton Advisory Committee, 2005).

Figure 43: Cotton fabric production by region.

As shown in Figure 43, China has been the dominate global producer of cotton fabric the past ten years. The margin between China and the U.S as well as India has increased further since the phase-out of the multi-fiber agreement in 2005. India’s cotton fabric production has remained relatively constant since 1996 averaging between 1.5 and 2 million metric tons. The U.S. has seen a decline in its output of cotton fabric from around 1 million metric tons in 1996 to around 500 thousand in 2006 (International Cotton Advisory Committee, 2005).

Performance Apparel

Figure 44: Synthetic fiber production by region.

As shown in Figure 44, China has seen sizable increases in its output of synthetic fiber from 1996-2006. China’s output of synthetic fiber increased by 700% from 2.5 million metric tons in 1996 to 20 million metric tons in 2006. India’s production of synthetic fiber has increased from a little over 1 million metric tons in 1996 to over 3 million metric tons in 2006. U.S. production of synthetic fiber between 1996 and 2006 remained relatively consistent at 3,000 metric tons with some fluctuation over the years (Fiber Organon, various issues).

![Production of Synthetic Yarn by Region](image)

**Figure 45:** Production of synthetic yarn by region.


As shown in Figure 45, China has also seen sizable increases in its production of synthetic yarn between 1996 and 2005. Synthetic yarn production has
increased 433% from 3 million metric tons in 1996 to 16 million metric tons in 2006. The U.S. and India’s production of synthetic yarn averaged a little below 3 million metric tons in 2005. This amount is a slight decline for U.S. production from 1996, where this amount represented a slight increase for Indian production of synthetic yarn (ICAC, 2005). In terms of U.S. Production of synthetic yarn, as shown in Table 30, Olefin yarn comprised the greatest amount of U.S. synthetic yarn production with 76% of total production. Polyester comprised the second highest amount with 20% of U.S production of synthetic yarn (Horn, 2006).

Table 30: U.S. Production of Selected Synthetic Yarns (in Million Pounds)

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nylon Textile Yarn</td>
<td>146.1</td>
<td>134.3</td>
<td>112.6</td>
</tr>
<tr>
<td>Polyester Textile Yarn</td>
<td>816.8</td>
<td>799</td>
<td>632.7</td>
</tr>
<tr>
<td>Olefin Yarn</td>
<td>2349</td>
<td>2383.4</td>
<td>2395.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3311.9</strong></td>
<td><strong>3316.7</strong></td>
<td><strong>3140.5</strong></td>
</tr>
</tbody>
</table>

Source: Horn, 2006 Fiber Organon March 2006 volume 77 no.3
Figure 46: Man-made fiber apparel imports by region – units.

As shown in Figure 46, China is the largest importer into the U.S. in terms of man-made fiber apparel. In 2005, China imported over 2.5 billion units which represents an increase of 108% between 2004 and 2005; this reflects the elimination of the MFA in 2005. The CAFTA region as a whole was second in terms of imported units into the U.S. with around 1 billion units. This amount has remained relatively constant since 2000. Hong Kong, Sri Lanka, and India all hovered around 250 million units from 1996-2005.

Figure 47, displays dollar value of the imports of man-made fiber apparel. Again, China was the dominate force in terms of imports with under 6 billion dollars in imports in 2005. The value of imports from these regions followed a relatively
equal pattern in comparison to Figure 46 which looked at unit imports by region. The only difference could mainly be seen in Hong Kong which appears to be importing higher value apparel into the U.S. in comparison to the other regions examined in this figure.

![Man-Made Fiber Apparel Imports by Region](image)

*Figure 47: Man-made fiber apparel imports by region - U.S.$*


Phase 1 Results: Sample Identification (Step 2)

The goal of Phase I (Step 2) was to identify sample for this study. In total 90 companies were identified as potential respondents. The researcher contacted the companies 90 companies. A total of 13 out of the 90 companies contacted decided
to participate in the research. A complete list of the participating sample can be seen in Table 21. Over 20 executives were inquired for this research.

Phase 1 Results: Cost Analysis (Step 3)

_Yarn & Textile Cost Comparison_

![Ring Spun Yarn Costs for 2006](image)

**Figure 48:** Ring spun yarn costs for 2006


Figure 48 compares the 2006 average cost of cotton ring spun yarn manufactured in China, India, & the U.S. As shown in Figure 48, ring spun yarn manufactured in the U.S. is .08 cents cheaper when compared to China per kg of yarn. This goes against the intuitive believe that Asian textiles are always cheaper in comparison to U.S. textiles. The lower labor costs in China are offset by higher raw material costs in comparison to the U.S. India had the lowest ring spun yarn cost at
$2.13 per kg of yarn. India had both lower raw material costs and labor costs when compared to the other two countries. Capital costs are relatively equal across all three countries with the U.S capital cost slightly higher. Power costs are highest in India at .32 cents per kg of yarn.

![Woven Ring Yarn Fabric Costs for 2006](image)

**Figure 49:** Woven ring yarn costs for 2006.


Figure 49, compares the 2006 average costs of cotton woven fabric made from ring spun yarn for China, India, and the U.S. The U.S. has the most expensive cost per meter of fabric at .83 cents. Labor costs are significantly higher at .22 cents per meter of fabric in the U.S. versus .01 cent per meter of fabric in India as well as .02 cents per meter of fabric in China. Capital costs are relatively equal across all
three countries with the U.S capital cost slightly higher. China had the highest raw material cost at .34 cents versus India at .20 cents and .23 cents in the U.S.

![Textured Yarn Costs for 2006](image)

**Figure 50:** Synthetic textured yarn costs for 2006.


Figure 50 compares the 2006 average cost of textured synthetic yarn manufactured in China, India, & the U.S. Raw material cost was the most significant contributor to final product cost when looking at synthetic yarn. For the U.S. example, raw materials account for 74% of the product cost or $1.70 of the $2.29 of total product cost. Labor costs are relatively low at 1% for both India & China and 8% for the U.S. This reflects the amount of automation in synthetic yarn production.
Figure 51: Knitted textured yarn fabric costs for 2006.


Figure 51, compares the 2006 average cost of synthetic textured knit fabric made from ring spun yarn for China, India, and the U.S. The cost differential between the U.S. and Chinese synthetic knitted textured fabric is .14 cents versus the .08 cent difference in the cotton woven ring spun fabric for the two countries. Labor costs are significantly higher in terms of the U.S example at .08 cents per meter of fabric versus half a cent per meter of fabric for both the Chinese and Indian example. The Chinese and Indian examples are equal in total product cost at .42 cents per meter of fabric.
Figure 52 displays a comparison between the cost components of U.S. ring and rotor spun yarn. As found in a study conducted by Parrish (2002), raw materials make up the largest percentage of yarn costs for both types followed by capital and then labor. When comparing the cost of U.S ring spun yarn versus rotor spun yarn there is a $1.06 difference. This cost difference between the two types of yarn increased by around .45 cents from the study conducted in 2002. The actual cost of the rotor spun yarn has declined from around $2.10 per kg in 2001 versus $1.75 per kg in 2006. This is a continuation of a trend observed by Parrish (2002) in terms of a decline in price of rotor spun yarn.

These examples support the conclusion made by Parrish (2002) that labor cost is not always the main determinant of product cost. These examples show that each component of product cost play a part in determining final product cost.

Garment Cost Comparison

Table 31: Work Pant Cost Comparison – Nicaragua vs. China

<table>
<thead>
<tr>
<th></th>
<th>China</th>
<th>Nicaragua</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Work Pant</td>
<td>Work Pant</td>
</tr>
<tr>
<td><strong>Fabric Details</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fabric Origin</strong></td>
<td>China</td>
<td>U.S.</td>
</tr>
<tr>
<td>Cost $/yd</td>
<td>$ 2.18</td>
<td>$ 2.46</td>
</tr>
<tr>
<td><strong>Fabric Cost per Unit</strong></td>
<td>$ 2.73</td>
<td>$ 3.08</td>
</tr>
<tr>
<td><strong>Trim Details</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thread</td>
<td>$ 0.04</td>
<td>$ 0.08</td>
</tr>
<tr>
<td>Main Label</td>
<td>$ 0.04</td>
<td>$ 0.05</td>
</tr>
<tr>
<td>Other Labels</td>
<td>$ 0.08</td>
<td>$ 0.09</td>
</tr>
<tr>
<td>Hang Tags</td>
<td>$ 0.09</td>
<td>$ 0.10</td>
</tr>
<tr>
<td>Polybag</td>
<td>$ 0.01</td>
<td>$ 0.02</td>
</tr>
<tr>
<td>Carton</td>
<td>$ 0.01</td>
<td>$ 0.01</td>
</tr>
<tr>
<td>Zipper</td>
<td>$ 0.35</td>
<td>$ 0.35</td>
</tr>
<tr>
<td>Lining</td>
<td>$ 0.03</td>
<td>$ 0.03</td>
</tr>
<tr>
<td>Pocketing</td>
<td>$ 0.14</td>
<td>$ 0.16</td>
</tr>
<tr>
<td>Buttons</td>
<td>$ 0.08</td>
<td>$ 0.09</td>
</tr>
<tr>
<td><strong>Trim Cost per Unit</strong></td>
<td>$ 0.87</td>
<td>$ 0.98</td>
</tr>
<tr>
<td><strong>Cut &amp; Sew Details</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cutting</td>
<td>$ 0.06</td>
<td>$ 0.08</td>
</tr>
<tr>
<td>Sewing</td>
<td>$ 1.68</td>
<td>$ 1.68</td>
</tr>
<tr>
<td>Freight</td>
<td>$ 0.17</td>
<td>$ 0.23</td>
</tr>
<tr>
<td>Finishing</td>
<td>$ 0.12</td>
<td>$ 0.17</td>
</tr>
<tr>
<td><strong>Total Cut &amp; Sew</strong></td>
<td>$ 2.03</td>
<td>$ 2.16</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>$ 5.63</td>
<td>$ 6.22</td>
</tr>
<tr>
<td>Profit Margin</td>
<td>$ 0.62</td>
<td>$ 0.69</td>
</tr>
<tr>
<td><strong>Total Cost</strong></td>
<td>$ 6.25</td>
<td>$ 6.91</td>
</tr>
</tbody>
</table>
Table 31 compares the garment cost of two work pants; one manufactured in China and the other in Nicaragua. The cost differential between the two garments is .66 cents with the Chinese example being cheaper. The fabric cost and the trim cost are both higher for the Nicaragua example. The higher cost in these components of the garment could reflect the lack of fabric and trim vendors in the CAFTA region. These inputs are more often then not imported into the CAFTA region for assembly purposes. However, the CAFTA region is in the process of building up these various nodes of the supply chain to increase cost competitiveness. The cost advantage of .66 cents for the Chinese example is magnified for example if the order was for 10,000 units; the cost savings for the Chinese example would translate into $6,600.00.

The cut and sew costs between the two regions are relatively equal. The major differential between the two regions can be found in freight and finishing again with China having the cheaper cost by .13 cents. Surprisingly, the Nicaragua example has a higher freight cost by .05 cents in relation to the Chinese example. Again, this could reflect the freight costs associated with importing the inputs for the garments where China has all the nodes of the supply chain within the country. Cutting and sewing costs, the most labor intensive components, of apparel manufacturing are equal. Wage rates rate are higher in the CAFTA region compared to China, the equal cost in terms of cut & sew could signify higher productivity in terms of the labor force in the CAFTA example.
Table 32: Nurse Uniform Bottom Cost Comparison – China vs. Nicaragua

<table>
<thead>
<tr>
<th>Country</th>
<th>China</th>
<th>Nicaragua</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Nurse bottom</td>
<td>Nurse bottom</td>
</tr>
</tbody>
</table>

**Fabric Details**

<table>
<thead>
<tr>
<th>Fabric Origin</th>
<th>China</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost $/yd</td>
<td>$1.16</td>
<td>$1.96</td>
</tr>
<tr>
<td>Fabric Cost per Unit</td>
<td>$1.16</td>
<td>$1.96</td>
</tr>
</tbody>
</table>

**Trim Details**

<table>
<thead>
<tr>
<th>Description</th>
<th>China</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thread</td>
<td>$0.06</td>
<td>$0.08</td>
</tr>
<tr>
<td>Main Label</td>
<td>$0.04</td>
<td>$0.05</td>
</tr>
<tr>
<td>Other Labels</td>
<td>$0.03</td>
<td>$0.03</td>
</tr>
<tr>
<td>Hang Tags</td>
<td>$0.09</td>
<td>$0.10</td>
</tr>
<tr>
<td>Polybag</td>
<td>$0.01</td>
<td>$0.02</td>
</tr>
<tr>
<td>Carton</td>
<td>$0.10</td>
<td>$0.10</td>
</tr>
<tr>
<td>Zipper</td>
<td>$0.23</td>
<td>$0.28</td>
</tr>
<tr>
<td>Lining</td>
<td>$0.30</td>
<td>$0.30</td>
</tr>
<tr>
<td>Pocketing</td>
<td>$0.40</td>
<td>$0.40</td>
</tr>
<tr>
<td>Buttons</td>
<td>$0.50</td>
<td>$0.50</td>
</tr>
</tbody>
</table>

**Cut & Sew Details**

<table>
<thead>
<tr>
<th>Description</th>
<th>China</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutting</td>
<td>$0.05</td>
<td>$0.06</td>
</tr>
<tr>
<td>Sewing</td>
<td>$0.60</td>
<td>$0.60</td>
</tr>
<tr>
<td>Freight</td>
<td>$0.17</td>
<td>$0.23</td>
</tr>
<tr>
<td>Finishing</td>
<td>$0.10</td>
<td>$0.12</td>
</tr>
<tr>
<td>Total Cut &amp; Sew</td>
<td>$0.92</td>
<td>$1.01</td>
</tr>
</tbody>
</table>

**Sub Total**

<table>
<thead>
<tr>
<th></th>
<th>China</th>
<th>Nicaragua</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$2.31</td>
<td>$3.25</td>
</tr>
<tr>
<td>Profit Margin</td>
<td>$0.26</td>
<td>$0.36</td>
</tr>
</tbody>
</table>

**Total Cost**

<table>
<thead>
<tr>
<th></th>
<th>China</th>
<th>Nicaragua</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$2.57</td>
<td>$3.61</td>
</tr>
</tbody>
</table>

Table 32, compares the garment cost of two nurse uniform bottoms: one manufactured in China and the other manufactured in Nicaragua. The cost between the two countries for the nurse uniform bottom is $1.07; again with China producing the lower cost garment. The cost differential between the two regions is significantly higher when looking at the nurse uniform bottom in comparison to the work pant. The nurse uniform bottom is a lower make garment in comparison to the work pant.
The Chinese fabric cost advantage is more prominent in the nurse uniform bottom example. The Nicaragua fabric cost for the higher make work pant accounts for 44.5% of total garment cost versus 54% for the lower make nurse uniform bottom.

*Product Lifecycle Cost Comparison*

One textile manufacturer interviewed provided information in regards to product lifecycle cost. This organization used Sourcing Simulator data to compare Asian sourcing scenarios vs. CAFTA sourcing scenarios. The Sourcing Simulator simulates retail and retail/manufacturing scenarios for a line of products. This program allows the user to evaluate the impact of alternative sourcing decisions on gross margin. The Sourcing Simulator measures lost sales, desired service level and the effect of lost sales on gross margin when the correct SKU is not at retail. The respondent provided an example of SKU error in Table 33.

**Table 33: Plan vs. Actual SKU Demand Example**

<table>
<thead>
<tr>
<th>Color</th>
<th>Plan %</th>
<th>Actual %</th>
<th>Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>9.9</td>
<td>9.9</td>
<td>0</td>
</tr>
<tr>
<td>Medium</td>
<td>21.7</td>
<td>16.7</td>
<td>5</td>
</tr>
<tr>
<td>Large</td>
<td>31.2</td>
<td>28.2</td>
<td>3</td>
</tr>
<tr>
<td>Ex Large</td>
<td>26.1</td>
<td>36.1</td>
<td>10</td>
</tr>
<tr>
<td>1x</td>
<td>10.2</td>
<td>3.2</td>
<td>7</td>
</tr>
<tr>
<td>2x</td>
<td>0.9</td>
<td>5.9</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>30 %</td>
</tr>
</tbody>
</table>
Based on the example above there is a 30% error between the sales plan in terms of SKU and the actual demand per SKU for the season. This would lead to a loss of sales by not having 30% of the demanded SKU and also lead to excess inventory in terms of unsold SKU. Table 34 compares differences in lead time between Asian manufacturing & CAFTA manufacturing. The CAFTA example assumes the use of domestic fabric.

