

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

LABELING REGULATION ANALYSIS

FOR ECO-FASHION PRODUCT

A Thesis submitted in fulfillment of the requirements

For the degree of Master of Science in

Family and Consumer Sciences

By

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DEDICATION

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ABSTRACT

LABELING REGULATION ANALYSIS FOR ECO-FASHION PRODUCT

By

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Master of Science in Family and Consumer Sciences,

This study explored the current apparel and textile industry's labeling practices within the United States. The purpose of this research study was to develop a barcode labeling system in order to assist consumers' pre and post eco-product consumption. The first objective of the study included an investigation of eco-products against conventional products within three apparel companies. Data was collected through a content analysis research method to determine missing information on eco-product labels, including hang tags, back tags, and side tags.

A barcode labeling system was then developed, as the second objective, to encourage informed purchasing decisions and promote sustainable consumption. Findings suggest there is a lack of environmental production information, capable of being incorporated into a user-friendly barcode system. Imperative quantitative criteria absent from current eco-labels were proposed and charted among various stages of the product life cycle.

CHAPTER 1

INTRODUCTION

We want more, enjoy more, revel in excess, and take pleasure in seizing every opportunity possible to own and consume such excess (Turner, 2010). Increasing global environmental concerns is causing the push for sustainable consumption to become more important than ever. At this time, more natural resources are being consumed than our planet can reproduce (Bailey, 2010). Western society is generally responsible, as they are obsessed with products and the obtainment of goods and services. While the United States consists of 5% of the world's population, it is an immense consumer swallowing 30% of the world's resources and creating 30% of the world's waste (Leonard, 2010). Since the U.S. cannot contain all of its consumer waste, it is merely exported elsewhere and further contributing to our planet's depletion.

Bill McKibben states in his novel *Deep Economy*, “growth is no longer making most people wealthier, but instead generating inequality and insecurity. And growth is bumping against physical limits so profound—like climate change and peak oil—that continuing to expand the economy may be impossible” (McKibben, 2008).

Overconsumption is not only costing Americans their happiness, but also depleting our planet Earth.

How did Americans spin out of control with their overconsumption habits?

Planned obsolescence is a business practice that intentionally manufactures products to have a short life cycle (Grout, 2005). This methodology enables corporations to turnover larger inventory faster than ever before. Advertisements serve a singular purpose to mass-produce customers just as factories mass-produce products in a growing economy

(Leonard, 2010). Society is told repeatedly their life needs improvement through certain products. As a result, consumers are left caught up in today's fast-paced society; overwhelmed by shameless propaganda, and fixated on the end result of "price", there by overlooking product content and quality.

Instead of trusting advertisement portrayals of green products and sustainable companies, consumers should be able to base purchasing decisions off reliable sources. It is the right of the consumer to obtain not only product material knowledge, but also the corporate responsibility behind its' production. This is currently not available through product labeling. Precise content and production process information of apparel and textile industry products should influence more sustainable purchasing behaviors.

Statement of the Problem

Labeling serves as a communication tool between a brand and their target market. This will be addressed from a consumer, social, and business-ethical standpoint, which will assist conscious needs, wants, and satisfaction, as well as responsibility. By nature, "eco-products", differing from regular products, need to declare where, what, who, and how all the materials are produced. Including but not limited to, the finishing process, dyeing process, labor process, sourcing process, etc. There have been many previous studies that investigate issues such as general labeling practices (Hustvedt and Bernard, 2010), corporate social responsibility in the apparel and textile industry (Linfei, 2008), environmental analysis of textile lifecycles (Chen and Burns, 2006), textile recycling methods (Hawley, 2006) and new product tracking technology (Thiesse and Fleisch, 2009). However, there is no study proposing the implementation of diversifying labeling for eco-products.

There is currently a lack of product information tools and regulations for eco-products. Consumers should be presented with more production and discarding information in order to alter current consumption behavior.

The purpose of this study is to explore the current apparel and textile industry's ethical practice in the United States, especially labeling regulations. Furthermore, consumer rights will be analyzed in relation to the knowledge of the production process in this industry. An honest portrayal of corporate social responsibility is essential in order to lead consumers in making informed decisions. Through the investigation of current labeling regulations and the proposal of a new labeling system for eco-products, the apparel and textile industry will adhere their business practices in a more sustainable manner. Eco-labeling serves as a communication tool demonstrating a company's commitment to preserving the environment, as well as offering much needed product information. With this positive change, these following two objectives will offset the earth's carbon footprint and encourage a future of sustainable purchasing decisions.

Objective 1: Analysis of current labeling programs and practices that affect the apparel and textile industry today.

Objective 1.1: Investigation of current labeling practice among eco-products in comparison to conventional products within the apparel and textile industry in the United States

Eco-products are having an increasing impact on the apparel and textile industry (Thomas, 2008). They need to be distinguished against conventional products and analyzed for their specific impact on the environment, especially given their current market product claims. Three specific companies within the apparel and textile industry

will be researched in order to first compare the labeling of eco-products against conventional products.

Objective 1.2: Examination of the selected current apparel and textile companies in regards to environmental business practices

After investigating certain products within the apparel and textile industry, labeling practices of these companies will be examined according to actual business ethics. Environmental information marketed on existing eco-product labels, including hang tags, back tags, and side tags, will be extensively researched. These companies will then be cross-examined to distinguish their common differences.

Objective 2: Development of a sustainable eco-product labeling barcode system for consumer rights

Through a barcode system, consumers will have immediate access to a wide range of information to assist them to adopt sustainable pre and post consumption behaviors. Furthermore, the purpose of environmental rights will be portrayed for consumers to understand the need to sustain our future. With this proposed labeling system, consumers will have product-content knowledge for environment, sustainability, and textile recycling purposes.

Limitations

This study was restricted in scope to evaluate information and experiences of major United States textile organizations and corporations regarding labeling issues for eco-products. Also three apparel companies were selected by researchers for convenience and purposive. The selection could create an over generalization to draw conclusions.

Apparel companies without environmental initiatives were researched strictly for

their labeling approach. Organizations that rate products, excluding apparel, based on health, green, and social responsibilities heavily influenced the development of a labeling barcode system.

Terms & Definitions

The terms defined below are presented for clarity in the context of the study:

American society for testing and materials (ASTM): This U.S. based international standards organization develop and publish technical standards throughout a wide range of industries. The *Annual Book of ASTM Standards* is contains 15 different sections; currently with 12,000 standards, the book is updated and published yearly. (ASTM, 2010).

Business ethics: This form of professional trust examines ethical principles and morals that emerge in a business environment. (Bews, 2002).

Consumer rights: Consumers have four basic rights: safety, choice, information, and to be heard, as stated by John F. Kennedy in his 1962 Bill for Consumer Rights speech. In 1985, four additional rights were added to this bill, satisfaction of basic needs, redress, consumer education, and a healthy environment (United Nations, 1993).

Corporate social responsibility: Environmental, human health, and social welfare are all responsibilities required by businesses to maintain conditions under which humans and nature can exist in productive harmony for future generations (EPA, 2011).