Table 34: *Lead Time Comparison – Asia vs. CAFTA*

<table>
<thead>
<tr>
<th>Processes</th>
<th>Asia</th>
<th>CAFTA</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order processing</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Textile manufacturing</td>
<td>21</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Trans. textile mill to garment manufacturing</td>
<td>7</td>
<td>12</td>
<td>+5</td>
</tr>
<tr>
<td>Cut &amp; sew garment</td>
<td>48</td>
<td>41</td>
<td>-7</td>
</tr>
<tr>
<td>Transit to port</td>
<td>7</td>
<td>3</td>
<td>-4</td>
</tr>
<tr>
<td>Sailing time</td>
<td>21</td>
<td>3</td>
<td>-18</td>
</tr>
<tr>
<td>Consolidate &amp; ship to DC</td>
<td>10</td>
<td>6</td>
<td>-4</td>
</tr>
<tr>
<td>Total Days</td>
<td>120</td>
<td>88</td>
<td>-28</td>
</tr>
<tr>
<td>Nearest Weeks</td>
<td>17 weeks</td>
<td>13 weeks</td>
<td>4 week difference</td>
</tr>
</tbody>
</table>

By reducing the lead-time through CAFTA manufacturing a retailer or apparel manufacturer could reduce the amount of their inventory when compared to using Asian manufacturing. The retailer or apparel manufacturer could order more often in a season ensuring a more accurate SKU mix in terms of actual demand. This particular vendor is looking to further shrink this lead time via a strategic partnership with the apparel brand used in this example and the cut and sew facility in the CAFTA region. Table 35 demonstrates the simulation between Asia and CAFTA in terms of end-of-season gross margin.
Table 35: Asia vs. CAFTA Sourcing Simulator Simulation

<table>
<thead>
<tr>
<th>52 Week Selling Season</th>
<th>Asia</th>
<th>CAFTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of reorders</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Weeks to first reorder</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Weeks between reorder</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Reorder lead-time</td>
<td>17 weeks</td>
<td>6 weeks</td>
</tr>
<tr>
<td>Initial inventory %</td>
<td>48%</td>
<td>12%</td>
</tr>
<tr>
<td>Target weeks reorder</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td>Service levels</td>
<td>95%</td>
<td>95%</td>
</tr>
<tr>
<td>Avg. Inventory units -M</td>
<td>319</td>
<td>99</td>
</tr>
<tr>
<td>Inventory Turns</td>
<td>2.95</td>
<td>8.65</td>
</tr>
<tr>
<td>Avg. Inventory M $ invest</td>
<td>1,839</td>
<td>578</td>
</tr>
<tr>
<td>Inventory @ Season-end</td>
<td>106</td>
<td>17</td>
</tr>
<tr>
<td>GMROI</td>
<td>2.89</td>
<td>9.3</td>
</tr>
<tr>
<td>Sales M $</td>
<td>10,228</td>
<td>10,205</td>
</tr>
<tr>
<td>Gross Margin M $</td>
<td>5,311</td>
<td>5,298</td>
</tr>
</tbody>
</table>

By providing the right SKU at the right time the U.S. fabric vendor and the cut-&-sew facility in CAFTA are able to provide equal gross margin to the apparel customer. By increasing the reorders from 8 to 11 within a year the U.S/CAFTA example is able to reduce the initial inventory % to only 12% as well as reduce the level of on-hand inventory throughout the season. Where Asia can compete on lower product cost; the CAFTA example using U.S. fabric can be just as competitive in terms of gross margin by accurately providing the right SKUs demanded by the apparel manufacturer’s customer.
Phase 1 Results: Financial Ratio Comparison for Cotton Bottom Weights (Step 4)

The researcher compiled six financial ratios for firms in three countries; The U.S., China, and India. In addition, the researcher looked at ratios for three segments of the cotton bottom weight supply chain for each of these countries; fiber/yarn, textile, and apparel. The results of this analysis can be seen in Appendix J. The results of this initial comparison did not provide any conclusive evidence in terms of segment or country productivity. Financial data from public companies was only available for use. This proved a problem when looking at domestic fiber/yarn and textile companies as many of the main competitors in these segments are private. A future study might provide useful in terms of analyzing productivity from a finance standpoint.

Phase II: Concurrent Triangulation Strategy-Interview Results.

Primary data was gathered from thirteen companies and twenty respondents. The questionnaire used to administer the interviews was developed using both deductive and inductive logic. Deductive logic was used to inquiry the three sets of variables; competitive advantage variables, sourcing criteria variables, and product cost variables. Inductive logic was used to evaluate each component of Michael Porter’s Model, the Determinants of National Competitive Advantage (Factor Conditions; Demand Conditions; Firm Structure, Strategy & Rivalry; and Related & Supporting Industries), product cost, as well as the sourcing criteria used by companies.
Interview Results: Deductive Logic

The first step in gathering quantitative data was to ask respondents to rank order variables which provided comparative data (1=most important variable and 6=the least important variable). Respondents were not allowed to assign the same ranking to the importance of different variables. The second step was to ask the respondents to determine how important each variable was using a five-point Likert scale which provided non-comparative data and looked at each variable individually (1=not important at all, 2=somewhat not important, 3=neither important not unimportant, 4=somewhat important, 5=very important). The sector of each company is shown in the results: 1=Fiber/Yarn Manufacturers, 2=Fabric Manufacturers, 3=Apparel manufacturers and 4=Retailers. The product category of each company is also shown in the results: P=Performance Apparel and B=Cotton Bottom Weights. In addition, the location of each company is also shown: S=Southeast and C=California. In rank order questions (Comparative scaling), the mode of each of these demographic variables was examined. In terms of the Likert and constant sum scaling questions (non-comparative) the mean of each of the demographic variables was examined.

Competitive Advantage Variables

The first group of variables investigated were strategies outlined by Michael Porter in the Determinants of National Competitive Advantage (1990) as competitive advantage variables. To avoid confusion in regards to the definition of each component respondents were given a copy of the operational definitions to use in terms of their responses. Table 36 shows the rankings that were assigned. In
In general, respondents ranked *customer service* as the most important competitive advantage variable to their business. *Production efficiency* was ranked second in terms of competitive advantage variables. *Relationship with Suppliers* and *Marketing* were tied at third. *Location* of the business headquarters was ranked last across the board.

In looking specifically at the location of the firms interviewed there was a noticeable difference in terms of the importance of *marketing* as a competitive advantage variable. Firms in California ranked *marketing* as more important to their competitive advantage in comparison to firms in the southeast. The mode in terms of California based firms was two in relation to *marketing* and five for firms located in the southeast. There was a distinct difference when looking at marketing as a competitive advantage variable when comparing down-stream (apparel & retail) and up-stream (fiber/yarn & textile) companies. The mode of both up-stream segments in terms of *marketing* as a business success variable was five, where down-stream companies (apparel & retail) both ranked *marketing* as more important with a mode of one for apparel manufacturers and a mode of two for retailers.

When looking specifically at product category, there was a noticeable difference in terms of the top competitive advantage variables for each product category. *Production efficiency* was ranked number one in terms of companies competing in cotton bottom weights. In terms of companies competing in performance apparel, *customer service* was ranked as the most important competitive advantage variable. Again, *location* across the board was ranked last by respondents.
Respondents were also asked to assign a level of importance of the competitive advantage variables. The level of importance indicated by each respondent is shown in Table 37. In aggregate, marketing and customer service were ranked the highest with a mean of 4.8. Research & development and production efficiency were ranked third in terms of the level of importance with a mean of 4.5. The lowest rating was 2.5 for the location of the firms interviewed. There were no noticeable difference when looking at the mean score in terms of firms located in California versus firms in the Southeast (.6 was the largest differential in terms of ratings). The same can be deduced when comparing the various sectors and product categories.
Table 37: Competitive Advantage Variables: Level of Importance (Mean)

<table>
<thead>
<tr>
<th>Category</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
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</table>

Sourcing Criteria Variables

The second set of variables tested related to sourcing decision criteria. Again, respondents were given a copy of the operational definitions to inform their responses. As shown in Table 38, Product quality was ranked as most important in terms of the sourcing criteria used by the companies interviewed. Product cost was ranked second. Reliability of delivery was ranked third. It was mentioned by many respondents that those three criteria (Product quality, cost, & reliability) go hand-in-hand; all three are equally essential. Full-package sourcing was ranked last in terms of importance with many respondents saying that they prefer to align the supply chain and have other companies follow up in terms of procuring the actual inputs to production. Lead time and flexibility were both ranked on the lower end of the spectrum. It was mentioned that these components could be worked around in terms of procuring the outsourced goods. When comparing across location, sector, and product category there was no notable distinction in terms of the rankings provided by respondents.
Table 38: Sourcing Criteria Variables: Rank Order (Mode)

<table>
<thead>
<tr>
<th>Company</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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</table>

Reliability of delivery: 3 3 4 3 3 X 3 1 3 3 2 4 3 3 3 3 3 3 3 3 3
Product quality: 2 2 1 2 4 X 1 4 1 1 1 1 2 1 1 1 1 2 1 1 1 1 1
Full package sourcing: 5 5 6 6 6 X 5 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6
Lead-time: 4 5 3 5 1 X 4 5 4 5 4 3 4 4 4 5 4 4 4 4 4
Flexibility: 5 4 5 4 5 X 5 5 5 5 5 5 5 5 5 5 5 5 5 5

P=Performance Apparel, B=Cotton Bottom Weights, 1=Fiber/Yarn, 2=Textile, 3=Apparel, 4=Retailer, S=South East, C=California

Respondents were also asked to assign the level of importance to each of the sourcing criteria listed. The level of importance indicated by each respondent is shown in Table 39. As shown in the rank-order question, product quality was rated by respondents as the most important factor in sourcing criteria. Product cost had the second highest rating overall with a mean score of 4.8. Reliability of delivery was ranked third by respondents with a mean score of 4.7. Again, many respondents indicated these three components were all essential in terms of their sourcing criteria. Full-package sourcing had the lowest mean score at 2.6 (Neither important, nor unimportant). There was no notable distinction between the ratings given by firms in different categories or location. When looking at the scoring by sector there is a distinct difference shown in the scoring of sector 4=retailer. The one retailer interviewed made the case that none of the components could be measured in isolation and must all be present in terms of product sourcing. This respondent did say that product quality was the most important factor overall.
Table 39: Sourcing Criteria Variables: Level of Importance (Mean)

<table>
<thead>
<tr>
<th>Company</th>
<th>A</th>
<th>B</th>
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</tr>
</tbody>
</table>

P=Performance Apparel, B=Cotton Bottom Weight, 1= Fiber/Yarn, 2=Textile, 3=A apparel, 4=Retailer, S=South East, C=California

**Product Cost Variables**

The third set of variables related to the components that comprise total product cost. This question utilized a constant sum methodology. Respondents were given a total of ten points and were asked to assign these points to various components of product cost (*Freight, Raw Materials, Labor, Capital, and Research & Development*). Respondents were asked to assign more points to responses that configure a higher percentage of product cost and allocate fewer points to responses that configure a lower percentage of product cost. They were also asked to identify the product they were using for the example. Responses were looked at overall as well as by sector, product category, and location of company.

As shown in Table 40, *Raw materials* were indicated as the most expensive component of product cost by all companies except for Company M (a Jean Manufacturer). The product used here for an example was a pair of women’s designer jeans which as a product category tend to have a higher-make and requires more labor to finish the item; hence the higher labor cost for this item in relation to the other companies. When looking at the overall mean for product cost,
raw materials comprised 4.3 out of the 10 points or 43% of total product cost. Unskilled labor comprised 1 or 10% of total product cost and skilled labor comprised 1.7 or 17% of total product cost. Research & development had the lowest score with .8 or 8% of total product cost. Many respondents indicated that research and development costs were more seen as an overhead cost rather than something that was calculated into actual product cost. Overall, capital was indicated as 1.2 or 12% of total product cost. Finally, freight was indicated at 1 or 10% of total product cost.

The respondent interviewed from sector 4 (retail) had the highest unskilled labor cost in relation to the other sectors interviewed with 1.5 or 15% of total product cost. Skilled labor was lowest for sector 1 (fiber/yarn) in relation to the other sectors. This reflects the level of automation in yarn spinning. The percentage of freight cost as part of total cost indicated increased based on how far up-stream a company was (7% for fiber/yarn manufacturers, 9% for textile manufacturers, 10% for apparel manufacturers, and 20% for retailers). The percentage of raw material cost as a part of total cost increased based on how far down-stream a company was (50% for fiber/yarn manufacturers, 46% for textile manufacturers and 40% for both apparel manufacturers and retailers). There was no discernable difference in terms of companies in different product categories or in terms of location in regards to the product cost variables.
Table 40: Product Cost Variables: Constant Sum (Mean)

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<th>Q 18</th>
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<th>Worsted Wool Bottom Weight Fabric</th>
<th>Knit Performance Fabric</th>
<th>Men's Shorts</th>
<th>Knit T-Shirt</th>
<th>Knit T-Shirt</th>
<th>Scrub Pant</th>
<th>Women's Swimsuit</th>
<th>100% Cotton Yarn</th>
<th>Denim Fabric</th>
<th>Cotton Bottom Weight Fabric</th>
<th>Pair of designer jeans</th>
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P=Performance Apparel, B=Cotton Bottom Weights, 1=Fiber/Yarn, 2=Textile, 3=Apparel, 4=Retailer, S=South East, C=California
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<th>Overall</th>
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</table>

P=Performance Apparel, B=Cotton Bottom Weights, 1= Fiber/Yarn, 2=Textile, 3=Apparel, 4=Retailer, S=South East, C=California
Interview Results: Inductive Logic

Respondents were asked open-ended questions that were developed using inductive logic. The questions asked about various business success variables as indicated by each component of Porter’s *Determinants of National Competitive Advantage* (Factor Conditions; Demand Conditions; Firm Structure, Strategy & Rivalry; and Related & Supporting Industries) as well as the sourcing criteria used by firms and issues related to product cost. In addition, Respondents were asked to map out their supply chains (Appendix I). Summaries of results are presented in tabular form; interview results by topic are not shown in importance.

Firm Strategy, Structure, & Rivalry

Firm strategy, structure, & rivalry questions dealt specifically with a company’s corporate strategies. These questions gauged the role of research & development and marketing as competitive strategies. In addition, the management style of organizations were inquired. Finally, the role of competition with other local firms was included in this set of questions.

Table 41: Firm Strategy, Structure, & Rivalry - Summary of Results

| Corporate Strategies                  | • High product quality
|                                     | • Speed to market
|                                     | • Reduce lead times
|                                     | • Assist customer’s customer
|                                     | • Line up the supply chain for customer
|                                     | • Excellent product bundled with customer service
|                                     | • Consistency of product
|                                     | • Relationship based selling
|                                     | • Leverage proximity to cut and sew
|                                     | • in CAFTA & Mexico |
Table 41 Continued

<table>
<thead>
<tr>
<th>Corporate Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Compete in multiple markets with product at different quality/cost levels; shadow the cut and sew operations of customers</td>
</tr>
<tr>
<td>• Differentiated product created through technology and R &amp; D</td>
</tr>
<tr>
<td>• Service customers in multiple manufacturing locations with the same product (Asia, Mexico, CAFTA, etc)</td>
</tr>
<tr>
<td>• Strategic partnerships with cut &amp; sew operations in East Asia</td>
</tr>
<tr>
<td>• Awareness of market trends</td>
</tr>
<tr>
<td>• Analyze sales numbers</td>
</tr>
<tr>
<td>• Purchase raw materials at competitive prices</td>
</tr>
<tr>
<td>• Integrated multi-faceted marketing</td>
</tr>
<tr>
<td>• Vertical integration</td>
</tr>
<tr>
<td>• Introducing organic cotton product line</td>
</tr>
<tr>
<td>• Transparency in terms of production</td>
</tr>
<tr>
<td>• Branding</td>
</tr>
<tr>
<td>• Leveraging the scale of total business to get cost savings</td>
</tr>
<tr>
<td>• Manage complexity of calendar</td>
</tr>
<tr>
<td>• Blended sourcing strategy – manufacturing in multiple locations throughout the world</td>
</tr>
<tr>
<td>• Licensing agreements to differentiate product</td>
</tr>
<tr>
<td>• Servicing niche markets through product targeted to these segments</td>
</tr>
<tr>
<td>• Extended size offering – niche sizes (plus, mastectomy, petite, etc)</td>
</tr>
<tr>
<td>• Multiple channels of distribution</td>
</tr>
<tr>
<td>• Data mining (know consumer spending habits)</td>
</tr>
<tr>
<td>• Customer-service website</td>
</tr>
<tr>
<td>• Product development</td>
</tr>
<tr>
<td>• Growing lifestyle brands</td>
</tr>
</tbody>
</table>
Table 41 Continued

<table>
<thead>
<tr>
<th>Corporate Strategies</th>
<th>• Market-driven orientation, rather than a manufacturing mind-set</th>
</tr>
</thead>
</table>
| Role of research & development | • Provides product differentiation and allows for higher margin  
• Differentiate commodity product through R & D so much that it becomes a new product for a new market  
• Partner with other members of the supply chain to bring R & D efforts to the consumer  
• Develop exclusive products for customers  
• Increasing the amount of PhDs on staff to ramp up R & D efforts  
• Focus on R & D efforts that increase value throughout the supply chain; not just throwing a finish on the product at the end  
• Research fashion trends  
• Research developments by auxiliary companies such as Clariant  
• Consumer research  
• Test products in select stores and then role out to more stores  
• Focus on new fabric and knitting technologies  
• Trickle down in terms of fabric innovation from main brand found in department stores to sub-brands developed for mass merchants the following season |
| Management style & corporate structure of organization | • Heavy handed manufacturing; trying to adapt to a global market orientation  
• Military like  
• Evolving into a business model that can better serve niche markets  
• Not a lot of layers in terms of management  
• Work lifestyle tied into the lifestyle of the product  
• A focus on flexibility to accommodate the needs of employee’s lifestyles  
• Flexible in terms of process  
• Corporate office and sewing facility all in one building  
• Sewers given equal benefits as employees in corporate office  
• Each sub-brand functions as an independent business unit  
• Operations combined on the back to leverage cost savings across brands  
• Attempt to keep work load as humane as possible  
• Employees given a lot of autonomy and responsibility  
• Flat management  
• Merchandising-centric corporate structure  
• Moving more towards smaller runs – a huge cultural change |
Table 41 Continued

| Role of marketing | • Market 2-3 layers deep in the supply chain to your customer’s customer  
|                   | • Some business to business marketing  
|                   | • Branding  
|                   | • Combination of in-house marketing and outside advertising agency  
|                   | • Marketing directly to the retailer (upstream companies  
|                   | • Integrated multi-prong marketing scheme used to create lifestyle brand  
|                   | • All advertising done in house to save costs; employees used as models  
|                   | • Hyper-sexual tone of advertising used to differentiate brand  
|                   | • In-store marketing  
|                   | • Television crossovers (Licensing agreements with popular television shows)  
|                   | • Celebrity endorsements  
|                   | • Market research used in terms of customer database  
|                   | • Pop-up stores used in key markets  
|                   | • Consistency across all channels of communication to the consumer from catalogue, store, and on-line  
|                   | • Merchant role hubcap of the operational wheel; merchants involved in all aspects of the business  
|                   | • Speak with one voice in terms of each brand but adapt to the needs of each country |
Table 41 Continued

| Competition with other local firms | None due to the lack of other domestic manufacturers of synthetic yarn  
• Is a key component in driving research and development; develop better product in accordance to market needs  
• Most competitors are overseas now and many local firms have gone out of business; competition is not as strong as it used to be in Los Angeles  
• Significant amount of cross hiring between surf and skate brands  
• Easily able to monitor competition’s product direction in the surf and skate market because of the proximity of all the main competitors in Southern California  
• Competition influences price, product technology, & positioning  
• Competitive with other firms in terms of carving out fashion positioning in the healthcare uniform market  
• Competition is global now; globalization and the internet have changed the level of competition facing the domestic industry  
• Proximity to textile resources is beneficial – finishers and spinners  
• Consolidation is characterizing the competitive environment as of lately |

|
Demand Conditions

Demand condition questions dealt specifically with how the location of company as well as how the local consumption of product in their respective market influenced their product direction.

Table 42: Demand Conditions - Summary of Results

| Location of Company | • Location of headquarters does not influence company’s products; Sales presence in key markets often filter ideas to headquarters  
• Being located in Los Angeles is an advantage in the contemporary market; easy access to market trends  
• Product is geographically specific – Southern California is the epicenter of the surf market; it helps from a competitive stand point to be immersed in the market  
• Product is geared towards warm weather; it helps to be located in warm weather in terms of product direction (Los Angeles)  
• Being located in the Southeast does not influence product direction; shop a global market place for product direction  
• Proximity to Hollywood helps in terms of licensing agreements (Grey’s Anatomy & General Hospital Licensing agreements)  
• Location is a big part of the image of the product; helps to establish the positioning of the brand  
• It helps to be located in the southeast in terms of access to raw materials (cotton) |


### Related & Supporting Industries

Related & supporting industry questions sought to define interactions with both suppliers and customers. These questions also sought to understand competitiveness as a result of being located within a cluster. In addition, these questions sought to understand customer/supplier interactions as well as the customer service orientation of the firms interviewed.
| Relationship with suppliers | • Variety of suppliers used based on the desired input  
|                           | • Sourcing offices used in key sourcing areas to handle dealings with the factories  
|                           | • Textile manufacturers drive most innovation in the performance apparel supply chain  
|                           | • (Retailer) coordinates the supply chain and has vendors follow up on procuring inputs to the product  
|                           | • Retailer interviewed prefers not to use full-package sourcing; wants full control of all aspects of the product, quality seen as key to brand positioning  
|                           | • Negotiation with suppliers in terms of cost as well as the level of quality for the cost  
| Relationship with customers | • Work with customers 2-3 layers deep in the supply chain  
|                           | • Bring innovation to customer’s customer (Nike, Reebok, etc) to pull product though the supply chain  
|                           | • Try to build a relationship beyond purchasing  
|                           | • Domestic textile companies are often asked to bring their innovation and ideas to the table – essential to compete against commodity goods  
|                           | • Try to have customers look at total product lifecycle costs rather than just initial markup – having the right SKU and the ability to minimize inventory by sourcing in the western hemisphere (reducing WIP).  
|                           | • Customers deal more with sales agents in various cities where main accounts are |
Table 43 Continued

| **Relationship with customers** | • Relationship with surf shops seen as a strategic partnership  
| | • Able to react to selling immediately through distribution centers and by using domestic manufacturing to replenish and react quickly to customer selling  
| | • Develop private label with retailers – strategic partnership  
| | • Sharing of supply chain costs in terms of strategic partnerships  
| | • Database marketing is a key strategy used to understand customer behavior  
| | • Merchants constantly analyzing sales to adapt assortment in terms of the end-consumer  
| | • Service customers by participating in multiple supply chains with same or different products.  
| | • Adapt innovation in terms of wash for high end brands into a less expensive adaptation for following seasons; usually for the same customer  
| | • Exclusivity agreements  
| | • Retailers are not driving innovation in the supply chain because of fear of end-of-season markdowns |

**Factor Conditions**

Factor condition questions dealt specifically with the deployment of factors of production such as capital and labor. In addition, this set of questions sought to determine how organizations measure their productivity.
### Table 44: Factor Conditions - Summary of Results

| How does your organization manage capital & labor? | • Standard variances  
• Customer yields  
• Per pound of goods versus cost  
• Look at the revenue return at the end of a selling period  
• Keep inventories down  
• Smaller lot runs  
• Require customer minimums  
• Sewers form micro-businesses; evaluated in totality rather than individually; bonus awarded to the productivity of the micro-business  
• Automation used to minimize labor costs  
• Lbs per man hour |
| How does your organization measure its productivity? | • Metrics such as working capital, accounts receivable, & inventory levels  
• Efficiency & utilization metrics  
• Performance vs. standards  
• $ per sales units  
• Margin $’s  
• Amount made per week  
• Capacity & how product shifts affect capacity utilization  
• Cost of Goods Sold  
• EBITDA (Earnings Before Interest Taxes Depreciation & Amortization)  
• A benchmark in terms of how many garments can be manufactured in an hour; pay based on productivity rate  
• Top line sales & gross margin  
• Initial Mark-up  
• Cost cents per pound  
• Amount of off-quality |
Sourcing & Product Cost

Sourcing and product cost questions sought to understand what components of manufacturing were outsourced and what the criteria was in terms of location and vendor placement. In addition, these questions sought to understand the affect that location had on a companies sourcing strategy. Finally, this set of questions sought to understand what the most significant contributor final product cost is when looking at landed-duty paid (LDP).

Table 45: Sourcing & Product Cost - Summary of Results

| What components of manufacturing do you outsource? | • Chemicals to make partially oriented yarn (POY)  
|     | • Synthetic yarn  
|     | • Scouring of wool  
|     | • Products outside of core competency  
|     | • Yarn from Pakistan  
|     | • High-make goods in East Asia and basics in the CAFTA region  
|     | • Asia used for cut & sew and fabric for commodity product; Domestic fabric and cut & sew in Mexico or CAFTA used for more expensive differentiated product  
|     | • Some jeans are made in owned cut & sew facilities in Mexico and other jeans use outsourced cut & sew facilities  
|     | • Domestic denim sourced within the U.S. (Greensboro) as well as cut-sew (Los Angeles) for more expensive product lines |
| **What criteria do you use in sourcing decisions?** | **Cost & quality driven**  
**Source in accordance to the competencies of certain regions**  
**Volume & margin**  
**Lead time less of a concern, can build lead time into the time & action calendar**  
**Full package sourcing not important; decide on fabric quality; source across sub brands to leverage the cost savings of high volume**  
**Diversify sourcing portfolio to minimize risk**  
**Multiple criteria in sourcing decisions, not just margin driven**  
**Price, quality, capacity, type of fabric, delivery lead-time & cost all play into sourcing decisions**  
**Base it on where the customer is (apparel manufacturers and cut & sew facilities) – customer service driven**  
**Balance placement of product to get a blended IMU and minimize risk** |
|---|---|
| **Location’s affect on sourcing strategy** | **The proximity to Mexico & CAFTA helps when servicing customers with cut & sew facilities in these area**  
**Take advantage of trade agreements in Mexico & CAFTA region**  
**Depends less on location and more on product quality desired and fabric type**  
**Utilize a diversified sourcing portfolio** |
Table 45 Continued

| Most significant contributor to final product cost | • Raw materials  
| | • Fabric costs  
| | • Labor has been automated out of the equation |

Supply Chain Maps

The following observations were made when transcribing the supply chains (Appendix I):

1. Many of the apparel manufacturers & retailers interviewed used a blended sourcing strategy; meaning they sourced in a variety of locations. Some of the justifications given by companies through qualitative questioning for this strategy are as follows:
   a. Minimize risk by sourcing in multiple regions of the world.
   b. Leveraging the manufacturing competencies of different regions.
   c. Minimize labor costs by manufacturing high-make goods in Asia & utilize speed-to-market advantages of sourcing low-make goods domestically or in CAFTA & Mexico.
   d. Variety of sub-brands with different positioning in terms of quality; domestic fabric and cut & sew used for high-end brands and CAFTA, Asian, and Mexican fabric and cut & sew used for mass and mid-tier sub brands.

2. Fiber/Yarn and textile companies are adapting to the blended sourcing strategy used by apparel manufacturers & retailers. They are setting up
manufacturing facilities in key supply chains such as China, the Far East, East Asia, CAFTA, and Mexico to better service their customer base that is using cut-and-sew facilities in these areas.

3. U.S. textiles are used more in expensive, differentiated product where lower priced Asian textiles are used for more commodity goods.

4. Textile manufacturers are forming joint ventures with cut-and-sew facilities in East Asia; creating vertically integrated supply chain cities or clusters.

5. Some members of all segments of the U.S. textile and apparel supply chain are leveraging cost savings and speed-to-market advantages by utilizing their proximity to CAFTA and Mexico.

6. Vertical integration in downtown Los Angeles- One California respondent handles all aspect of manufacturing and marketing in its downtown LA headquarters. Fabric formation, cut & sew, distribution, marketing, & retailing is all handled in-house by this apparel company. This apparel company is able to conceive a style, manufacture it, ship it and have it on the sales floor within two days.

7. Regional sourcing offices in key markets. One respondent interviewed had sourcing offices in CAFTA, Turkey, India, & Hong Kong. These facilities handle vendor communication and the logistics of getting the product into the U.S.
Table 46 displays were each firm interviewed has their goods manufactured. O indicates a manufacturing facility owned by the firm where X indicates outsourced manufacturing of the firm’s products. China was observed as the most frequent location in terms of outsourced manufacturing. The U.S. was observed as the most frequent location in terms of owned manufacturing.

Table 46: Location of Respondent’s Manufacturing – Owned & Outsourced

<table>
<thead>
<tr>
<th>Company</th>
<th>Performance/Apparel</th>
<th>Fiber/Yarn</th>
<th>Textile</th>
<th>Apparel</th>
<th>California</th>
<th>Mexico</th>
<th>South America</th>
<th>Caribbean</th>
<th>East Asia</th>
<th>South Asia</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company A</td>
<td>Performance Apparel</td>
<td>Fiber/Yarn</td>
<td>Southeast</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company B</td>
<td>Performance Apparel</td>
<td>Textile</td>
<td>Southeast</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company C</td>
<td>Performance Apparel</td>
<td>Textile</td>
<td>Southeast</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company D</td>
<td>Performance Apparel</td>
<td>Textile</td>
<td>California</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company E</td>
<td>Performance Apparel</td>
<td>Apparel</td>
<td>California</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company F</td>
<td>Performance Apparel</td>
<td>Apparel</td>
<td>California</td>
<td>O</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company G</td>
<td>Performance Apparel</td>
<td>Apparel</td>
<td>Southeast</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company H</td>
<td>Performance Apparel</td>
<td>Apparel</td>
<td>California</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company I</td>
<td>Performance Apparel/Cotton Bottom Weights</td>
<td>Retail</td>
<td>Other</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Company J</td>
<td>Cotton Bottom Weights</td>
<td>Fiber/Yarn</td>
<td>Southeast</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company K</td>
<td>Cotton Bottom Weights</td>
<td>Textile</td>
<td>Southeast</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company L</td>
<td>Cotton Bottom Weights</td>
<td>Textile</td>
<td>Southeast</td>
<td>O</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company M</td>
<td>Cotton Bottom Weights</td>
<td>Apparel</td>
<td>Southeast</td>
<td>X</td>
<td>O</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

O=Owned manufacturing facility X=Outsourced manufacturing facility
CHAPTER V
SUMMARY, CONCLUSIONS, & RECOMMENDATIONS

Summary

The purpose of this research was to examine competitive advantages that increase a firm’s productivity. The conceptual framework used in this study to evaluate productivity was Michael Porter’s *Determinants of National Competitive Advantage* (1990). This conceptual framework defines the variables that influence competitiveness of firms within a nation’s industry. Another purpose of this research was to examine issues related to product cost and outsourcing decision making. This research study focused on two product categories; performance apparel and cotton bottom weights. This research used a two-phase methodology. The first phase was exploratory in nature and involved an analysis of production and import data for cotton bottom weights and performance apparel. An analysis of domestic and international competitors in each market was also conducted in phase I to identify candidates for survey sample. Also in Phase I, a comparative cost analysis was conducted at the yarn, textile, and garment level. Also, an examination of lead time on total product lifecycle cost was explored. The final component of Phase I entailed a financial ratio analysis of domestic and international firm’s competing in cotton bottom weights.

The second phase of the research used a concurrent triangulation strategy to gather primary qualitative and quantitative data through an interview methodology.
The interview was conducted using a researcher developed instrument which focused on five areas; each component of Porter’s *Determinants of National Competitive Advantage* (Factor Conditions; Demand Conditions; Firm Structure, Strategy & Rivalry; and Related & Supporting Industries) as well as the sourcing criteria used by firms and issues related to product cost. Firms in both California and the Southeast were interviewed. Interviews were conducted with firms in all supply chain segments of both product categories of investigation – fiber/yarn, textile, apparel, and retail.

Summary of Results

*RO1: To conduct a comparative cross country cost analysis*

It was shown through both secondary and primary sources that all components of product cost influence the final price. It is intuitively believed that labor is the most significant contributor to final product cost. This belief was disproved through both *International Textile Manufactures Federation* production cost data as well as through quantitative data collected from respondents. It was shown overwhelmingly that the most significant contributor to final product cost is fabric or raw materials.

The belief that Asian textiles are always cheaper in comparison to U.S. textiles was also disproved through cost analysis. The ring spun yarn comparison of ITMF data showed that the U.S. cost was .08 cents lower in comparison to the cost of the Chinese ring spun yarn. The Chinese example had significantly higher raw material costs when compared to the U.S. example.
Also displayed through cost analysis was the level of automation in synthetic yarn production. Raw materials account for over 75% of total product cost in all three countries examined (U.S., China, and India). Labor costs accounted for 1% of product cost in the Indian and Chinese examples of synthetic textured yarn. In addition, it was shown that the cost differential between U.S. ring and rotor spun yarn continues to increase with rotor spun yarn prices continuing to decline.

In a further cost examination at the garment level, it was shown that China was more cost competitive in relation to Nicaragua. The lower cost of raw materials in China was the main cost differential between the two regions. The more labor intensive component of apparel manufacturing, cutting & sewing, had relatively equal cost when compared between regions. This again disproves the belief that the most significant contributor to final product cost is labor.

The effect of lead-time was also explored through a Sourcing Simulator simulation. It was shown that U.S. Textile companies could compete with Asia through strategic partnerships with other members of the supply chain that leveraged speed-to-market advantages by using CAFTA cut-and-sew. The textile company and the CAFTA cut-&-sew facility were able to provide the apparel company with more replenishments within a selling season. These replenishments more accurately represented actual demand in comparison to the larger up front order needed when using the Asian vendor. By reducing end-of-season markdowns for the apparel company, the U.S. Textile company and CAFTA cut-&-sew facility are able to provide equal gross margin dollars in comparison to the Asian example.
RO2: To provide a global overview of both the market and main competitors in cotton bottom weights & performance apparel markets

Cotton Bottom Weights

It was demonstrated through OTEXA, International Cotton Advisory Committee (ICAC), and Cotton Incorporated Import data that the U.S. is losing market share as well as its competitiveness when compared to other regions of the world in terms of cotton bottom weights. United States production of bottom weights has declined by 56% between 2001 and 2005. While domestic production has declined, imports have increased by 36% in terms of units in this same time period.

China, India, and the U.S. were shown to be the most significant producers of cotton fiber. China was shown to be the dominate producer of cotton fiber, yarn, and fabric. Major increases in production have occurred in China the past 10 years. For example, China’s production of cotton yarn has increased from 5 million metric tons in 1996 to 11 million metric tons in 2005.