Eco-fashion: Fashion that is specifically benign in its impact on the environment (Thomas, 2008). The prefix eco is used throughout society to show consumers that certain products have been designed and/or produced with the environment in mind. This can include any aspects throughout the lifecycle of a product. For example, any of these

factors may be considered: the type of fibers used, economic pattern layout for fabric utilization, construction of garment for ease of disassembly, and corporations' ethical responsibility.

Federal trade commission (FTC): One of the United States' independent government agencies, the FTC exists to protect consumers from unethical business practices by enforcing regulations (FTC, 2011).

Footprint: More commonly known as carbon footprint, this measures an individuals or business impact on the environment. The impact is measured by energy through total amount of green house gas emissions (Fiala, 2008).

Green product: Green product is defined as "products and services that reduce the health and environmental impacts as compared to other products and services used for the same purpose" by the federal government (Zudonyi, 2011).

Greenwash: This terminology is used to mislead consumers regarding the environmental practices of a company or the environmental benefits of a product or service (TerraChoice, 2007). Companies that practice greenwashing, portray themselves as environmentally responsible in order to overstate environmental benefits or misrepresent, diminish, or divert attention from environmental wrongdoing (Kaplan, 2011).

Labeling: This signifies required information sewn onto garments, which includes content labels, care labels, and hang tags. Fiber content labels consist of the brand name, textile material content, business tracking information, and the country of origin (Stone, 2003). Care labels offer written instructions or symbols to provide proper cleaning techniques. Hang tags are crucial for brand image and used as a tool to communicate the right message to target markets (Runway Infotech, 2011).

Quick response (QR) code: Barcodes evolved in the mid 1990's to this two-dimensional form of tracking device (Karimzadeh, 2008). The barcode consists of black modules arranged in a square pattern on a white background that now can be scanned by any smart phone.

Radio frequency identification (RFID): A more recent product tracking and identification tool was created to increase operational efficiency in supply chain management by sharing real-time information and allowing total visibility (Ngai, 2010).

Socially responsible buying/sourcing: A business commitment of continuous transparency actions that extend beyond company structure through sourcing operation decisions for environmental and human rights (Urlaub, 2011).

CHAPTER 2

LITERATURE REVIEW

The concept of sustainability is not a recent by any means; although through generations waves of attention have been directed towards this subject. Eco-fashion predominantly originated as a free-spirited style during the 1960's environmental movements. Past this era, the importance of ethical responsibility vanished from society for decades. During the early 21st century, organic agricultural consumption became an environmental concern and trend, as the idea of climate change and negative effects of pesticides and toxins impeded the outlook of our future. The literature review included recent environmentalism as well as labeling regulations implemented in United States apparel industry today. Researchers that have taken an environmental standpoint to consumption or looked into new technology for apparel merchandise through previous studies also presented.

An explanation of various labeling systems affecting the Apparel and Textile industry was imperative to this research, to understand the need for stricter initiatives for eco-products. This literature review focused on regulations seen predominantly within the apparel and textile industry including government agencies such as the Federal Trade Commission and the American Society for Testing and Materials. Various environmental organizations exist and are working hard to address this issue of organic and eco-friendly apparel labeling. Most of the larger, better known organizations are implementing solutions throughout the world, although few organizations, for example bluesign, Textile Exchange, GreenBlue, and the Outdoor Industry Association have strictly focused on the United States to alter its consumption behavior through the labeling of eco-products.

Environmentalism

Overconsumption along with a number of other detrimental factors: such as global warming, ecological degradation, and resource depletion, has led to a reintroduction of environmental concerns. In response to these current interests, many consumers have been encouraged to think about the effects of their own purchases and how we control the earth, our one planet with limited amount of resources. This changed advertising all together, as eco-friendly terminology was starting to be seen more frequently in the media. Subsequently, businesses started taking their own approach to sway consumers towards their “eco-friendly” or “green” products (Thomas, 2008).

With economical products available at our convenience, for example fast fashion, consumers have become accustomed to frequent disposal of everyday products. In 2009, municipal solid waste generated a total of 243 million tons, as depicted in Figure 1 by the Environmental Protection Agency (US EPA, 2010). This waste is then categorized by material and product type. Ironically, the largest contribution to waste consists of recyclable products. Although the category of rubber, textiles, and leather only accounts for 8.3% of all municipal waste, it still totaled over 20 million tons in 2009 alone.

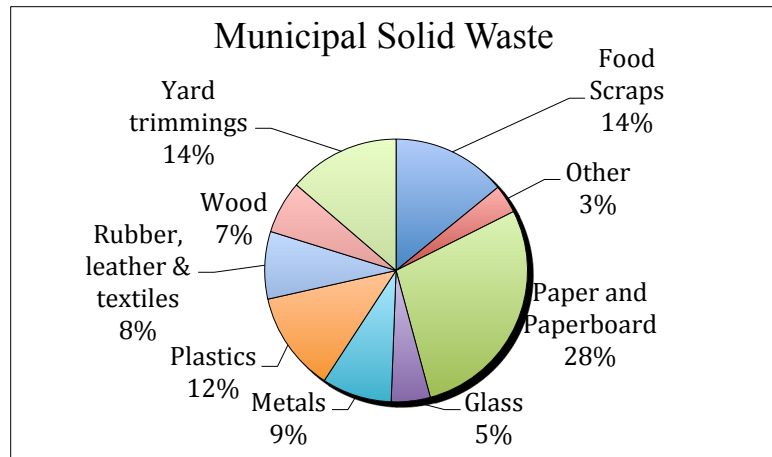


Figure 1: Materials Generation in Municipal Solid Waste in 2010 (U.S. EPA, 2011, pg. 4).

Michael Bloch of Green Living Tips, an online environmental newsletter, addresses how Americans affect our planet's consumption statistics. "The average American buys 53 times as many products as someone in China and one American's consumption of resources is equivalent to that of 35 Indians. Over a lifetime, the typical American will create 13 times as much environmental damage as the average Brazilian" (Bloch, 2009). Perceived obsolescence, as a part of planned obsolescence, deals with desirability of a product; new products are desired whether the product is still functional or not, granting it obsolete (Leonard, 2010). This preconceived idea that consumption of materialistic goods will enable an association with different socio economic statuses will not sustain our future. In reality, it merely contributes to the abundance of trash and landfills daily.

Environmental Footprint of the Apparel and Textile Industry in the United States

Consumers in today's fast paced environment bombarded daily with advertisements can contribute to greed stricken economy. In her novel *The Story of Stuff*, Annie Leonard refers to the big picture as a materials economy. She discusses how to

alter your decisions as a consumer in order to achieve a more sustainable lifestyle through the importance of each product lifecycle step: extraction, production, distribution, consumption, and disposal (Leonard, 2010). When Western Culture changes its obsolescent consumption behaviors, the other steps will naturally fall in line as well.

Textile consumption increased by 430,000 tons in 2008 as disclosed by the U.S. Environmental Protection Agency's latest released data, bringing the total volume of clothing and other textiles consumed annually to 12,730,000 tons, or roughly 83 pounds per man, woman and child living in the U.S. (U.S. EPA, 2011). Textile waste accounts for 12.73 million tons or 5.2% of the total municipal solid waste, as stated in Figure 2 below (U.S. EPA, 2011). Consumption was not always associated with environmental concerns, yet at this rate Western society's attitude on overconsumption is affecting others worldwide. Growing consumer demands forces corporations to meet faster production rates. Consequently the production process of apparel and textiles contributes to accelerated product life cycles.

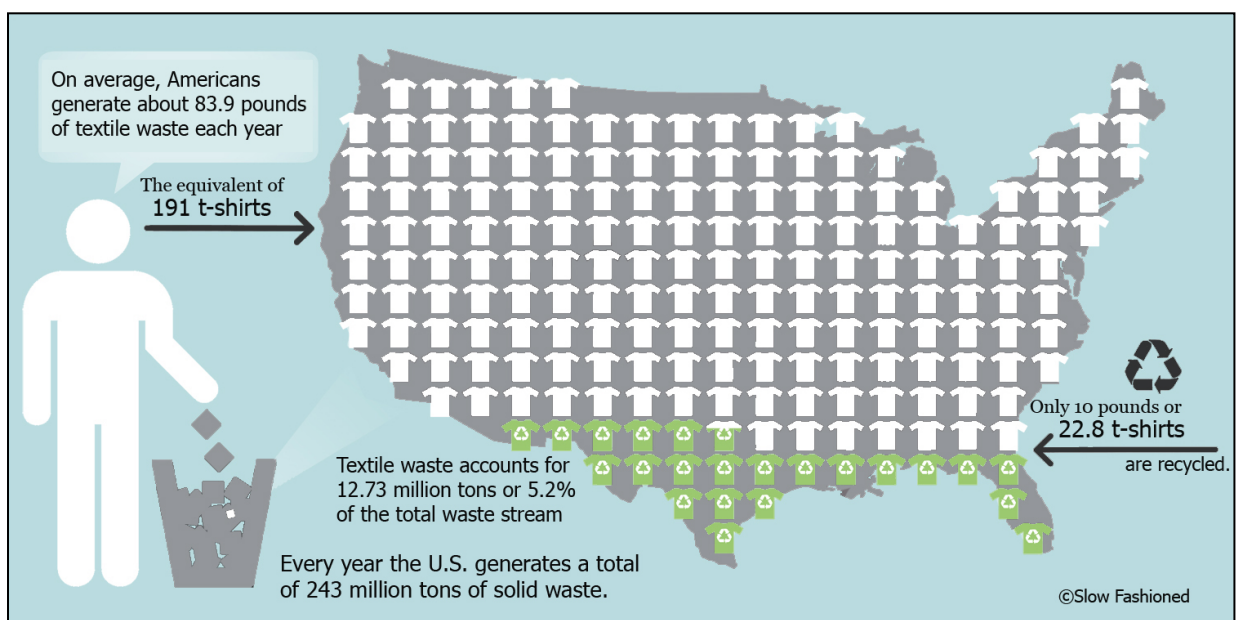


Figure 2: U.S. Textile Waste (Bourland, 2011, para. 3).

From a consumerist perspective, products are discarded for one of two reasons, functional obsolescence, physical malfunction, or fashion obsolescence, cosmetic or feature disinterest (King, 2006). Consumerism may be the dominant social pattern causing sustainability problems worldwide, as the consumption of goods in the U.S. doubled from the 1950s to 1990s (Schor, 2005). Many consumers are caught up in *fast fashion*. These affordable clothing collections allow consumers to easily follow the latest fashion trends for a considerably low cost, as consumers often relate shopping to competition with a value oriented mindset (Arnold & Reynolds, 2003). Unfortunately, corporation planned obsolescence is fueling this habit of overconsumption. Designers of budget fashion brands disregard quality knowing these products are designed for rapid consumption. Americans are left to make the ethical decision whether to fix the depreciated product or replace it at a possibly cheaper cost. It is no surprise that many instantly opt for the easier route or quick fix. This mindset is commonly seen with nutrition and pharmaceutical products, although applicable to household goods and apparel as well. This fast-paced stimulating economy comes at an environmental cost.

Within the disposal state of a garment's life cycle, the consumer is left with the decision to resell, donate, or trash the apparel (Hawley, 2006). Non-profit organizations that handle redistribution of post-consumer waste such as Goodwill Industries and Salvation Army both function to provide jobs and product disposal alternatives throughout the United States. Citizens receive U.S. government tax incentives from donating used products to such organizations. Goodwill diverts more than two billion pounds of clothing and household goods every year from landfills by recovering the value in people's unwanted material goods (Goodwill, 2010). The Council for Textile

Recycling estimates that 2.5 billion pounds of post-consumer textile waste, including anything made of fabric, is thus collected and prevented from entering into the waste system. This represents 10 pounds for every person in the United States, but it is still only about 15% of the clothing that is discarded (Claudio, 2007).

Corporate social responsibility is no longer used as a competitive advantage, but has become crucial for businesses to portray (Linfei, 2008). This includes sustainability efforts within the product life cycle from environmental production to disposal and recycling programs. Matthias Wallander diverts millions of pounds of clothing from landfills through his recycling business *USAgain*, acquired from the phrase, “use it again.” Founded in 1999, this organization collects unwanted textiles and resells them in the U.S. and foreign countries, fueling local economies in emerging countries. With over 10,000 collection bins distributed among 15 states, they collected over 56 million pounds of discarded clothing in 2010 alone (Wallander, 2011).

Hawley (2006) agreed that overconsumption is the notion of fashion itself; therefore researched alternative textile recycling methods. Pre-consumer waste, consisting of by-product materials used to remanufacture back into various industries, is not given much attention in today’s society. Post-consumer methods were examined in this study from a systems perspective by using purposeful sampling to interview textile-sorting companies. Hawley found these companies do not realize the effort required to be successful, although when a unique valuable good comes along, the process is worth it. The sorting process of these garments is time consuming and takes great judgment to evaluate quality. In Figure 3, post-consumer waste was charted through two general life cycles. Most often this waste is sold to rag sorters by charities, eventually being

discarded to landfills. Like many other concepts, if demand increases, so would supply, ending part of this landfill contribution. Consumer education of this process was posed for change (Hawley, 2006).