When looking at the regions of investigation for this study, the most significant exporter to the U.S. in terms of finished cotton bottom garments is the CAFTA region in aggregate. In addition, China has seen significant growth in exports to the U.S. since 2005 especially in women’s and girl’s cotton bottoms. China saw a 466% increase in exports in this category between 2004 and 2005.

Performance Apparel

Market data was not available in terms of performance apparel in itself because it encompasses a variety of product categories, fabrications, and end uses.
The researcher investigated import data in terms of synthetics as to cover both cotton and synthetic product when examining trade data.

The trend observed in terms of China’s cotton bottom weight supply chain was also observed in synthetics. Between 1996 and 2006 China saw a 700% increase in its production of synthetic fiber. In addition, synthetic yarn production increased 433% in the same time period. Indian production of synthetic fiber and yarn increased slightly in this time period and U.S. production remained relatively constant in this time period. In terms of synthetic finished garments the top exporter to the U.S. was again China with a 108% increase between 2004 and 2005.

**RO3:** To conduct in-depth case studies via primary sources to determine the business strategies that are being used to increase productivity by fiber/yarn manufacturers, textile manufacturers, apparel manufacturers and retailers

<table>
<thead>
<tr>
<th>Fiber/Yarn</th>
<th>Textile</th>
<th>Apparel</th>
<th>Retail</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Location</td>
<td>5. Location</td>
<td>5. Relationship with suppliers</td>
<td>5. Relationship with suppliers</td>
</tr>
</tbody>
</table>

As shown in Table 47, *Customer service* was ranked as the most important strategy by respondents in the fiber/yarn, textile and retail segments. *Marketing* was ranked as more important by up-stream companies (apparel & retail) compared to
down-stream companies (fiber/yarn & textile). Conversely, Production efficiency was more important for down-stream companies in comparison to up-stream companies. Location and relationship with suppliers were ranked last by respondents across all segments in terms of the importance of these strategies.

RO4: To examine where the U.S. competitive advantage is using Porter’s Four Determinates of Competitive Advantage as the conceptual framework for organizing the data collected

Through the cost analysis conducted in Phase I it was shown that the U.S. is not competitive when looking at cost in isolation. It was observed however through primary research that certain business strategies create competitive advantages and differentiate the product offering of U.S. textile and apparel companies. Differentiation allows a firm to command a premium price, which leads to increased productivity (Porter, 1990). These business strategies that differentiate U.S companies’ products provide unique and superior value in terms of product qualities and service. These strategies observed through primary interviews are:

Customer service

1. Align the supply chain for apparel companies & retailers in terms of the various nodes of the supply chain.
2. Relationship based selling – providing service beyond the initial sale.
3. Consistency in terms of product quality.
4. Adapt to the blended sourcing strategy of apparel manufacturers and retailers by servicing customers in multiple supply chains with the same or different product.
5. Customer service web-site for customers to check status of orders, order sample yardage.

6. Educate customers to look at total product lifecycle costs rather then just initial markup – having the right sku and the ability to minimize inventory by sourcing in the western hemisphere.

**Research & Development**

1. Create value throughout the product supply chain; not just by applying a finish after the product is made.

2. Develop exclusive product for select high volume customers.

3. Front-end collaboration with up-stream companies in terms of developing product for their needs

**Marketing**

1. Create identifiable brands.

2. Compete in multiple markets with product at different quality/cost levels.


4. Licensing agreements with well known brands.

5. Introduce organic product lines.

6. Service niche markets through product targeted to these segments.

7. Market 2-3 layers deep in the supply chain; marketing directly to the retailer or apparel manufacturer to create demand.

**Strategic partnerships**

1. Leverage proximity to cut-&-sew facilities in CAFTA in terms of speed-to-market advantages.
2. Vertical strategic partnerships with cut & sew operations in East Asia.

3. Partner with other members of the supply chain to bring research and development efforts to the consumer.

**RO5: To provide insight into product cost, sourcing strategies, and the criteria used by companies in outsourcing decisions**

**Product Cost**

Raw materials were reported to be the most significant contributor to final product cost by 12 out of the 13 respondents interviewed. This goes against the intuitive belief that labor is the most significant contributor to final product cost. The product used in this analysis represented all segments of the supply chain for both cotton bottom weights and performance apparel. Table 48, shows the final product cost averaged across the thirteen respondents interviewed.

Table 48: *Product Cost Summary*

<table>
<thead>
<tr>
<th>Cost Component</th>
<th>% to final cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freight/Shipping/Transportation</td>
<td>10%</td>
</tr>
<tr>
<td>Raw Materials</td>
<td>43%</td>
</tr>
<tr>
<td>Unskilled Labor</td>
<td>10%</td>
</tr>
<tr>
<td>Skilled Labor</td>
<td>17%</td>
</tr>
<tr>
<td>Capital</td>
<td>12%</td>
</tr>
<tr>
<td>Research &amp; Development</td>
<td>8%</td>
</tr>
</tbody>
</table>

**Sourcing Strategies**

1. Many of the apparel manufacturers & retailers interviewed used a blended sourcing strategy; meaning they sourced in a variety of locations. Some of the justifications given by companies for this strategy are as follows:
   a. Minimize risk by sourcing in multiple regions of the world.
b. Leveraging the manufacturing competencies of different regions.

c. Minimize labor costs by manufacturing high-make goods in Asia & utilize speed-to-market advantages of sourcing low-make goods domestically or in CAFTA & Mexico.

d. Variety of sub-brands with different positioning in terms of quality; domestic fabric and cut & sew used for high-end brands and CAFTA, Asian, and Mexican fabric and cut & sew used for mass and mid-tier sub brands.

2. Fiber/Yarn and textile companies are adapting to the blended sourcing strategy used by apparel manufacturers & retailers. They are setting up manufacturing facilities in key supply chains such as China, the Far East, East Asia, CAFTA, and Mexico to better service their customer base that is using cut-and-sew facilities in these areas.

3. U.S. textiles are used more in expensive, differentiated product where lower priced Asian textiles are used for more commodity goods.

4. Textile manufacturers are forming Joint ventures with cut-and-sew facilities in East Asia; creating vertically integrated supply chain cities or clusters.

5. Some members of all segments of the U.S. textile and apparel supply chain are leveraging cost savings and speed-to-market advantages by utilizing their proximity to CAFTA & Mexico.

6. Vertical integration in downtown Los Angeles- One California respondent handles all aspect of manufacturing and marketing in its downtown LA headquarters. Fabric formation, cut & sew, distribution, marketing, & retailing
is all handled in-house by this apparel company. This apparel company is able to conceive a style, manufacture it, ship it and have it on the sales floor within two days.

7. Regional sourcing offices in key markets. One respondent interviewed had sourcing offices in CAFTA, Turkey, India, & Hong Kong. These facilities handle vendor communication and the logistics of getting the product into the U.S.

Outsourcing Criteria

Respondents were asked to rate several variables in terms of there importance in outsourcing decision making. Through qualitative questioning it was noted by many respondents that quality, cost, & reliability were all equally important in terms of outsourcing decisions. Table 49 displays the aggregate mode for each variable in terms of the companies interviewed:

Table 49: Outsourcing Criteria by Overall Mode

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Outsourcing criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>Product quality</td>
</tr>
<tr>
<td>#2</td>
<td>Cost</td>
</tr>
<tr>
<td>#3</td>
<td>Reliability of delivery</td>
</tr>
<tr>
<td>#4</td>
<td>Lead-time</td>
</tr>
<tr>
<td>#5</td>
<td>Flexibility</td>
</tr>
<tr>
<td>#6</td>
<td>Full-package sourcing</td>
</tr>
</tbody>
</table>

It was reported by the respondents in this sample that full-package sourcing was not a desirable scenario. Controlling the various components of product manufacturing and aligning the supply chain for other companies was reported as a
more desirable scenario by the sample in this study. *Lead-time* and *flexibility* were reported by respondents as something they could work around and build into the calendar; thus they were less of a concern when compared to the other variables.

Conclusions

1. Porter’s *Determinants of National Competitive Advantage* (1990) was useful in assessing the U.S textile and apparel industries competitive advantages. It provided insight into the components that are driving the competitiveness of the textile and apparel industry in both the Southeast and Southern California.
   
a. Firm Strategy, Structure, & Rivalry – This component of Porter’s model proved to be the most indicative of the competitive advantages of firms in the United States. U.S. firms are able to differentiate their products through strategies that increase the value of their product offering. These strategies as shown through this research are Research and Development, Marketing, & Customer service. These three strategies differentiate the product offering of United States firms from that of the other regions of investigation. These competitive advantages that increase productivity need to be continuously upgraded to remain viable in the global market. As shown, through this research regions such as India and China have become increasingly competitive in the past 10 years and will continue to do so.

b. Demand Conditions- This area of Porter’s model was cited as a competitive advantage by firm’s interviewed in California. The companies interviewed service lifestyle niches such as the surf and
skate market where Southern California is the epicenter for consumption in this market. However, it was also cited by firms in the southeast that in the age of globalization and the internet that being located outside the nexus of consumption does not put them at a competitive disadvantage. It was reported that it requires a concerted effort to remain abreast of demand conditions through market research.

c. Related & Supporting Industries- As with demand conditions, globalization has changed the nature of this component of Porter’s model. In terms of suppliers, many respondents reported that they source raw materials globally and that often local suppliers have gone out of business due to the increased level of competition brought on by globalization. Conversely, it was reported by most respondents that customer service was the most integral competitive advantage in relation to their business; relationship based selling is what differentiated United States firms from competitors in Asia. Strategic partnerships with cut and sew operations in CAFTA was mentioned by respondents through qualitative questioning as a means of maintaining competitiveness by leveraging speed to market advantages combined with a lower wage rate then in the U.S.

d. Factor Conditions - It was reported by respondents that unskilled labor is no longer a necessity because of automation and outsourcing of non value added components of manufacturing. Skilled labor however is
still a necessity as many United States textile companies are upgrading the number of PhDs in employment to ramp up Research and Development efforts.

2. It was reported by respondents in both supply chains investigated that United States textile companies drive the majority of the innovation in the supply chain to both suppliers (spinners) and customers (apparel manufacturers).

3. This research demonstrated that raw materials is the most significant contributor to final product cost.

4. This research demonstrated that product quality was the most significant concern when making sourcing decisions.

5. The metrics used to measure the productivity of an organization as mentioned by respondents varied in accordance to their segment in the supply chain. Upstream companies (apparel & retail) often used terms such as “gross margin” & “EBITDA” which capture the efficiency of an organization as a whole and downstream companies (yarn and textile manufacturers) spoke in terms of production efficiency and machinery utilization.

6. Retailers and apparel manufacturers are using blended sourcing strategies that utilize manufacturing from a variety of locations.

7. California firms benefit from speed to market advantages of either sourcing in areas of close proximity such as Mexico or utilizing a vertically integrated business model. Marketing and consumer focus was also mentioned as significant competitive advantage of firms in California.
Limitations of Study

1. This research was focused on two product categories: Cotton bottom weights and performance apparel. Results cannot be generalized to other product categories.

2. A non-probability convenience sample was used in this study. Results cannot be generalized to the entire population.

3. The questionnaire for this study included inquiries into various components of a firm’s business. With this in mind, there might be potential inability error in that respondents might not have had access to the complete data needed to answer certain questions.

4. There was potential for respondent bias depending on the willingness of respondents to disclose information in regards to actual and accurate business strategies.

Recommendations

1. Future research could examine the concept of total product lifecycle cost. It was reported that apparel manufacturers and retailers are often myopic in their view of product cost and focus specifically on initial markup.

2. In exploration of how firms are leveraging the CAFTA region to maintain competitiveness. This was mentioned by many firms as a means to remain competitive in the face of competition from Asia.

3. Future research could focus on the business strategies of lifestyle niche brands in California.
4. Future research could focus on the criteria used by retailers and apparel manufacturers in terms of vendor placement in their use of blended sourcing strategies - what regions and why?
REFERENCES


Appendix A1: Fiber Yarn Population – Cotton Bottom Weights

**India**
Forbes Gokak Ltd
Lakshmi Mills
Patspin India Ltd
Rajasthan Spinning & Weaving Mills Ltd
Suryalakshmi Cotton Mills

**California**
California Yarn (Los Angeles)
Unisun Multinational Inc (City of Commerce)
Jess Smith & Sons Cotton LLC

**United States**
American & Efird
Avondale
Coats North American
DMC Group
National Textiles
Parkdale Mills
Paul Reinhart Inc
Plains Cotton Cooperative Association
R L Stowe Mills
Carolina Mills
Greenwood Mills
National Textiles
National Spinning
Southern Mills
Stowe-Phar Mills
Unifi

**China**
Luthai Textile Joint Stock Co., Ltd
Shanghai Worldbest Industry Development Co
Xiake Color Spinning
Zhejiang Orient Holdings
Guangdong Golden Dragon Development
Shandong Demian Incorporated Company
Appendix A2: Fiber Yarn Population – Performance Apparel

India
Indo Rama Synthetics India Ltd.
BSL Ltd.

United States
Unifi, Inc.
American & Efird
Carolina Mills
Milliken
Invista
Omnova Solutions
Parkdale Mills
Stowe-Pharr Mills (Pharr yarns)
Guilford Mills
Ads Inc.
Albany International
American Dawn
Avondale
Blumenthal Print Works
BP Fabrics and Fibers
Brookwood Companies
Burlington Industries
Chargeurs
Chori Company
Coats (United Kingdom)
Coats North American
CULP INC
Day International
Deveaux SA
Dogi International Fabrics
Dollfuc Mieg
Fab Industries
Fuji Spinning Company
Greenwood Mills
ICG/Holliston
Invista
Itochu Corp
Klopman International
Kuraray Company Limited
Malden Mills
Milliken & Company
Mount Vernon Mills
National Spinning
National Textiles
Nitto Boseki Co Ltd
Paul Reinhart Inc
Pittards PLC
Plains Cotton Cooperative Association
Polymer Group Inc.
QST Industries
R L Stowe Mills
Ratti SPA
Reeves Brothers
Royal Ten Cate NV
SI Corp
Southern Mills
Tavex Algodonera SA
Teijin Ltd
Toho Tenax Co Ltd
Tomen Corp
Toyobo Co.
Unitika Ltd
Victoria PLC
Vincenzo Zucchi SPA

Other
Fujibo Holdings, Inc (Japan)
Fuji Spinning Company
Klopman (U.K)
Kuraray Company Limited (Japan)
Nisshinbo Industries (Japan)
Nitto Boseki Co Ltd (Japan)
Appendix A3: Textile Population – Cotton Bottom Weights

**India**
Arvind Polycot Ltd.
Raymond Ltd.
Binny Ltd

**California**
Edmund Kim International - Vertical (Rancho Dominguez)
David Textiles Inc (Commerce)
Robert Kaufman Co (Los Angeles)
PDQ Sewing (Santa Ana)

**United States**
Avondale
ITG-Cone Denim
Galey & Lord Swift Denim
Burlington Industries
Dan river
Greenwood Mills
Mount Vernon Mills
Delta Woodside Industries, Inc.
Bender & Associates, Inc
Canwil Textiles
Churchville Fabrics Inc
Cotswold Industries, Inc
Davetex Fabrics
Fayette Trading Inc

Haber Fabrics
Inman Mills
JBC Textiles Inc
Phoenix of Anderson
Tailored Fabrics Corp
Textile Enterprises Ltd
Wald-Tex Inc
Alaska Textile Co
CMI Industries, Inc.
Culp Inc.
Dyersburg Corp.
Galey & Lord, Inc.
Guilford Mills

**China**
Novel Denim Holdings Ltd
Shijiazhuang Changshan Textile
Anhui Feiya Textile Development
Weiqiao Textile Co
Zhonghe Co., Ltd

**Other**
Tavex Algodonera SA (Spain)
Compania Industrial de Parras, S.A. de
C.V. (Mexico)
Appendix A4: Textile Population – Performance Apparel

India
BSL Ltd.