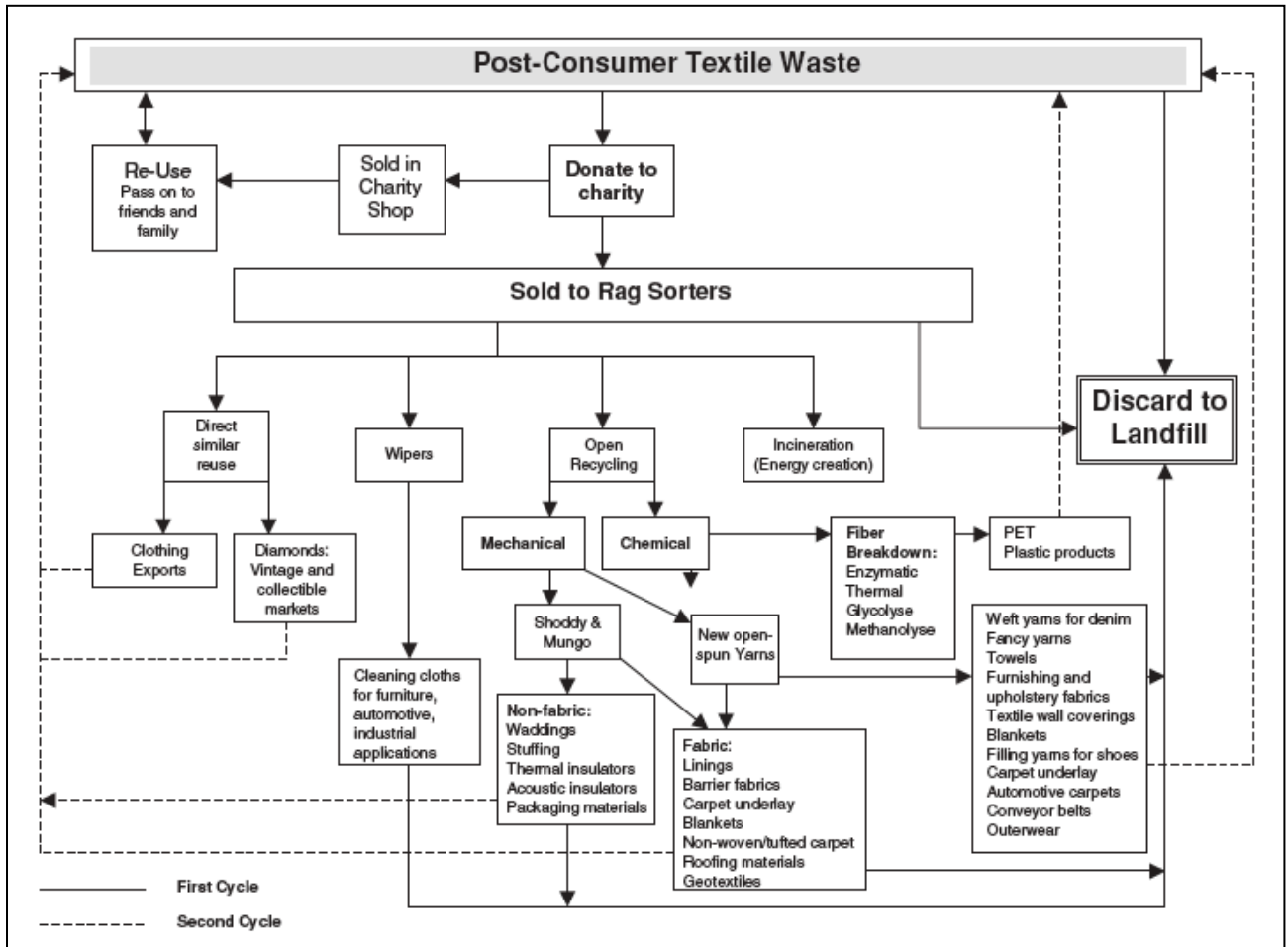


Figure 3 General Life Cycle Schematic for Postconsumer Textiles (Hawley, 2006, pg. 267).

Note. From “Digging for Diamonds” by J.M. Hawley, 2006, Clothing and Textiles Research Journal, 24, pg. 267

Government Regulated Labeling Programs

Labeling regulations have been administered by government agencies since 1914 (Federal Trade Commission, 2011). A textile or apparel label, as defined by the Federal

Trade Commission, is the stamp, tag, label or other means of identification, or authorized substitute, therefore required to be on or affixed to textile fiber products by the Act or Regulations and on which the information required is to appear. This form of branding began in the 19th century when the first label was sewn into garments. Before labels, anonymous seamstresses were hired to create high-end fashion for royalty.

Since then, among the years, the process of labeling has expanded into four main content labeling categories: Woven labels, Leather labels, PVC/Plastic Labels, and Embroidered Labels. Today, this serves a purpose to inform consumers of product attributes. This is also usually associated with marketing, as brand recognition is important for companies in the apparel and textile industry.

Federal Trade Commission (FTC)

The United States' current labeling system has many regulations regarding fiber content, country of origin, manufacturer identification, and label placement. The Federal Trade Commission (FTC) is the main government agency enforcing current labeling and trade regulation rules. This organization was established in 1914 to protect consumers from unethical business practices (FTC, 2011). In 1937 the FTC moved headquarters to the apex of the federal buildings on Pennsylvania Avenue by orders of Franklin D. Roosevelt. There he deemed the Commission to, “stand for all time as a symbol of the purpose of the government to insist on a greater application of the golden rule to conduct the corporation and business enterprises in their relationship to the body politic.” (Roosevelt, 1937). The first apparel and textile related U.S. Supreme Court case in 1941 involved a copyrights issue initiated by the Fashion Originators' Guild of America against the FTC (Justia.org, 2011).

The FTC fosters consumer protection and competition jurisdiction through business regulations. The Textile and Wool, Textile and Fiber Identification, and Care Labeling Acts are among the most well known labeling regulations that the FTC publishes. A recent publication by the American Apparel & Footwear Association and Federal Trade Commission, *Threading your Way Through the Labeling Requirements Under the Textile and Wool Acts* was established as a guide to help companies easily understand and comply with these rules. The FTC uses these regulations to enforce ethical business practices.

The Textile Fiber Products Identification Act, Fur Products Act, and the Wool Products Labeling Act of 1939 were all established to enforce labeling requirements on most textile and wool products (FTC/AAFA, 2011). Each content label must include the fiber content, country of origin, and manufacturer's identity or any business responsible for production of the apparel (FTC/AAFA, 2011).

Fiber content. Percentages of the fiber content are required to be stated on apparel and textile labels in descending order. Trim is considered to be an exception to content labeling if it is less than 15% of the total fiber material (FTC/AAFA, 2011). If it encompasses over 15% the garment, the trim must be included on the label as decoration. Ornamentation, similar to embroidery, refers to fiber or yarn used as a visible design to the garment. If it exceeds 5% of the fiber weight, it must be disclosed on the label, listed under other fiber materials. Many consumers do not realize the amount of materials required for one product's completion. Towards the end of *Threading Your Way Through the Labeling Requirements Under the Textile and Wool Acts*, generic and ISO permitted

manufactured fiber names are listed. However, the amount of energy consumption from the production of these materials has yet to be stated.

If the fiber is under five percent of the garment fiber weight, yet has a functional significance, then the information may be presented on the label. Generally, the fibers that comprise of five percent or more of the total fiber weight can be stated. Fibers of less than five percent should be disclosed as “other fibers”, although if there is definite functional significance at a certain fiber amount, that percentage may be stated (FTC/AAFA, 2011). All are acceptable as depicted below in Figure 4.

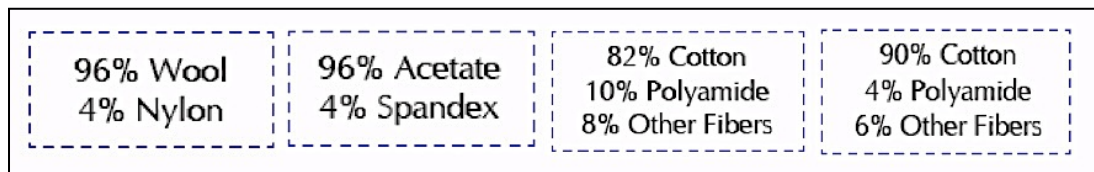


Figure 4: Fiber Percentage Content Label Examples (FTC/AAFA, 2011, pg. 7).

However, labels have limited dimensions. This constricts an in-depth description of all materials, including all fibers, trims, notions, dyes, etc. If trim fibers are advertised as on the garment, they must also be disclosed on the label as ornamentation. All fiber names must be stated as their generic content name (FTC/AAFA, 2011). For example, Pima, an extra long staple, South American, Creole, Sea Island cotton cannot be solely used to represent cotton on a label. All swatches used to promote the sale of fabrics must be labeled. If they are not used for retail purposes, are less than two square inches, and have attached catalog information, a label is not necessary. A three percent tolerance rule applies to all products in case the total fiber weight needs to be slightly adjusted (FTC/AAFA, 2011). Products cannot knowingly be misrepresented; for example if a shirt contains 97% cotton and 3% spandex, the label may not read 100% cotton.

Country of origin. Under the Textile and Wool Acts, the country of origin, where products were processed or manufactured, must be stated on the front of every label. This can be very complicated as the production process is now so universal. Requirements vary depending on whether goods pass through FTC or the U.S. Customs and Border Protection. The FTC expects a product is not labeled with the country of origin until it is in the final production state.

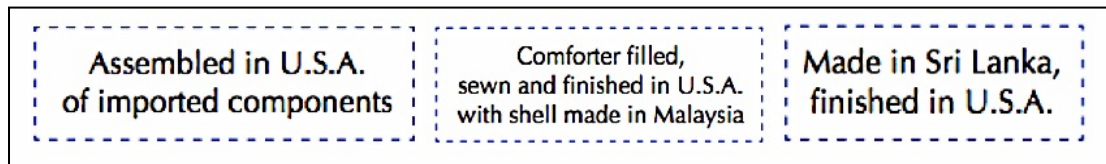


Figure 5: Country of Origin Content Label Examples (FTC/AAFA, 2011, pg. 21).

However, this causes some manufacturers to misconstrue country of origin information by transporting goods to a different country for completion before importing it elsewhere for retail distribution. The Textile and Wool Acts state if any materials were imported for production to be finished in the United States, the label cannot state it was made in the U.S.A, unless it also includes where it was made, as seen in Figure 5 above. This is difficult to completely track and identify at times. If manufacturers specified the source of all production materials, the distinction between where the good was produced would be clear.

Manufacturer identification. Any of the following four name options are possible when representing imported goods: the foreign manufacturer, the importer, the wholesaler, or the ultimate retailer (FTC/AAFA, 2011). The manufacturer's identity can also be represented on labels as a registered identification number, RN. Manufacturers are not required to have an RN to do business, however is common because of its' few advantages. Buyers can easily search RN's online. A RN may require less room on a

label than a name. A RN also helps with record keeping and tracking their business production. Businesses may easily apply for an RN or update RN information online at ftc.gov.



Figure 6: Content Label Example (FTC/AAFA, 2011, pg. 27).

Label placement. Specific placement and attachment of each content labels and care labels depend on FTC regulations. Both labels must be securely, although not permanently attached before garment obtainment by consumers. Generally, content or brand labels are found near the inside center of the neck. Care labels are attached to an inside side seam. This is not always the case, therefore information on garments without a neck must appear on a noticeable and readily accessible label(s) on the inside or outside of the product (FTC/AAFA, 2011). The three requirements of content labels may appear on the same label or all different labels. Fiber content listed on the same label as care instructions is most commonly seen with apparel.

Exceptions. Certain rules apply to labels when marketing of product information is also involved. Advertisement information must match the content label in descending order of fiber weight, listed as percentages (FTC/AAFA, 2011). A product's country of origin is equally important, even if parts of the product are outsourced or not. For example, catalogs will advertise products as being made in the U.S.A; therefore the garment label must also match this information.

Rules vary depending on the textile, although wool and fur are two major exceptions to these acts and as such, require certain attention. Fur fibers describe the mix

of hair fibers present; although on the label the percentages of each fur must be present and in descending order. Fur labels take their own size requirement, a minimum of 1 by 2 ¾ inches with font no smaller than size 12 (FTC/AAFA, 2011). All required information on the label could appear in any order. The only exception to this list is with fiber content, which is stated in descending order of fiber weight. For example, if the fur is organically produced, that information must be stated directly below the fur fiber content. The animal name, other furs contained with this garment, the fur's country of origin, and the RN number or manufacturer name also must be included on this content label.

American Society for Testing and Materials (ASTM)

This member based non-profit organization uses over 12,000 international consensus standards to improve product quality, enhance safety, facilitate market access and trade, and build consumer confidence (ASTM, 2011). ASTM publishes an Annual Book of ASTM Standards covering 15 sections, including steel, metal, paint, textiles, plastic, rubber, water, energy, and medical related products (ASTM, 2011). From Fortune 500 leaders to local small businesses, ASTM levels the playing field for all companies to compete on a global scale.

ASTM Standard D5489-96c, Standard Guide for Care Symbols for Care Instructions on Textile Products, states symbols developed for apparel and textiles in the United States; Europe uses a different (ISO) International Standards Organization standard (ASTM, 2011).








































 Washing	 Hand Wash  Machine Wash Normal Cycle  Machine Wash Durable Press Cycle  Machine Wash Delicate/Gentle Cycle  Do Not Wash (Used Only With Do Not Dry)  Do Not Wring (Placed After The Instructions)
 Bleaching	 Any Bleach When Needed  Only Non-Chlorine Bleach When Needed  Do Not Bleach
 Drying	Tumble Drying  Tumble Dry Normal Cycle  Tumble Dry Durable Press Cycle  Tumble Dry Gentle/Delicate Cycle  Do Not Tumble Dry (Warning Placed After The Instructions) Tumble Dry Temperature * =  Hot  Medium  Low  No Heat Natural Drying  Line Dry  Drip Dry  Dry Flat  In The Shade (Added to Line Dry, Drip Dry, or Dry Flat)  Do Not Dry (Used Only With Do Not Wash)
 Ironing	 Steam  No Steam Iron Temperature * =  Hot Iron (200 C) (390 F)  Warm Iron (150 C) (300 F)  Cool Iron (110 C) (230 F)  Do Not Iron
 Drycleaning	 Normal Cycle  Short Cycle  Low Moisture  Reduce Heat  No Steam Finishing Solvent * = A = Any Solvent P = Any Solvent Except Trichloroethylene F = Petroleum Solvent only L = Leather Dryclean  Do Not Dryclean

Figure 7. ASTM Guide to Care Symbols for Care Instructions on Textile Products

(ASTM, 2011, para. 19).