California
Nanotex (Oakland)
American Soccer Co Inc – Vertical
(Los Angeles)
Antex Knitting Mills (Los Angeles)
Broadway Albion Knitting Mills -
Uniforms - Vertical (Los Angeles)
Bgreen/Cotton knit trading Inc
(Rancho Dominguez)
Edmund Kim International - Vertical
(Rancho Dominguez)
Intimo Seamless knitting Industry
(Vernon)
Metropolitan Industries (Los Angeles)
Paramount Textile
Popular textile group (Vernon)
PDQ Sewing
Sas Textile Inc
Scot tex Inc
SFO Impact, Inc
SH fabrics Inc
Style Knits Inc
Terry Knits Inc
Texcellence Inc
Texollini Inc (Long Beach)
Textile Unlimited Inc – Vertical
(Haw thorne)
Western Knitting Mill
Wintex Inc
Wolfson Knitting Mills

United States
Brookwood Companies Incorporated
ITG-Burlington
Milliken
Chargeurs
Dog i International Fabrics
Invista
Malden Mills

Re eves Brothers
Southern Mills
Mount Vernon Mills
Concord Fabrics, Inc.
Guilford Mills
Fab Industries Corporation
HCI Direct, Inc.
Apex Mills Corp
Fayette trading Inc
Gehring Textiles Inc
Bristol Products Inc
Carmel Textile s Inc
Centralia Knitting Mills
Crystal Textile Group
Deitsch Textiles Inc
Dyer fabrics
Gibertex International
M & K textiles Inc
Solid Stone Fabrics
Venus Knitting Mills

China
Zhonghe Co., Ltd

Other
Nisshinbo Industries (Japan)
Nitto Boseki Co Ltd (Japan)
Royal Ten Cate NV (Netherlands)
Tomen Corp (Japan)
Toyobo Co. (Japan)
Unitika Lt
Appendix A5: Apparel Population – Cotton Bottom Weights

**India**
Arvind Polycot Ltd
Raymond Ltd.

**California**
Cherokee Inc. (Los Angeles)
Guess?, Inc. (Los Angeles)
Innovo Group – Joe’s Jeans (Los Angeles)
Jalate, Ltd. (Los Angeles)
Levi Strauss & Co (Bay Area)
Mossimo Inc. (Los Angeles)
Paris Blues (Rancho Dominguez)
Perry Ellis International (Multiple Locations)
Quicksilver, Inc. (Huntington Beach)
Tarrant Apparel Group (Los Angeles)
Azteca Production International (Los Angeles)
Rsv Sport Inc (Los Angeles)
AZ3 Inc BCBG (Los Angeles)
L’koral Incorporated – Seven Jeans (Los Angeles)
Rampage Clothing Company (Los Angeles)
Leon Max, Inc. – Max Studio (Los Angeles)

**China**
USI Holdings Ltd. (Hong Kong)
Fujian Septwolves Industry Co., Ltd.
Guangdong Rieys Group Co., Ltd.
Jiangsu Hongdou Industry Co., Ltd.
Jiangsu Sainty Corp Ltd
Lai Sun Garment (Hong Kong)
TAL Group (Hong Kong)
Tarrant Apparel Group (Hong Kong)
Tristate Holdings Limited (Hong Kong)

**United States**
Aris Industries, Inc.
Ashworth Inc.
Bernard Chaus
Cintas Corp
Durango Apparel, Inc.
Eileen Fisher
Kellwood
Haggar Corp
Hartmarx Corp
IC Isaacs & Company (Girbaud)
Jones Apparel Group
Jordache Enterprises
Kasper ASL

Liz Claiborne, Inc.
Mast Industries
Oshkosh B’Gosh, Inc.
Oxford Industries
Phat Fashions
Perry Ellis International (Multiple Locations)
Phillips-Van Heusen
Polo Ralph Lauren
Superior Uniform Group, Inc.
VF Corp
Yakira LLC (ecko unlimited)
Williamson-Dickie
Dualstar
Columbia Sportswear
Appendix A6: Apparel Population – Performance Apparel

**California**
American Apparel (Los Angeles)
Perry Ellis International (Multiple Locations)
Quiksilver, Inc. (Huntington Beach)
Volcom Inc (Costa Mesa)
K2 Inc (Los Angeles)
Vans – VF Corporation (Santa Fe Springs)
OP (Irvine)
Apparel Ventures, Inc. (Los Angeles)
Authentic Fitness Corporation –Speedo (Los Angeles)
Patagonia (Ventura)
PDQ Sewing (Santa Ana)
Raj Manufacturing
Mias Fashion –Vertical (Santa Fe Springs)

**United States**
Nike
Ralph Lauren – RLX
Cintas Corp
Columbia Sportswear
Danskin
Gildan Activewear Inc
Kellwood
Liz Claiborne, Inc.
London Fog
Jockey
Perry Ellis International (Multiple Locations)
PremiumWear, Inc.
Puma AG Rudolf Dassler Sport (US office – Boston)
VF Corp
Yakira LLC (ecko unlimited)
Russell Corp.
Techknits, Inc.

**China**
TAL Group (Hong Kong)
Tarrant Apparel Group (Hong Kong)
U-Right International Holdings Ltd. (Hong Kong)
Appendix A7 : Retail Population

Abercrombie & Fitch
Aeropostale
American Eagle Outfitters
American Resources & Development Co.
Ann Taylor Stores
Aramark
Bass Pro Shops
Bebe Stores
Belk
Big Dog Holdings
Buckle
Burlington Coat Factory
Cabelas
Cache
Carry Wealth Holdings Ltd
Casual Male Retail Group
Catherines Stores
Cato
CFS International Inc.
Charlotte Russe
Charming Shoppes
Chico’s FAS
Children’s Place Retail Stores
Christopher & Banks
Cintas
Citi Trends
Clothestime
Coachman
County Seat Stores
Cox Co., Ltd.
Cutter & Buck
DEB Shops
DELiA*s
Dillard’s
Dress Barn
Easy Knit International Holdings Ltd.
Edison Brothers Stores
Evans
Factory 2-U Stores
Federated
Filene’s Basement
G & K Services
Gadzooks
Gantos
Gap
Goody’s
Gymboree
H & M Hennes & Mauritz AB (Sweden)
Hakuyosha Co., Ltd. (Japan)
Harold’s Stores
Haruyama Trading Co Ltd.
Hot Topic
J. Jill
J. Crew
Jacobs (Jay)
JC Penney
John David Group Plc
Jos. A. Bank Clothiers
Joyce Boutique Holdings Ltd.
Kenwin Shops
Kmart
Kohl’s
Lamonts Apparel
Land’s End
Limited Brands
LL Bean
Loehmann’s
May Department Stores
Men’s Wearhouse
Miller’s Retail Ltd.
National Service Industries
Neiman Marcus
New Morning Corp
Nordstrom
One Price Clothing Stores
Orvis
Pacific Sunwear of California
Paul Harris Stores
Phillips-Van Heusen
Retail Ventures
Right On Co Ltd
Ross Stores
S & K Famous Brands
Saks
San Francisco Boutiques, Inc.
Sears
Stage Stores
Stein Mart
Sym's
Talbots
Target
Theme International Holdings Ltd.
TJX
Today's Man
Too Inc.
Unifirst
United Retail Group
Urban Outfitters
Veeko International Holdings Ltd

Wal-Mart
Wet Seal
Zumiez

California

Pacific Sunwear California, Inc
(Anaheim)
Wet Seal Inc (El Toro)
Hot Topic, Inc. (City of Industry)
Fashion 21, Inc. (Los Angeles)
Draper's Rossmoor (Irvine)
Fredrick's of Hollywood (Los Angeles)
APPENDIX B: INTERVIEW INSTRUMENT
Company ________________: Interview Instrument

Performance Apparel/Cotton Bottom Weights (circle one)

Respondent Information:
Name:
Title:
Years in position:
Years with company:
Years in industry:

1) What strategies does your organization use to compete in your respective market? How does your organization compete?

2) What role does research and development play in your organization?

3) How would you describe the management style of your organization?

4) What role does marketing play in your organization?

5) How does competition (rivalry) with other companies in __________ influence your business?

6) How does being located in __________ influence your company’s products?

7) How does the local consumption of product from your respective market in __________ influence your business strategy?

8) How often do you interact with suppliers? How would you describe your suppliers? Where are your suppliers located? How would you describe your relationship with your suppliers? How would you describe your interaction with suppliers?

9) How often do you interact with your customers? How would you describe your customers? Where are your customers located? How would you describe your relationship with your customers? How would you describe your interaction with your customers?
10) How does your organization manage capital & labor?

11) Does your organization outsource? What criteria does your organization use in terms of making sourcing decisions? Where and what aspects of production do you outsource?

12) How does being located in ________________ affect your sourcing strategy if at all?

13) Please use the map on the following page to indicate your supply chain to show the flow of goods. Please use the codes listed below the map to indicate each segment of your supply chain and use arrows to show the flow of goods. Please indicate the flow of goods from suppliers to your organization. In addition, please indicate the flow to your customers. Only indicate the components that are relevant to your organization's supply chain.
Fi-Fiber vendor  Y-Yarn vendor/Spinning  F- Fabric/textile vendor (Weaving/Knitting)  C-cut & sew/apparel manufacturing  P-Printer/Converter  A-Auxiliaries (fabric treatments/other value added components: please list___________________  R-Retailer
14) What is the most significant contributor to final product cost? Product:

15) How does your organization evaluate its productivity?

16) Please rank the following in order of importance in terms of the successes of your business. 1 being the most important. 6 being the least important.

Please use a number only once

a. Marketing
b. Location
c. Customer service
d. Relationship with suppliers
e. Research & Development
f. Production efficiency

17) Please rate the following on the level of importance to your business:

<table>
<thead>
<tr>
<th></th>
<th>Not Important at all</th>
<th>Somewhat Not Important</th>
<th>Neither important, nor unimportant</th>
<th>Somewhat Important</th>
<th>Very Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Marketing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Located in</td>
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<tr>
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<td></td>
</tr>
<tr>
<td>C. Customer Service</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Relationship with suppliers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Research and Development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. Production Efficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
18) Please allocate a total of 10 points to the following components of product cost. Allocate more points to responses that configure a higher percentage of product cost and allocate less points to responses that configure a lower percentage of product cost: (Product: )

a. Freight/Shipping/Transportation ______
b. Raw Materials ______
c. Unskilled labor ______
d. Skilled labor ______
e. Capital ______
f. Research & Development ______

19) Please rank the following in order of importance in terms of your sourcing decision criteria. 1 being the most important. 6 being the least important

Please use a number only once:

a. Cost ______
b. Reliability of delivery ______
c. Product quality ______
d. Full-package sourcing ______
e. Lead-time ______
f. Flexibility ______
20) Please rate the following on the level of importance to your sourcing decisions:

<table>
<thead>
<tr>
<th></th>
<th>Not Important at all</th>
<th>Somewhat Not Important</th>
<th>Neither Important, nor unimportant</th>
<th>Somewhat Important</th>
<th>Very Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Reliability of delivery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Product quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Full Package Sourcing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Lead time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. Flexibility</td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>
Date
Contact Name
Company
Address
City, State Zip
Dear Contact Name:

<Reference name, company>, suggested that I contact you regarding my research study. My study focuses on the companies competing in all sectors of the bottomweights market and performance apparel segments (fiber/yarn, textile, apparel, and retail) and examines issues related to business strategies. Your company has been selected to participate in this study, and your confidentiality will be secured.

Your participation is voluntary. I will be conducting informational interviews in your area the week of __. I would like to set up a time to meet with members of your company in merchandising, sourcing, strategy, or new product development during this week if possible. If an on-site visit is not possible during this week I would like to arrange a conference call when convenient.

The questionnaire to be administered during the informational interview is attached for your review. I will follow-up with you via email or by phone to discuss a possible meeting time. Please let us know when you will be available during this time or if there is someone else that we should contact. Your cooperation is greatly appreciated. If you have any questions concerning the study, please contact me via email at the address below.

Sincerely,

Matt Berdine
Graduate Student
NCSU/ITT
mpberdin@unity.ncsu.edu

Nancy L Cassill, Ph. D
Professor – NCSU
Nancy_Cassill@ncsu.edu

William Oxenham, Ph.D
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William_Oxenham@ncsu.edu

Michelle R. Jones, Ph.D
Assistant Professor – NCSU
Michelle_Jones@ncsu.edu
APPENDIX D: COMPANY INTERVIEW RESULTS – FIRM, STRATEGY, STRUCTURE, & RIVALRY
## Appendix D1: Company A Interview Results – Firm Strategy, Structure, & Rivalry

**Category:** Performance Apparel  
**Sector:** Fiber/Yarn  
**Location:** Southeast  
**Respondent’s Title:** Director of Supply Chain Management

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Corporate Strategies          | • High product quality  
• Speed to market  
• Lower lead time for customers  
• Compete on price – more expensive than Asian manufacturing but less when looking at “fully loaded”  
• No real domestic competition  
• Assist customer’s customer (apparel companies) in lining up the supply chain with Company A’s product |
| Role of R & D                  | • Premier value-added product (non commodity) accounts for 10% of gross sales and this product accounts for 60% of gross margin  
• No real competition domestically in terms of value-added, research and development intensive product |
| Management style of organization | • Heavy-handed manufacturing; trying to adapt to a global market orientation                                                                                           |
| Role of marketing              | • Marketing is used to get the premier value added product to the customer’s customer  
• Marketing 2-3 layers deep in the supply chain  
• Creating demand by advertising product quality to customers such as Nike & Reebok |
| Competition with other local companies | • No, due to the lack of other domestic manufacturers of synthetic yarn                                                                                     |
## Appendix D2: Company B Interview Results – Firm Strategy, Structure, & Rivalry

**Category:** Performance Apparel  
**Sector:** Fiber/Yarn, Textile  
**Location:** South east  
**Respondent Title:** Business Manager & Director of Sales & Marketing – CBI

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Corporate Strategies                 | - Cannot compete through price  
|                                      | - Can compete through customer service, product quality, and consistency of product  
|                                      | - Ship 100% to customer needs, Asian manufacturers not as consistent  
|                                      | - Relationship based selling  
|                                      | - Provide service & quality beyond customer’s expectations as well as competitors  
|                                      | - Proximity- As a domestic manufacturer can have more product available quicker  
|                                      | - Compete in multiple markets  
|                                      | - Adapt strategy in relation to market needs  
|                                      | - Rent-a-uniform business requires low cost with minimum innovation  
|                                      | - Innovative companies (Company H) require high quality & service levels, smaller runs with many colors, as well as innovation in terms of fabric to drive sales  
|                                      | - Company B adapts to the needs of both of these markets to provide the level of service they both require  
| Role of R & D                         | - Research & development is the cornerstone of success of Company B  
|                                      | - Strength in combining chemistry and textiles  
|                                      | - Differentiate product through R & D so far as to create new markets through differentiated product  
| Management style of organization     | - Open but structured  
|                                      | - Military like  
| Role of marketing                    | - Very minimal at this point  
|                                      | - Some business to business marketing  
|                                      | - Branding is a future prospect to pull product through the supply chain  
| Competition with other local companies | - Forces company B to develop better product through research and development  
|                                      | - Once product is adapted my other companies competitiveness requires blocking and tackling to maintain market share  

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Appendix D3: Company C Interview Results –Firm Strategy, Structure, & Rivalry

Category: **Performance Apparel**
Sector: **Textile & apparel**
Location: **Southeast**
Respondent Title: **Product Development Manager – Men’s Apparel**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Corporate Strategies            | • Compete with differentiated product created through technology and R & D  
• Cannot compete via low cost  
• Provides products with consistent color  
• Excellent product bundled with customer service  
• Service customer in multiple locations with same product in order to adapt to the rise of the blended sourcing strategy used by retailers and apparel manufacturers- ask customer where they are planning to cut the fabric  
• Strategic partnership with a cut & sew operation in Vietnam |
| Role of R & D                   | • “Company C Labs” – incubator of technology  
• Partner with other members of the supply chain  
• Develop exclusive product for customers; license to a specific customer  
• Stage-gate - develop wild idea and then look at the capital investment required and if there is a market for the specific idea  
• Hiring PhD’s to ramp up R & D developments  
• Focused on creating value throughout the supply chain, not just adding a treatment on a product after manufacturing. Focus on creating value in the product yarn-forward |
<p>| Management style of organization | • Aggressive management                                                                                                                                                                                                 |</p>
<table>
<thead>
<tr>
<th>Role of marketing</th>
<th>Competition with other local companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Evolving from a manufacturing centric organization into a market based organization</td>
<td></td>
</tr>
<tr>
<td>- Evolving to a business model that can better serve niche markets</td>
<td>- Company B often competes in the same market</td>
</tr>
<tr>
<td></td>
<td>- Sometimes offer same product but product needs are adapted to such specific markets/narrow niches as not to compete head on</td>
</tr>
<tr>
<td></td>
<td>- Use outside advertising agency to handle some aspects of advertising</td>
</tr>
<tr>
<td></td>
<td>- Booth at key trade shows (Outdoor Retailer)</td>
</tr>
<tr>
<td></td>
<td>- Advertisements in DNR</td>
</tr>
</tbody>
</table>
### Category: Performance Apparel
### Sector: Textile (Knit)
### Location: California
### Respondent Title: Owner

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Corporate Strategies                     | • Flexibility  
  • Awareness of market trends  
  • Employee longevity  
  • Purchase raw materials competitively  
  • Analyze sales numbers  
  • High product quality  
  • Excellent customer service |
| Role of R & D                             | • More a role in recent years  
  • Different R & D used for this companies three main markets; Performance, Swim, & Contemporary  
  • Research industry to determine apparel trends  
  • Research developments by auxiliary companies such as Clariant |
| Management style of organization         | • $100 million company  
  • Mom & Pop type operation  
  • Not a lot of layers in management |
| Role of marketing                         | • Not one of this organization’s greatest strengths  
  • Marketing directly to retailer; talking to retailer’s suppliers (Apparel companies) |
| Competition with other local companies   | • Competition with local firms has lessened in recent years.  
  • Most competitors are overseas now and many local firms have gone out of business  
  • Labor costs have lead to a decline in the critical mass in Los Angeles |
Appendix D5: Company E Interview Results –Firm Strategy, Structure, & Rivalry

Category: **Performance Apparel**  
Sector: **Apparel**  
Location: **California**  
Respondent  
Title: **Men’s Product Line Manager, Director of Marketing, Director of Operations**  

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Corporate Strategies         | • Intensive Marketing -- See below  
• Adapts U.S. marketing materials to the needs of 3 additional markets – Europe, Australia, & Latin America. Feeling of advertising is the same across markets– athletes & product change in accordance to the market. Reef Girl (girl in thong but face covered) is consistent across all markets  
• Brand extensions – Swimwear & Girl’s apparel - spring 08’  
• The industry benchmark for beach sandals |
| Role of R & D                | • Consumer research key to success of brand  
• Shop the market in Europe and Brazil to develop design and print direction. Samples are not always interpreted literally |
| Management style of organization | • Very relaxed & comfortable  
• Work lifestyle tied into the lifestyle of the product  
• A focus on flexibility to accommodate the needs of employee’s lifestyles (surfing, children, etc) |
| Role of marketing            | Integrated multi-prong marketing scheme:  
1) **Sponsor athletes around the world**  
• Over 100 from highly recognizable athletes to local |
### Role of marketing (Cont.)