Note. From “Annual book of ASTM standards” by American Society for Testing and Materials, 2010, ASTM Volume 07.01 Textiles (I): D5489 - 07

Among the five elements of laundering, wash, bleach, dry, iron, and dry-clean; each symbol represents a different care technique, as depicted in Figure 7. The label must state if the garment is to be washed by hand or machine, as well as suggest a water

temperature. Certain bleaches, depending if chlorine based or not, can harm a product, therefore must be stated. The drying method must be included on the label; machine or hang dry, as well as if a high temperature machine setting will damage the product. If a product requires ironing on a regular basis, the symbol on the care label must suggest the correct temperature. Dry-cleaning symbols generally depend on the type of solvent used. A simple dry-cleaning method can be used only if no modifications need to be made (FTC/AAFA, 2011).

Labels today may state “care instructions” with symbols like those in Table 7; although written instructions are acceptable as well. If symbols are used on care labels, an explanation of the symbols should be included. Figure 8 shows examples of three different care labels; they include either written care instructions only, symbol depictions only, or both.



COUNTRY OF ORIGIN	MADE IN U.S.A	MADE IN CHINA	MADE IN THE U.S.A
FIBER CONTENT	SHELL: 100% NYLON LINING: 100% NYLON FILL: 100% POLYESTER	SHELL: 100% COTTON LINING: 100% POLYESTER	50% POLYESTER 50% COTTON
CARE INSTRUCTIONS	MACHINE COLD WASH DO NOT BLEACH TUMBLE DRY LOW HEAT DO NOT IRON		Exclusive of Trim Machine Wash Cold with Like Colors Do Not Bleach Tumble Dry Low Remove Promptly Do Not Dry Clean
GARMENT SIZE			X-LARGE

Figure 8: Care Label Examples (FTC/AAFA, 2011, pg. 27).

An investigation on care labels was administered to evaluate consumers’ perception of their purchase. The specific three ways to state care labels, symbols, text

only, or a combination of both, were analyzed in relation to consumers' apparel purchases. The presentation of these care instruction labels greatly influenced the consumers' confidence of the garment through a multivariate analysis of covariance (MANCOVA) (Yan, 2008). Yan (2008) found consumers to be comfortable with the text only and combination of text and symbol care labels, although preferred the text-only format when given a choice. Consumers with a higher cognition concern also felt more assured with text only care label information.

Private Sector Labeling Programs

Well-known organizations have started to implement solutions to product labeling worldwide, although Europe excelling with programs such as the European Unions Eco-Label, Ethical Fashion Forum, EcoTextile News, ISO certifications, and Oeko-Tex Standards. As these successful organizations predominantly function in European countries, a labeling approach more strict within the United States was focused on through the following organization's efforts.

Bluesign®

Independent certification organizations such as the bluesign® evaluate textiles based on standards throughout the production process. While focusing on legal aspects of production to reduce toxic substances at an early state, they also value human rights through environmental safety and health. Textile manufacturers are tested under the five principles of bluesign®; resource productivity, consumer safety, air emission, water emission, and occupational health and safety (bluesign, 2010).

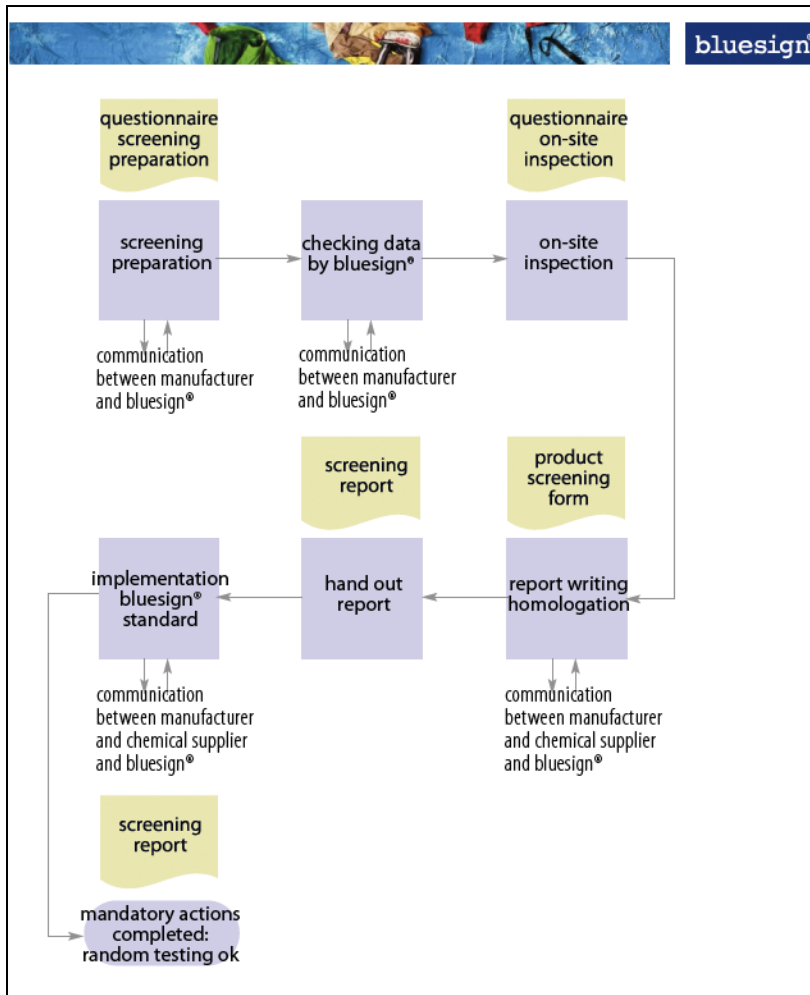


Figure 9 bluesign® work flow (bluesign, 2011, pg. 11).

The process in Figure 9 outlines how bluesign® evaluates textile manufacturers. Once the manufacturer collects data for bluesign®, an inspection occurs to evaluate Environment, Health and Safety (EHS) management procedures, as well as input and output streams. Homologation takes place through identifying ecological and toxicological risks while banning usage of certain substances. A screening report is then created with a clear evaluation of textile auxiliaries, dyestuffs, and chemicals environmental impact (bluesign, 2011). Helly Hansen, Mountain Equipment Co-op, Patagonia, Inc. Inc., the North Face Inc., and VAUDE Sport GmbH & Co. KG are all

members of bluesign® in order to keep textile production at the lowest environmental impact possible.