2) **Publicity**
   - Trade publications
     - Surf trade publications
   - Consumer publications
     - Product placement
     - Surf magazine

3) **In-store marketing**
   - Banners, fixtures, product giveaways, posters, stickers, etc.

4) **Trade Shows**
   - ASR, Surf Expo, Outdoor Retailer
   - Build booths for the shows (two in total)
   - One each to represent one of two different sub-brands

5) **Event Marketing**
   - Sponsor local surf events
   - Full scale promo tours
   - Buses filled with athletes
   - Nightclub parties
   - Fashion shows

6) **Video Division**
   - Film maker makes surf movies sponsored by Company D
   - Films feature premier surf talent
   - Target Customer: 17-24 male surf enthusiast is the main customer. May attract other customers by focusing on this segment; but all marketing must be catered to this market in order to maintain “authenticity” of brand and lifestyle positioning of brand

### Competition with other local companies

- Lion-share of companies competing in surf market are located in Southern California
- Main competitor is Quicksilver
| Competition with other local companies (Cont.) | located in Orange County  
- Significant amount of cross hiring between surf and skate brands  
- Easily able to monitor competition’s product direction |
### Appendix D6: Company F Interview Results – Firm Strategy, Structure, & Rivalry

**Category:** Performance Apparel  
**Sector:** Textile, Apparel, Retail  
**Location:** California  
**Respondent Title:** Plant Tour/Brand Manager

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Corporate Strategies        | • Vertical Integration  
|                              |   o Control all aspects of production; knit, dye, cut, market, distribute  
|                              | • Efficiency & time to market are key business strategies that vertical integration allows  
|                              | • Can produce and ship in two days  
|                              | • Distribution centers in Canada & International  
|                              | • Rolling out a line of organic cotton T-shirts  
|                              | • Can produce 220,000 garments a day; 1,000,000 in one week  
|                              | • Transparency in terms of all aspects of production is important  
| Role of R & D                | • Usually test products small then role out to more stores if successful  
| Management style of organization | • Flexible in terms of process  
|                              | • Laid back, lack of formality  
|                              | • Sewers given equal benefits as individuals that work in the office  
|                              | • Corporate office and sewing facility are all in one building; helps to minimize reaction time  
|                              | • English lessons offered to employees  
|                              | • Rent a bike program for individuals who do not have transportation  
| Role of marketing            | • All advertising is done in house  
|                              | • Often employees or individuals seen on the street are used as models rather then  

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| Role of marketing (Cont.) | supermodels; company would rather put benefits back into the company  
|                           | • Advertise in smaller free publications; billboards used as well  
|                           | • Hyper-sexual tone to advertising |
| Competition with other local companies | XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX |
Appendix D7: Company G Interview Results –Firm Strategy, Structure, & Rivalry

Category: **Performance Apparel**  
Sector: **Apparel**  
Location: **Southeast**  
Respondent Title: **Vice President of Customer Operations, Manager Global Sourcing**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| **Corporate Strategies**           | • Branding- focus on developing brands that speak to consumers  
  o Multiple brands for multiple channels of distribution  
• Leveraging the scale of total business to get cost savings  
  o Enormous scale in terms of synthetics  
• Manage complexity of calendar  
  o Logistical complexity  
• Blended sourcing strategy  
  o High make products manufactured in East Asia  
  o Low make items manufactured in CAFTA region |
| **Role of R & D**                  | • Focused on new fabric technology & knitting technology  
• No longer just a stupid basics business  
• Using anti-microbial and wicking treatments to differentiate product  
• Trickledown in terms of innovation from main brand to this organization’s sub brand developed for mass merchants |
| **Management style of organization** | • Each sub-brand functions as an independent business unit  
• Matrixed organization  
• Operations combined on the backend |
| **Role of marketing**              | • Marketing driven organization                                                                                                                       |
| Competition with other local companies | • Brands drive sales of consumer packaged goods  
• Competition is more global  
• Competition influences focus on price, technology, & positioning |
## Appendix D8: Company H Interview Results – Firm Strategy, Structure, & Rivalry

**Category:** Performance Apparel  
**Sector:** Apparel  
**Location:** California  
**Respondent Title:** Senior Director of Marketing & Merchandising

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Corporate Strategies                | • Licensing-Disney, Grey’s Anatomy General Hospital licensees used to differentiate hospital uniform assortment  
                                | • Niche market- fashion oriented nurse/hospital uniforms  
                                | • Intensive marketing (see below)  
                                | • Multiple channels of distribution; sell to retail; own catalogue and online distribution and group sales                                                                                                         |
| Role of R & D                        | • Fair amount of R & D  
                                | • Partner with textile companies to bring innovation to market  
                                | • Working with Company B in terms of R & D                                                                                                                                                                      |
| Management style of organization    | • No politics  
                                | • Try to keep business as humane as possible                                                                                                                                                                    |
| Role of marketing                   | • Marketing has many facets for this organization  
                                | • In store retailing  
                                | • Mobiles for in-store marketing  
                                | • Advertise in healthcare publications  
                                | • Television cross-over’s  
                                | • Celebrity endorsements                                                                                                                                         |
| Competition with other local companies | • Competitive in terms of product direction  
                                | • Competitors include Dickies & Cheorke  
                                | • Dickies Healthcare changed the direction of the market towards more fashion orientation- trying to catch up                                                                                       |
Appendix D9: Company I Interview Results – Firm Strategy, Structure, & Rivalry

Category: **Cotton Bottom Weights/ Performance Apparel**  
Sector: **Retail**  
Location: **Other**  
Respondent Title: **Sourcing Director – Swim & Sweaters**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| **Corporate Strategies**    | • Extended sizing  
  o styles developed to meet needs such as mastectomy, plus size, petite etc  
• Multiple channels of distribution; retail, catalogue, & internet  
• Data mining – Use database of customer purchases to develop strategies in terms of catalogue mailings, internet blasts, customer behavior  
• Blended sourcing strategy- rely on a mix of vendors to minimize risk  
• Catalogue and online distribution selling allows the company to better communicate product selling features |
| **Role of R & D**            | • Partner with textile companies & auxiliary companies to bring fabric innovation to market  
• Have in-house fabric team; but geared more towards quality control rather then developing innovation  
• Usually not the leader in terms of innovation… follow Patagonia in terms of outerwear  
• A significant amount of consumer research happens through database |
| **Management style of organization** | • Laidback  
• Individuals are given a lot of autonomy and responsibility  
• Corporate identity is tied into the Wisconsin lifestyle |
| **Role of marketing**        | • Market research is important part of business in terms of customer database |
| Role of marketing (Cont.) | • Pop up stores used in the summer months in the Hamptons and other key markets  
• All consumer contact points in catalogue and online communicate the brands positioning  
• Selling and marketing go hand in hand in catalogue and on-line businesses |
| Competition with other local companies | • None really, no other competitors in the Wisconsin area |
Appendix D10: Company J Interview Results –Firm Strategy, Structure, & Rivalry

Category: **Cotton Bottom Weights**  
Sector: **Fiber/Yarn**  
Location: **Southeast**  
Respondent Title: **Vice President of Logistics**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Strategies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Diverse product offering (ring, OE, Airjet)</td>
</tr>
<tr>
<td></td>
<td>• Wide variety of product in significant volume</td>
</tr>
<tr>
<td></td>
<td>• Organic cotton yarn an emerging opportunity</td>
</tr>
<tr>
<td>Role of R &amp; D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Not as much when compared to companies such as Milliken</td>
</tr>
<tr>
<td></td>
<td>• R &amp; D done on by customer request</td>
</tr>
<tr>
<td></td>
<td>• Done on a market basis</td>
</tr>
<tr>
<td>Management style of organization</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Flat management</td>
</tr>
<tr>
<td></td>
<td>• Relatively large small business</td>
</tr>
<tr>
<td>Role of marketing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Marketing and sales one in the same</td>
</tr>
<tr>
<td></td>
<td>• Not a lot of advertising</td>
</tr>
<tr>
<td></td>
<td>• Some business to business advertising</td>
</tr>
<tr>
<td>Competition with other local</td>
<td></td>
</tr>
<tr>
<td>companies</td>
<td>• None, international competition at this point</td>
</tr>
</tbody>
</table>
Appendix D11: Company K Interview Results –Firm Strategy, Structure, & Rivalry

Category: **Cotton Bottom Weights**  
Sector: **Textile**  
Location: **Southeast**  
Respondent Title: **Director of Product Development & two Senior Merchandise Managers**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Corporate Strategies        | • Provide differentiated product to customers in the U.S., Europe, & Asia  
                               • Compete in multiple markets  
                                  o Mass market (Large runs-offshore)  
                                  o Higher price differentiated product (small short runs-domestic)  
                                     ▪ Price pressure not as great  
                                     ▪ Service the California differentiated denim market  
                               • Shadow the cut & sew operations of customers (apparel manufacturers & retailers)  
                                  o “Follow the needle”  
                                  o Nicaragua  
                                  o Mexico  
                                  o Zhazing, China  
                               • Provide differentiated product bundled with services. Services include:  
                                  o Quality  
                                  o Transportation  
                                  o Product Expertise  
                               • Customer-service website  
                                  o Look up styles  
                                  o Order sample yardage |
| Role of R & D                | • Product drives differentiation  
                               o Yarn patterns, dye shade, stretch, etc  
                               • R & D is top of priority list  
                               • R & D drives sales through differentiated product |
<p>| Management style of organization | • Merchandising centric corporate |</p>
<table>
<thead>
<tr>
<th>Management style of organization (Cont.)</th>
<th>structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Design, sales, &amp; manufacturing report into merchandising</td>
<td></td>
</tr>
<tr>
<td>• Moving away from the “we make it, you buy it” model- moving from a manufacturing-centric model into a marketing/merchandising centric model</td>
<td></td>
</tr>
<tr>
<td>• Smaller runs is a huge cultural change for textile companies</td>
<td></td>
</tr>
<tr>
<td>Role of marketing</td>
<td>• Merchant role-hubcap of the operational wheel</td>
</tr>
<tr>
<td></td>
<td>• Market driven in terms of product</td>
</tr>
<tr>
<td></td>
<td>• Merchants have their hands in all aspects of the business</td>
</tr>
<tr>
<td>Competition with other local companies</td>
<td>• Competition is no longer local; many local competitors have gone out of business</td>
</tr>
</tbody>
</table>

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Appendix D12: Company L Interview Results –Firm Strategy, Structure, & Rivalry

Category: **Cotton Bottom Weights**  
Sector: **Textile**  
Location: **Southeast**  
Respondent Title: **Vice President of Manufacturing, Owner**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Corporate Strategies               | • High product quality  
                                      • Speed to market (essential)  
                                      • Leveraging product development capabilities  
                                      • Leveraging proximity to cut & sew operations in CAFTA and Mexico |
| Role of R & D                       | • Critical to the success of company L’s business  
                                      • Identify customers needs and develop product accordingly |
| Management style of organization   | • “We work like our pants are on fire”  
                                      • Communication is key!!  
                                      • People are not hung up on titles  
                                      • Identify objective and work towards satisfying the objective |
| Role of marketing                  | • Not a tremendous amount of marketing  
                                      • Have close relationships with customers  
                                      • People who can afford their product, know who they are in the market |
| Competition with other local companies | • Proximity to other textile resources is beneficial – finishers and spinners support business  
                                      • No real direct competition left in the southeast |
### Topic Executive’s Comments

#### Corporate Strategies
- Participate in a product category and be the leader
- Know consumer
  - Know consumer’s hot buttons and develop product accordingly
- Own the category
  - Western-wear: Levi does not participate in this market
- Compete in a variety of markets with price, product, distribution, promotion combined in a package that means something to the target customer
- Very market driven, manufacturing driven part of old phased out mentality
- Mix between owned cut & sew facilities & contracted factories
- Focus on growing lifestyle brands that speak to consumers
- Develop new growth initiatives
  - Marc Jacobs partnership for the premium denim market
  - Consumer research drives the conception of new growth initiatives

#### Role of R & D
- Consumer research
- Market research –NPD
- Style research
  - Thrift stores
  - WGSN
- Competitor Analysis

#### Management style of organization
- Conservative corporate culture
- Marketing centric organization, not manufacturing centric

#### Role of marketing
- Sales are driven by marketing and
<table>
<thead>
<tr>
<th>strength of the brand</th>
<th>• Speak with one voice in terms of each brand but adapt to the needs of each country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competition with other local companies</td>
<td>• Consolidation is characterizing the competitive environment as of lately</td>
</tr>
<tr>
<td></td>
<td>• No other competitors left in the south east</td>
</tr>
<tr>
<td></td>
<td>• Competition is global now</td>
</tr>
</tbody>
</table>
APPENDIX E: COMPANY INTERVIEW RESULTS – DEMAND CONDITIONS
Appendix E1: Company A Interview Results – Demand Conditions

Category: **Performance Apparel**  
Sector: **Fiber/Yarn**  
Location: **Southeast**  
Respondent Title: **Director of Supply Chain Management**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of company</td>
<td>• No, does not influence business</td>
</tr>
<tr>
<td>Local consumption</td>
<td>• No, does not influence business</td>
</tr>
</tbody>
</table>
Appendix E2: Company B Interview Results – Demand Conditions

Category: **Performance Apparel**  
Sector: **Textile**  
Location: **Southeast**  
Respondent Title: **Business Manager & Director of Sales & Marketing -CBI**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of company</td>
<td>• No, global business</td>
</tr>
<tr>
<td>Local consumption</td>
<td>• No, global business</td>
</tr>
</tbody>
</table>
Appendix E3: Company C Interview Results – Demand Conditions

Category: **Performance Apparel**  
Sector: **Textile**  
Location: **Southeast**  
Respondent Title: **Product Development Manager**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of company</td>
<td>• The location of the company does not influence the company’s product</td>
</tr>
<tr>
<td></td>
<td>• Sales presence in key markets – Boston, New York, Portland, Greensboro, Dallas, Los Angeles</td>
</tr>
<tr>
<td></td>
<td>o Sales agents often communicate what is going on in terms of these markets</td>
</tr>
<tr>
<td>Local consumption</td>
<td>• Very little of their product is consumed in the southeast at this point</td>
</tr>
</tbody>
</table>
Appendix E4: Company D Interview Results - Demand Conditions

Category: **Performance Apparel**  
Sector: **Textile (Knit)**  
Location: **California**  
Respondent Title: **Owner**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Location of company          | • Sell primarily to the Los Angeles market  
• Being located in Los Angeles is an advantage in the contemporary market; easy access to market trends |
| Local consumption            | • Local consumption does not influence product tremendously; product mostly manufactured in relation to customer specification |
Appendix E5: Company E Interview Results – Demand Conditions

Category: **Performance Apparel**  
Sector: **Apparel**  
Location: **California**  
Respondent Title: Men’s Product Line Manager, Director of Marketing, Director of Operation

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Location of company      | • Product is geographical specific  
                           | • Southern California is the epicenter of the market  
                           | • Surf Market  
                           | • Employees live the lifestyle of the product |
| Local consumption        | • Can go to the beach and see what people are wearing  
                           | • Employees are part of the culture, rather than just relying on observation |
Appendix E6: Company F Interview Results – Demand Conditions

Category: **Performance Apparel**  
Sector: **Textile, Apparel, & Retail**  
Location: **California**  
Respondent Title: **Plant Tour, Brand Manager**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of company</td>
<td>• Product is geared towards warm weather; it helps to be located in warm weather in terms of product direction</td>
</tr>
</tbody>
</table>
| Local consumption             | • Able to see trends on the street and put them in production and ship within two days  
                                 | • helps to be located in a market that is the epicenter of trend  
                                 | • No need for focus groups, can see employees and factory workers in terms of how they like the product |
Appendix E7: Company G Interview Results – Demand Conditions

Category: **Performance Apparel**  
Sector: **Apparel**  
Location: **Southeast**  
Respondent Title: **Vice President of Customer Operations, Manager of Global Sourcing**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Location of company      | • Design center in NYC  
                          | • Shop a global marketplace for product direction  
                          | • Being located in the southeast does not influence companies products             |
| Local consumption        | • National & global market research is completed  
                          | • The local consumption specifically in the southeast does not have an affect on business strategy |
Appendix E8: Company H Interview Results – Demand Conditions