Greenblue

GreenBlue is a U.S. based non-profit organization focusing on design of sustainable products while creating environmental business leaders through scientific resources. Founded in 2002, it was one of the only non-profits working with the private sector towards the most critical sustainability issues (Annepu, 2011). Publications are posted on their website to inform companies of statistics and new developments as well as recommend guidelines for different packaging materials. One of their recent publications, *Sustainable Packaging Indicators and Metrics Framework*, provide businesses with a clear measurement system to progress towards sustainable packaging (O’Dea, 2009). Although engrossed in sustainable production mainly through chemicals, packaging, and forest products, they are expanding to as many industries as possible. Jason Pearson, the president and CEO of GreenBlue, pictures an ideal world in a *Journal of Corporate Citizenship* essay.

“The textile company would improve environmental and labor practices. And I remain committed to ongoing innovation and optimization as part of our collective ambition. But we do not live in an ideal world. The magic of innovation and creativity can only take us so far. We cannot optimize everything. Prioritization is still required. We still have to decide what is most important. What to do first. What is the right thing to do” (Pearson, 2011).

GreenBlue recently created an industry working group of companies called *The Sustainable Packaging Coalition*® to communicate a more environmental approach to packaging. Memberships range from large global corporations to small businesses, although some well-known companies on board include Coca-Cola Company, Costco, Dell, DuPont, FedEx, Johnson & Johnson, Microsoft, Nike, and Target (O’Dea, 2009).

Textile Exchange

Another nonprofit, membership-based organization is Textile Exchange, they specify in tracking and promoting sustainable practices throughout the product life cycle. They focus mainly on organic cotton production and provide various publications and resources to their members and the general public. Since 2003, their goal has been to expand sustainable production through farmers, other raw material providers, brands, retailers, or consumers. In 2010, Textile Exchange provided support to 247 apparel and textile member companies practicing sustainability, with North America representing 37% of those members (Textile Exchange, 2011). They use textile conferences, worldwide seminars, tradeshow, online resource tools, and other networking events for members to collaborate and gain insight on supply chain opportunities.

More than 8,000 chemicals contribute to form raw materials into textiles and 25% of the world's pesticides are used to grow non-organic cotton (Earth Pledge, 2011). This causes irreversible damage to people and the environment, and yet two thirds of a garment's carbon footprint occurs after acquisition. Textile Exchange understands the importance of organic cotton production; therefore highly values farm engagement. This helps organic cotton producers expand their business through the Textile Exchange vast network of brands, retailers, and manufacturers seeking organic cotton (TextileExchange,

2011). Figure 10 shows the influential increase in organic cotton production. Textile Exchange grew the organic cotton market from \$240 million in 2001 to \$4 billion in 2009 (GRS, 2011). They strive for textile production that is ‘organic by design’ not ‘by default’ (TextileExchange, 2011).



Figure 10: Organic Cotton Farm and Fiber Report 2010 Highlights (Textile Exchange, 2011, pg. 13).

Figure 10 demonstrates the importance of organic production among the apparel and textile industry. 241,697 amounts of tons show an increase from 209,950 tons produced in 2009, yielding a fifteen percent production increase. One percent of total cotton

production may not sound like a significant amount, although every year those percentages increase.

Sustainable Apparel Coalition

In March of 2011, the Sustainable Apparel Coalition was established to reduce the apparel and footwear industry’s carbon footprint through an industry-wide index (“Apparel Industry”, 2011). As of June 2011, about thirty-five leading organizations make up their founding member circle. The Coalition addresses these major environmental and social categories as challenges within the apparel and textile industry; water usage and quality, land usage, energy and greenhouse gases, waste, chemical and toxicity, air emissions, and social and labor rights (Cooper, 2011).

The majority of the index information is based off two main environmental impact assessment tools: the Outdoor Industry Association Eco Index and the Nike Environmental Design Tool.

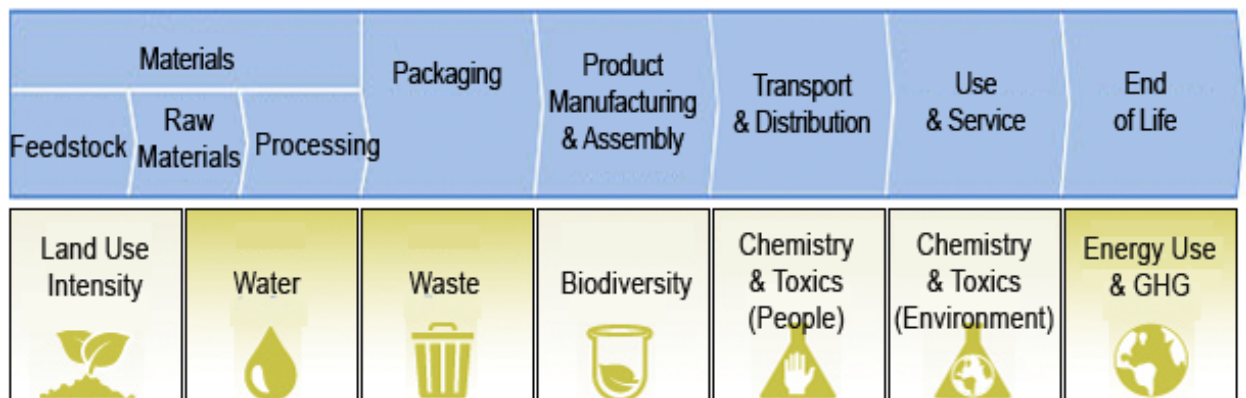


Figure 11: The Outdoor Industry Association Eco Index, Eco Framework 3.0 (“Eco Framework”, 2010, para. 2).

Although developed for outdoor apparel markets, Figure 11 can be used to assess any product life cycle. This index measures environmental impacts along a corporation’s

supply chain. The Coalition amended Figure 11 to develop a new index. The product life cycle structure remained, although they segmented the index to measure three core modules. Through quantitative data, the ultimate goal is to produce a comprehensive product footprint score through the lifecycle stages listed in Figure 12. Companies have the choice to evaluate environmental or social indicators based on three modules. This is viewed at a brand or company level, from a product level impact, or materials that contribute to the facility level of production (Cooper, 2011).