Category: **Performance Apparel**  
Sector: **Apparel**  
Location: **California**  
Respondent Title: **Senior Director of Marketing & Merchandising**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of company</td>
<td>• Proximity to Hollywood helps in terms of licensing agreements (for example Grey’s Anatomy &amp; General Hospital)</td>
</tr>
<tr>
<td>Local consumption</td>
<td>• No, due to the end use as healthcare uniforms</td>
</tr>
</tbody>
</table>
Appendix E9: Company I Interview Results – Demand Conditions

Category: **Performance Apparel/ Cotton Bottom Weights**  
Sector: **Retail**  
Location: **Other (Wisconsin)**  
Respondent Title: **Sourcing Director – Swim & Sweaters**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of company</td>
<td>• The location is a big part of the image of the product; helps to establish the positioning of the brand</td>
</tr>
</tbody>
</table>
| Local consumption      | • Not in particular, located in the middle of no where  
                         | • Its interesting to see how employees where the product                              |
Appendix E10: Company J Interview Results – Demand Conditions

Category: **Cotton Bottom Weights**
Sector: **Fiber/Yarn**
Location: **Southeast**
Respondent Title: **Vice President of Logistics**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of company</td>
<td>• It helps in terms of access to raw materials (cotton)</td>
</tr>
<tr>
<td></td>
<td>• It also helps to be located in the U.S. in terms of regulatory legislation when shipping to areas such as the Caribbean &amp; Mexico</td>
</tr>
<tr>
<td>Local consumption</td>
<td>• Not at all</td>
</tr>
</tbody>
</table>
Appendix E11: Company K Interview Results – Demand Conditions

Category: **Cotton Bottom Weights**  
Sector: **Textile**  
Location: **Southeast**  
Respondent Title: **Director of Product Development, Two Senior Merchandise Managers**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of company</td>
<td>• Does not influence product</td>
</tr>
<tr>
<td>Local consumption</td>
<td>• Does not influence product</td>
</tr>
</tbody>
</table>
Appendix E12: Company L Interview Results – Demand Conditions

Category: **Cotton Bottom Weights**  
Sector: **Textile**  
Location: **Southeast**  
Respondent Title: **Vice President of Manufacturing, Owner**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of company</td>
<td>• It does not influence product; but it definitely influences business strategy</td>
</tr>
<tr>
<td></td>
<td>o Speed to market</td>
</tr>
<tr>
<td></td>
<td>o Proximity to cut &amp; sew in CAFTA and Mexico</td>
</tr>
<tr>
<td>Local consumption</td>
<td>• No does not influence product</td>
</tr>
</tbody>
</table>
Appendix E13: Company M Interview Results – Demand Conditions

Category: **Cotton Bottom Weights**  
Sector: **Apparel**  
Location: **Southeast**  
Respondent Title: **Merchandise Manager**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of company</td>
<td>• Internet &amp; globalization have created a global consumer culture; location is not a disadvantage when developing product for high-end market</td>
</tr>
<tr>
<td>Local consumption</td>
<td>• Western wear consumer exists in the southeast; other segments not in the southeast</td>
</tr>
</tbody>
</table>
APPENDIX F: COMPANY INTERVIEW RESULTS –RELATED & SUPPORTING INDUSTRIES
Appendix F1: Company A Interview Results – Related & Supporting Industries

**Category:** Performance Apparel  
**Sector:** Fiber/Yarn  
**Location:** Southeast  
**Respondent Title:** Director of Supply Chain Management

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Relationship with suppliers       | • Interact with suppliers daily  
• Supplier base all over the world  
• Lycra-Invista $20.00 per pound  
• POY- Vendor in Texas & Europe $1.00 per pound |
| Relationship with customers       | • Interact daily with customers  
• Work with customers 2-3 layers deep in the supply chain  
• Often bring innovation to customers to drive sales (Nike, Reebok, etc) |
### Appendix F2: Company B Interview Results – Related & Supporting Industries

**Category:** Performance Apparel  
**Sector:** Fiber/Yarn, Textile  
**Location:** Southeast  
**Respondent Title:** Business Manager-Workwear, Director of Sales & Marketing - CBI

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Relationship with suppliers  | • Does not interact with suppliers frequently  
|                              | • Suppliers consist of fiber manufacturers (Company A), dyes, and chemical manufacturers |
| Relationship with customers  | • Interact with customers on a daily basis  
|                              | • Drives innovation in the supply chain to customers  
|                              | • Try to develop a relationship beyond purchasing  
|                              | • Customers usually ask for company B to bring some sort of innovation to the table  
|                              | • Try to make customers look at total product lifecycle costs then just initial markup – having the right sku, the ability to minimize inventory by sourcing in this hemisphere (reducing WIP) |
## Appendix F3: Company C Interview Results – Related & Supporting Industries

**Category:** Performance Apparel  
**Sector:** Textile  
**Location:** Southeast  
**Respondent Title:** Product Development Manager

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Relationship with suppliers     | • Outsource short staple spinning (long staple spinning done in house)  
                                  | • Customers bring some innovation to the table  
                                  | • Not enough good relationships with suppliers – loyalty is not there both ways  
                                  | • Speak with some suppliers on a daily basis |
| Relationship with customers     | • Not enough interaction on a personal basis – sporadic interaction  
                                  | • Customer should be in front of them more often  
                                  | • Customers deal more often with sales agents in various cities  
                                  | • Sales reps bring customer ideas to product development team  
                                  |   o At least one request a week  
                                  | • Relationship could be stronger |
### Appendix F4: Company D Interview Results – Related & Supporting Industries

**Category:** Performance Apparel  
**Sector:** Textile (Knit)  
**Location:** California  
**Respondent Title:** Owner

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship with suppliers</td>
<td>• Variety of customers depending on the yarn needed for the product</td>
</tr>
<tr>
<td></td>
<td>• Weekly interaction with customers</td>
</tr>
<tr>
<td>Relationship with customers</td>
<td>• Everyday interaction with customers</td>
</tr>
<tr>
<td></td>
<td>• Combination of Company D and customers driving innovation</td>
</tr>
<tr>
<td></td>
<td>• Sees relationship with customers as a partnership</td>
</tr>
</tbody>
</table>
Appendix F5: Company E Interview Results – Related & Supporting Industries

Category: **Performance Apparel**  
Sector: **Apparel**  
Location: **California**  
Respondent Title: **Men’s Product Line Manager, Director of Marketing, Director of Operation**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship with suppliers</td>
<td>• Interact frequently with mills in Brazil where the sandals are manufactured</td>
</tr>
</tbody>
</table>
| Relationship with customers | • Interact frequently with surf shops  
• Develop fixturing for key surf shops |
### Appendix F6: Company F Interview Results – Related & Supporting Industries

Category: **Performance Apparel**  
Sector: **Apparel**  
Location: **California**  
Respondent Title: **Plant Tour, Brand Manager**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship with suppliers</td>
<td>• Vertical operation; only source yarn from Pakistan</td>
</tr>
</tbody>
</table>
| Relationship with customers        | • Customer is end consumer  
• Stores interact daily with customers  
• Database used to track online consumer spending  
• Daily reports kept in terms of what the customer is buying  
• Able to react to selling immediately through distribution centers as well as by manufacturing product in accordance to customer selling |
### Appendix F7: Company G Interview Results – Related & Supporting Industries

**Category:** Performance Apparel  
**Sector:** Apparel  
**Location:** Southeast  
**Respondent Title:** Vice President of Customer Operations, Manager of Global Sourcing

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship with suppliers</td>
<td>• Sourcing offices in key sourcing areas handle dealings with the factories</td>
</tr>
<tr>
<td></td>
<td>o Hong Kong</td>
</tr>
<tr>
<td></td>
<td>o Turkey</td>
</tr>
<tr>
<td></td>
<td>o India</td>
</tr>
<tr>
<td></td>
<td>o Guatemala</td>
</tr>
<tr>
<td></td>
<td>o Each handle surrounding countries as to streamline</td>
</tr>
<tr>
<td></td>
<td>the communication to sourcing team in NC</td>
</tr>
<tr>
<td>Relationship with customers</td>
<td>• Constant interaction with customers</td>
</tr>
<tr>
<td></td>
<td>• Company G drives innovation in its supply chain</td>
</tr>
<tr>
<td></td>
<td>• Tries to build partnerships with retailers; theoretically a partnership</td>
</tr>
<tr>
<td></td>
<td>• Developed a private label for an upper tier mass merchant</td>
</tr>
<tr>
<td></td>
<td>• Relationship with this mass merchant is seen as a strategic partnership – strong brands grow store traffic</td>
</tr>
<tr>
<td></td>
<td>• Mass Merchant and this apparel manufacturer share supply chain costs</td>
</tr>
<tr>
<td></td>
<td>• This company sometimes provides retailer with markdown support</td>
</tr>
</tbody>
</table>
**Appendix F8 Company H Interview Results – Related & Supporting Industries**

**Category:** Performance Apparel  
**Sector:** Apparel  
**Location:** California  
**Respondent Title:** Senior Director of Marketing & Merchandising

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship with suppliers</td>
<td>• Fabric manufacturers often bring innovative ideas in terms of fabric to the table and ideas in terms of how to differentiate our product through fabrication</td>
</tr>
</tbody>
</table>
| Relationship with customers   | • Work with hospitals in terms of group sales  
• Interact directly with customers via direct channels of distribution such as catalogue and online |
Appendix F9: Company I Interview Results – Related & Supporting Industries

Category: **Cotton Bottom Weights/ Performance Apparel**  
Sector: **Retail**  
Location: **Other (Wisconsin)**  
Respondent Title: **Sourcing Director – Swim & Sweaters**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Relationship with suppliers        | • Daily interaction with suppliers  
• Vendors seen as partners  
• Coordinate the supply chain and have each vendor follow up  
• Interaction with cut & sew facilities, fabric vendors and trim vendors  
• Prefer not to use full package sourcing; want full control of all aspects of the product… product quality is an essential part of brand positioning  
• Suppliers visit during high development times; most interaction is via email other times  
• Constant negotiating in terms of cost and level of quality for the cost |
| Relationship with customers        | • Database marketing is a key strategy used to understand customer behavior to better adapt customer service to meet their needs  
• Merchants constantly analyzing sales to adapt assortment in terms of the customer |
Appendix F10: Company J Interview Results – Related & Supporting Industries

Category: **Cotton Bottom Weights**  
Sector: **Fiber/Yarn**  
Location: **Southeast**  
Respondent Title: **Vice President of Logistics**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Relationship with suppliers  | • Buy cotton in the NY cotton exchange  
• Deal directly with organic cotton growers (demand is greater than supply at the moment) |
| Relationship with customers  | • Have manufacturing facilities in various locations throughout the Americas  
  o Honduras  
  o Colombia  
  o Mexico |
Appendix F11: Company K Interview Results – Related & Supporting Industries

Category: **Cotton Bottom Weights**  
Sector: **Textile**  
Location: **Southeast**  
Respondent Title: **Director of Product Development, Two Senior Merchandise Manager**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Relationship with suppliers   | • Interact weekly with company J  
• Company J provides yarn for more of the mass product; not really used for high end differentiated product  
• Yarn for differentiated product is usually manufactured in house                                                                                   |
| Relationship with customers   | • Interact with customers daily  
• Sales reps in strategic locations  
  o LA (LA Niche brands)  
  o SF (Levi, GAP)  
  o Dallas  
  o NY  
  o Kansas City (Lee)  
  o Greensboro (Wrangler)  
• Service customers by participating in multiple supply chains with one product  
  o Provide product for cut & sew in Asia on the front-end  
  o Can service same customer in this hemisphere with the same product on the backend (reorders)  
  o Adapting to the blended sourcing strategy used by many apparel manufacturers and retailers  
  o Dye shades and slub patterns vary according to the machinery though  
• For companies with an assortment of brands (VF for example). Can provide, high end differentiated denim domestically one season for more expensive, designer type brands and then also service the more mass brands under VF’s umbrella in manufacturing facilities |
in Mexico and CAFTA with a cheaper version of the same type of denim the next season

- Has exclusivity agreements with some jean manufacturers
- Dark & light denim can coincide within a season… depends on the positioning of the vendor
Appendix F12: Company L Interview Results – Related & Supporting Industries

Category: **Cotton Bottom Weights**  
Sector: **Textile**  
Location: **Southeast**  
Respondent Title: **Vice President of Merchandising, Owner**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Relationship with suppliers  | • Daily interaction with customers  
|                               | • Individuals who are left in the industry are the ones who drove innovation from the beginning… that’s how they survived |
| Relationship with customers   | • Work with customers to satisfy their needs                                           |
## Appendix F13: Company M Interview Results – Related & Supporting Industries

**Category:** Cotton Bottom Weights  
**Sector:** Apparel  
**Location:** Southeast  
**Respondent Title:** Merchandise Manager

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
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</thead>
</table>
| Relationship with suppliers | • Daily interaction with supplier  
|                        | • Premium brands-company K usually drives the innovation in terms of latest developments in denim  
|                        | • Mass brands innovation is usually driven by this apparel company-they know when their mass customer is ready for whatever is going on in the market  
|                        | • This company is one of the largest purchasers of denim fabric. Can make a lot of demands |
| Relationship with customers | • Invite individuals from top 20 accounts to a meeting hosted by this company  
|                        | • Customers not driving innovation (retailer) because of fear of markdowns  
|                        | • Provide markdown dollars in terms of high end product  
|                        | • Partnership with retailers |
APPENDIX G: COMPANY INTERVIEW RESULTS – FACTOR CONDITIONS
### Appendix G Company Interview Results – Factor Conditions

<table>
<thead>
<tr>
<th>Company</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>P/B</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
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<tbody>
<tr>
<td>Category</td>
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<tr>
<td>Sector</td>
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<td>1,2</td>
<td>2,3</td>
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<td>3</td>
<td>2,3,4</td>
<td>2,3</td>
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<td>1</td>
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<tr>
<td>Question</td>
<td>Location</td>
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<tr>
<td>How Does your organization manage capital &amp; labor?</td>
<td>Very automated; only skilled workers employed</td>
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<tr>
<td></td>
<td>Metrics used to evaluate productivity: Working capital, accounts receivable, inventory levels</td>
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<tr>
<td>How does your organization evaluate its productivity?</td>
<td>Efficiency &amp; Utilization metrics; performance vs. standards; $ per sales associate; business units look at Margin $</td>
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<td></td>
<td>Amount made per week; capacity and how product shifts affect capacity</td>
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<tr>
<td></td>
<td>Cost of Goods Sold</td>
<td>EBITDA</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Look at per pound of goods versus cost, look at return after every inventory movement, keep inventories down, smaller lots run these days</td>
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<tr>
<td></td>
<td>all product is made to order; no inventories stocked; require minimums so there is some sort of payout; amortize equipment</td>
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<tr>
<td></td>
<td>Sewers form micro businesses; evaluated in totality rather than individually; bonus pay awarded to productivity of the micro-business</td>
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<tr>
<td></td>
<td>Stuffed according to the needs of the department; all manufacturing outsourced</td>
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</tr>
<tr>
<td></td>
<td>All manufacturing outsourced except sewing</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>Automating used to minimize labor costs</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Ibs per manhour; look at cost daily; manage inventory levels; run machines only when there is an order</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Metrics**
- Working capital
- Accounts receivable
- Inventory levels

**Efficiencies**
- Top line sales & gross margin
- EBITDA, Initial Markup
- EBITDA, Margin
- Costs per pound
- Sales Volume
- Off quality
- Margin
- Sales

**Efficiencies**
- Productivity
- Cost
- Off quality
- Yield

**IMU & Sales**
Appendix H1: Company A Interview Results – Sourcing & Product Cost

Category: **Performance Apparel**  
Sector: **Fiber/Yarn**  
Location: **Southeast**  
Respondent Title: **Director of Supply Chain Management**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outsourcing</td>
<td>• Yes, chemicals, lycra (Invista)</td>
</tr>
<tr>
<td>Location’s affect on sourcing</td>
<td>• No</td>
</tr>
<tr>
<td>Most significant contributor to product cost</td>
<td>• Raw Materials</td>
</tr>
</tbody>
</table>
Category: **Performance Apparel**  
Sector: **Fiber/Yarn, Textile**  
Location: **South east**  
Respondent Title: **Business Manager & Director of Sales & Marketing -CBI**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outsourcing</td>
<td>• Source synthetic yarn from Company A</td>
</tr>
<tr>
<td>Location’s affect on sourcing</td>
<td>• No</td>
</tr>
<tr>
<td>Most significant contributor to product cost</td>
<td>• Raw materials</td>
</tr>
</tbody>
</table>
### Appendix H3: Company C Interview Results – Sourcing & Product Cost

**Category:** Performance Apparel  
**Sector:** Textile & apparel  
**Location:** Southeast  
**Respondent Title:** Product Development Manager – Men’s Apparel

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Outsourcing                                | • Yes, outsource the scouring of wool; Outsource sometimes when a product goes out of core competency  
|                                            | • Cost & quality driven                                   |
| Location’s affect on sourcing              | • No                                                      |
| Most significant contributor to product cost | • Raw Material; Wool more then synthetics                 |
Appendix H4: Company D Interview Results – Sourcing & Product Cost

Category: **Performance Apparel**  
Sector: **Textile (knit)**  
Location: **California**  
Respondent Title: **Owner**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outsourcing</td>
<td>• Rarely; Only when it’s a product outside of our competency</td>
</tr>
<tr>
<td>Location’s affect on sourcing</td>
<td>• The proximity to Mexico helps when servicing our customer base</td>
</tr>
<tr>
<td></td>
<td>• We often ship fabric to Mexico or CAFTA region</td>
</tr>
<tr>
<td></td>
<td>• NAFTA &amp; CAFTA provisions help reduce costs</td>
</tr>
<tr>
<td>Most significant contributor to product cost</td>
<td>• Raw Materials</td>
</tr>
</tbody>
</table>
Appendix H5: Company E Interview Results – Sourcing & Product Cost

Category: **Performance Apparel**  
Sector: **Apparel**  
Location: **California**  
Respondent Title: **Men’s Product Line Manager, Director of Marketing, Director of Operation**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Outsourcing                                     | • Source apparel in Asia  
• Sandals are sourced in Brazil; sourcing in Brazil is part of the brand positioning  
• Swimwear will also be sourced out of Brazil for positioning purposes |
| Location’s affect on sourcing                   | • Not really                                                                         |
| Most significant contributor to product cost    | • Raw materials                                                                      |
## Appendix H6: Company F Interview Results – Sourcing & Product Cost

**Category:** Performance Apparel  
**Sector:** Apparel  
**Location:** California  
**Respondent Title:** Plant Tour/ Brand Manager

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outsourcing</td>
<td>• Just outsource yarn from Pakistan</td>
</tr>
<tr>
<td></td>
<td>• Vertically integrated operation from knitting fabric to marketing to stores</td>
</tr>
<tr>
<td>Location’s affect on sourcing</td>
<td>• No</td>
</tr>
<tr>
<td>Most significant contributor to product cost</td>
<td>• Raw Materials</td>
</tr>
</tbody>
</table>
Appendix H7: Company G Interview Results – Sourcing & Product Cost

Category: **Performance Apparel**  
Sector: **Apparel**  
Location: **Southeast**  
Respondent Title: **Vice President of Customer Operations, Manager Global Sourcing**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outsourcing</td>
<td>• Margin &amp; volume play into sourcing decisions</td>
</tr>
<tr>
<td></td>
<td>• Source high make goods in East Asia</td>
</tr>
<tr>
<td></td>
<td>• Source low make, basics in this hemisphere</td>
</tr>
<tr>
<td></td>
<td>• Lead time less of concern; build lead time into the time &amp; action calendar. Build calendar around lead time</td>
</tr>
<tr>
<td></td>
<td>• Full package sourcing not important; decide on fabric quality; source same fabric across sub brands to leverage the cost savings of high volume</td>
</tr>
<tr>
<td></td>
<td>• Diversify sourcing portfolio to minimize risk</td>
</tr>
<tr>
<td></td>
<td>• Multiple criteria in sourcing decisions, not just margin driven</td>
</tr>
<tr>
<td></td>
<td>• Different areas of the world have competencies in terms of different product types</td>
</tr>
<tr>
<td>Location’s affect on sourcing</td>
<td>• No, Source on a global scale</td>
</tr>
<tr>
<td></td>
<td>• Take advantage of trade agreements in Mexico &amp; Caribbean</td>
</tr>
<tr>
<td>Most significant contributor to product cost</td>
<td>• Raw materials are pretty fixed; but have control over labor costs, but try to lower costs by high volume</td>
</tr>
<tr>
<td></td>
<td>• Try to lower costs by using cut &amp; sew in inexpensive</td>
</tr>
</tbody>
</table>
Appendix H8: Company H Interview Results – Sourcing & Product Cost

Category: **Performance Apparel**  
Sector: **Apparel**  
Location: **California**  
Respondent Title: **Senior Director of Marketing & Merchandising**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
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</table>
| Outsourcing                                     | • Cut & sew in El Salvador, Mexico, and China  
• Source fabric from low cost Asian manufacturers for more commodity product & use Company B for high-end differentiated product  
• Price, quality, capacity, type of fabric, delivery lead time, & cost all play into sourcing decisions |
| Location’s affect on sourcing                   | • Depends less on location and more on product quality desired and fabric type                                                                                                                                          |
| Most significant contributor to product cost    | • Raw materials and then labor                                                                                                                                                                                         |
Appendix H9: Company I Interview Results – Sourcing & Product Cost

Category: **Cotton Bottom Weights/ Performance Apparel**  
Sector: **Retail**  
Location: **Other (Wisconsin)**  
Respondent Title: **Sourcing Director – Swim & Sweaters**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Executive’s Comments</th>
</tr>
</thead>
</table>
| Outsourcing                          | • Yes; Cost, quality, reliability are all essential in terms of sourcing decision: you can’t have one of these without the others  
  • The calendar is constructed around lead-time- factored into decision making in order to ensure IMU requirements are meet  
  • Don’t use full-package sourcing; prefer to control sourcing of fabric and trims- reflect quality which is significant part of brand positioning |
| Location’s affect on sourcing        | • No                                                                                                                                                                                                                  |
| Most significant contributor to product cost | • Fabric Costs                                                                                                                                                                                                          |
Appendix H10: Company J Interview Results – Sourcing & Product Cost

Category: **Cotton Bottom Weights**
Sector: **Fiber/Yarn**
Location: **Southeast**
Respondent Title: **Vice President of Logistics**

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<td>• Buy cotton fiber on the NY cotton exchange</td>
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<td>Most significant contributor to product cost</td>
<td>• Raw material</td>
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Appendix H11: Company K Interview Results – Sourcing & Product Cost

Category: **Cotton Bottom Weights**  
Sector: **Textile**  
Location: **Southeast**  
Respondent Title: **Director of Product Development, Two Senior Merchandise Manager**

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<td>Outsourcing</td>
<td>• Yes, outsourcing is based on where the customer is</td>
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<tr>
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<td>• Customer service driven</td>
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<tr>
<td>Location’s affect on sourcing</td>
<td>• Outsourcing is customer driven</td>
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<td>• Outsource sometimes to serve customers that are cutting in Asia</td>
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<tr>
<td>Most significant contributor to product cost</td>
<td>• Raw Materials; labor has been automated out of the equation</td>
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Appendix H12: Company L Interview Results – Sourcing & Product Cost

Category: **Cotton Bottom Weights**  
Sector: **Textile**  
Location: **Southeast**  
Respondent Title: **Vice President of Manufacturing, Owner**

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<th>Topic</th>
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</tr>
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| Outsourcing                                | • Yes, price, quality, & reliability are all looked at equally.  
  • Spinning & finishing are outsourced  
  • Align supply chain for customer – manufacturing involved directly with customer (retailer) to eliminate layer |
| Location’s affect on sourcing              | • No                                                                                                                                                 |
| Most significant contributor to product cost | • Raw Materials                                                                                                                                       |
## Appendix H13: Company M Interview Results – Sourcing & Product Cost

**Category:** Cotton Bottom Weights  
**Sector:** Apparel  
**Location:** Southeast  
**Respondent Title:** Merchandise Manager

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<th>Executive’s Comments</th>
</tr>
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</table>
| Outsourcing                                | • We own some factories in Mexico that do cut & sew but we also outsource some cut & sew in Asia; try to balance the placement of our product to minimize risk  
• We outsource some cut & sew in Los Angeles for the more expensive brands in our portfolio (Marc Jacobs); raw materials for this product are made in Greensboro (all aspects of Supply Chain in the US) |
| Location’s affect on sourcing              | • No; use a diversified portfolio of sourcing  
• We use trade agreements to our advantage                                                                                                           |
| Most significant contributor to product cost | • Fabric costs                                                                                                                                     |
Appendix I1: Company A - Supply Chain Map

F - Fiber  Y - Yarn  T - Textile  C - cut & sew  P - Printer/Converter  A - Auxiliaries
Blue – Flow of inputs  Red – Flow of outputs
Appendix I2: Company B – Supply Chain Map

90% of fabric leaves U.S. for off-shore Cut & Sew; Mexico, CAFTA, & Asia

F-Fiber  Y-Yarn  T-Textile  C-cut & sew  P-Printer/Converter  A-Auxiliaries
Blue – Flow of inputs  Red – Flow of outputs
Appendix I3: Company C – Supply Chain Map

Competing in multiple supply chains at different quality/cost levels

Joint Venture with Cut & Sew in Vietnam 100% Vertical Operation – Spring 2008

F-Fiber  Y-Yarn  T- Textile  C-cut & sew  P-Printer/Converter  A-Auxiliaries
Blue – Flow of inputs  Red – Flow of outputs
Appendix I4: Company D – Supply Chain Map

Domestic and Far East Yarn used as inputs; ship to cut & sew facilities in the U.S., Mexico & CAFTA Regions

F-Fiber  Y-Yarn  T-Textile  C-cut & sew  P-Printer/Converter  A-Auxiliaries
Blue – Flow of inputs  Red – Flow of outputs
Appendix I5: Company E – Supply Chain Map

**Legend:**
- **F**-Fiber
- **Y**-Yarn
- **T**-Textile
- **C**-cut & sew, Shoe manufacturing
- **P**-Printer/Converter
- **A**-Auxiliaries
- **H**-Headquarters

**Flow Colors:**
- Blue – Flow of inputs
- Red – Flow of outputs
Appendix I6: Company F – Supply Chain Map

Vertical operation (Knit, dye, cut & sew, retail)

F-Fiber  Y-Yarn  T-Textile  C-cut & sew  P-Printer/Converter  A-Auxiliaries  H-Headquarters
Blue – Flow of inputs  Red – Flow of outputs
Appendix I7: Company G – Supply Chain Map

Regional sourcing offices handle logistics of garment manufacturing in each region.

CAFTA: high volume, low complexity supply chain

East Asia: low volume, complex make supply chain

F-Fiber  Y-Yarn  T- Textile  C-cut & sew  P-Printer/Converter  A-Auxiliaries
S-Sourcing Office  D-Distribution Center  Blue – Flow of inputs  Red – Flow of outputs
Appendix I8: Company H – Supply Chain Map

U.S. Textiles used in differentiated product; Asian Textiles used for commodity product

Blue – flow of U.S. textiles

Red – flow of Asian textiles

F-Fiber  Y-Yarn  T- Textile  C-cut & sew  P-Printer/Converter  A-Auxiliaries
Appendix I9: Company I – Supply Chain Map

Los Angeles Supply Chain
3 days transit (Truck)

Sri Lankan Supply Chain
52 days transit (Boat)

F-Fiber  Y-Yarn  T- Textile  C-cut & sew  P-Printer/Converter  A-Auxiliaries
Short-staple spinner that uses U.S. Cotton with spinning facilities in the Southeast, Mexico, Colombia & Honduras
Appendix I11: Company K – Supply Chain Map

High-end jeanswear market

Low/mid-tier jeanswear market

Servicing multiple supply chains

F - Fiber  Y - Yarn  T - Textile  C - cut & sew  P - Printer/Converter  A - Auxiliaries
Blue – Flow of inputs  Red – Flow of outputs
Appendix I12: Company L – Supply Chain Map

Appendix I13: Company M – Supply Chain Map

High-end jeanswear market

Low/mid-tier jeanswear market

Blended Sourcing Strategy

F-Fiber  Y-Yarn  T-Textile  C-cut & sew  P-Printer/Converter  A-Auxiliaries
D-Distribution Center  Blue – Flow of inputs  Red – Flow of outputs
APPENDIX J: FINANCIAL RATIO ANALYSIS – COTTON BOTTOM WEIGHTS
## Appendix J1- Financial Ratio Analysis –Cotton Bottom Weights, Financial Data

| Product Category | Industry Subsector | Country | Firm       | Sales          | Total Assets     | Net Fixed Assets | Net Income     | Owners Equity | EBIT           | # of Employees |
|------------------|-------------------|---------|------------|----------------|------------------|-----------------|---------------|---------------|---------------|---------------|---------------|
| Cotton Bottom    | Fiber/Yarn        | India   | Forbes Gokak Ltd | 4,910,785,739 | 5,766,429,116   | 1,733,326,993   | 249,456,154   | 2,029,849,923 | 4,808,433,102 | not available |
|                  |                   |         | Lakshmi     | 1,721,525,000 | 2,029,849,923   | 1,721,309,000   | 1,721,309,000 | 125,33         |               |               |
|                  |                   |         | Patspin     | 1,010,930,000 |                  | 1,004,140,000   |              |               |               |               |
|                  |                   |         | Rajastan    | 5,231,500,000 |                  | 2,371,700,000   | 87,400,000     | 2,641,900,000 |               |               |
|                  |                   |         | Suryalaksh  | 3,462,320,822 |                  | 1,084,455,817   | 183,635,853    | 685,749,052   |               |               |
|                  |                   |         | China       | 2,233,104,000 |                  | 2,986,012,000   | 314,531,000    | 314,531,000   |               |               |
|                  |                   |         | Shanghai    | 3,428,222,618 |                  | 1,253,195,861   | -368,626,289   | 294,833,771   |               |               |
|                  |                   |         | Zhejiang    | 6,067,559,895 |                  | 2,458,676,136   | 89,659,000     | 583,553,000   |               |               |
|                  |                   |         | Xike Color  | 459,780,011   |                  | 561,226,704     | 25,168,309     | 75,307,332    |               |               |
|                  | Textile           |         | Raymond     | 19,722,500,000 | 34,572,400,000  | 18,688,500,000  | 1,102,700,000  | 1,998,071,000 |               |               |
|                  |                   |         | Arvind      | 18,072,583,000 | 27,190,130,000  | 11,195,573,000  | 1,429,441,000  | 1,429,441,000 |               |               |
|                  | Apparel           |         | Binny Ltd   | 311,840,000    | 4,519,961,000   | 495,359,000     | 286,613,000    | 648,500,000   |               |               |
|                  |                   |         | China       | 2,326,124,917 | 3,390,247,993   | 1,392,794,538   | 38,554,468     | 1,518,498,546 |               |               |
|                  |                   |         | Anhui Fujia | 424,646,099    | 972,966,526     | 271,151,512     | 5,875,451      | 277,421,934   |               |               |
|                  |                   |         | Weiqiao     | 13,584,369,000 | 24,874,461,000  | 14,495,891,000  | 1,242,473,000  | 9,827,008,000 |               |               |
|                  |                   |         | Zhonghe     | 309,420,100    | 500,913,702     | 107,085,853     | 41,614,173     | 207,048,543   |               |               |
|                  |                   |         | U.S.        | 220,114,000    | 312,828,702     | 118,354,000     | 5,343,000      | 80,669,000    |               |               |
|                  |                   |         | Della       | 157,863,000    | 117,567,000     | 40,861,000      | -27,417,000    | 35,989,000    |               |               |
|                  |                   |         | Raymond     | 19,722,500,000 | 34,572,400,000  | 18,688,500,000  | 1,102,700,000  | 1,998,071,000 |               |               |
|                  |                   |         | Arvind      | 18,072,583,000 | 27,190,130,000  | 11,195,573,000  | 1,429,441,000  | 1,429,441,000 |               |               |
|                  |                   |         | China       | 3,462,320,822 | 1,084,455,817   | 73,749,471      | 183,635,853    | 685,749,052   |               |               |
|                  |                   |         | Guangdong   | 459,049,000    | 1,241,081,000   | 502,564,000     | 8,193,000      | 504,678,000   |               |               |
|                  |                   |         | Lai Sun     | 441,725,000    | 3,486,319,000   | 31,708,000      | 4,400,000      | 73,089,000    |               |               |
|                  |                   |         | Innovo      | 108,590,000    | 27,596,000      | 487,000         | -16,433,000    | 11,557,000    |               |               |
|                  |                   |         | Quicksilver | 2,362,288,000 | 2,447,228,000   | 282,334,000     | 93,016,000     | 881,127,000   |               |               |
|                  |                   |         | Kellwood    | 2,565,144,000 | 1,513,646,000   | 79,707,000      | -38,413,000    | 609,367,000   |               |               |
|                  |                   |         | Jones       | 5,074,200,000 | 5,777,800,000   | 312,100,000     | 274,300,000    | 2,896,490,000 |               |               |
|                  |                   |         | VF          | 6,502,377,000 | 5,171,071,000   | 506,055,000     | 506,055,000    | 2,831,539,000 |               |               |
|                  |                   |         | Ashworth    | 209,600,000    | 164,043,000     | 39,126,000      | 951,000        | 504,678,000   |               |               |
|                  |                   |         | HarTmarkt   | 600,285,000    | 494,645,000     | 37,250,000      | 23,555,000     | 245,846,000   |               |               |
### Appendix J1- Financial Ratio Analysis –Cotton Bottom Weights, Financial Ratios

<table>
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<tr>
<th>Product Category</th>
<th>Industry Subsector</th>
<th>Country</th>
<th>Firm</th>
<th>Return on Total Assets</th>
<th>Return on Sales</th>
<th>Return on Equity</th>
<th>Asset Turnover</th>
<th>Fixed Asset Turnover</th>
<th>Basic Earning Power</th>
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