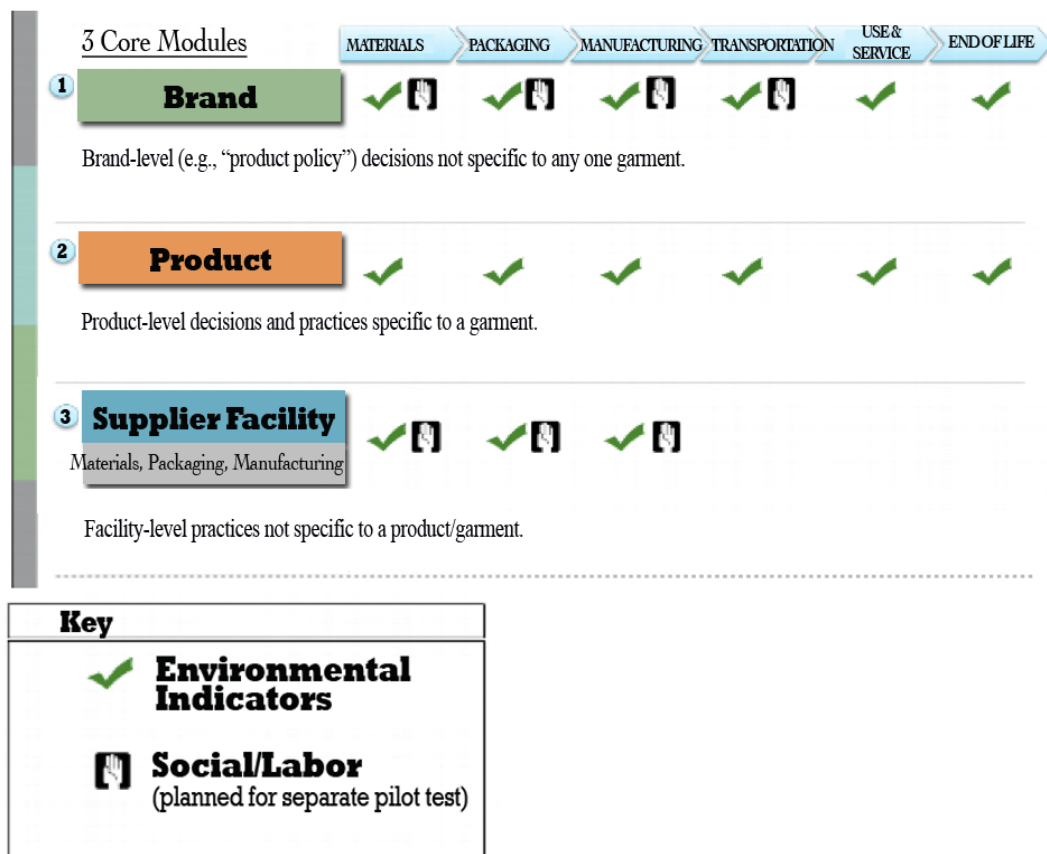


Figure 12: Version 1.0 Sustainable Apparel Index Prototype (“Apparel Industry”, 2011, para. 2).

Metrics and methodologies are calculated among important factors along the supply chain; energy or greenhouse gas, water use, and waste. This, along with data

collection sets, provides actual supply-chain specific environmental impact data. The Sustainable Apparel Coalition is working towards a single, open, industry-wide standard of measurement, although has no current effort to inform consumers of this through labeling of eco-products.

Federal government and independent agencies have been dealing with labeling regulations for the past 75 years. The following information will further explain the importance of how corporate social responsibility is shown through their promotion of various eco-products.

Business Ethics in Apparel and Textile Industry

While the present Western Culture is substantially unaware of their personal decisions and it's environmental impact, corporations as well as educated consumers need to make ethical decisions. To counteract inessential consumption, many environmentalists have been promoting the idea of sustainability in an effort to collaboratively reduce the impact on our planet. For businesses, the concept of "the right thing", also known as Corporate Social Responsibility, has existed for years, but can be easily used to create a business advantage.

Corporate Social Responsibility

Corporate Social Responsibility aids in regulating the impact a business has on its employees, the community, and the environment. Although many large corporations believe such Corporate Social Responsibility detracts from a businesses' economic role, companies that manage solely from a financial perspective may suffer in the long run. This happens, however while corporations are out to cut costs, so is most of the population. It is a corporation's ethical responsibility to portray the correct information

to consumers regarding their products origin and production process. Cotton Incorporated's 2009 Consumer Environment Study showed even with acknowledged consumer environmental concern and awareness of environmentally friendly fashion, purchasing decisions are still based most predominantly off of price, style, fit, and color (Cotton Inc., 2010). However, as sustainability initiatives increased, more green terminology is being seen in advertisements. Without a choice, individuals were faced to think about our one planet with limited resources.

A problem still exists with the company's own definition of corporate social responsibility. Since no single standardized term or form of regulation defines an ethical corporation, businesses are free to portray products as green as they see fit (Thomas, 2008). In a study by TerraChoice, an environmental consulting agency, the rate of green advertising was found to have tripled between 2006 and 2008 (Kaplan, 2011). In efforts to prevent greenwashing, TerraChoice compiled a list: the Seven Sins of Greenwashing to inform consumers how to recognize mislabeled environmental products (TerraChoice, 2007). Without agencies like these, consumers are at the mercy of profit unethical businesses.

Since these textile regulations have been established, the FTC has observed the use of business marketing tactics, instead of labeling information, to sway purchasing decisions. In the 1990's the FTC established a guideline for marketers when presenting environmental claims to consumers. The "Guide for the Use of Environmental Marketing Claims" started out with vague statements suggesting businesses state factual initiatives. The guide was revised in 1996 and 1998 to help keep businesses product claims consistent with consumer expectations. Most recently in 2010, a proposed revision was published

with the help of many public comments regarding the green guides. The revision advises marketers not to use vague claims such as “environmentally friendly” and “degradable” or unqualified product certifications (FTC, 2010). Even though positive efforts are being directed towards environmental claims, the enforcement of these revised regulations remains ambiguous.

A corporate social responsibility study on the Chinese apparel industry explored companies’ pressure to upgrade both socially and economically (Linfei, 2008). Fast fashion, with brands including Zara and H&M, popularity brought an increase in competition to outsource production. After a few years, this eventually led to an annual increase of wages for Chinese labor of 9.2% from 2004 to 2008 (Linfei, 2008). The researchers in this study came to the conclusion that the concept of corporate social responsibility is transferring from an obligation to a strategy; social and economic improvements are possible concurrently.

As the amount of greenwashing has increased business competition, a study in 2009 investigated how environmental labeling regulations affect this market competition. Hayes (2009) found that these regulations give large firms advantage over small ones, discourages entry of new firms, and allows for competitive behavior. More specifically, based on previous research, Hayes (2009) agreed that providing information and product differentiation was key to competition while still complying with eco-labeling regulations.

Consumer Rights

Consumers have the right to the truth behind production processes prior to any obtainment of good or service. The following factors were taken from John F. Kennedy’s

Bill of Consumer Rights speech and will be discussed in relation to the apparel and textile industry.

Consumers should feel satisfied with every eco-fashion purchase. Within the food industry, there is enough evidence to know now that synthetic chemicals are destroying our health and our ability to reproduce and, thus, our ability to survive as a species (Rodale, 2010). With such health issues in today's society, educated and informed consumers are starting to take greater concern for their health. This also pertains to apparel with the amount of synthetic chemicals involved in the apparel production process.

Through labeling, consumers can use product information to choose ethically or unethically when making apparel decisions for pre purchase as well as post purchase behavior. While there is no clear definition as to what constitutes a sustainable product, companies market products as "environmentally friendly" without any enforceable regulation. Terms such as "environmental, ecological, green, sustainable, ethical, recycled, organic, and inclusive (universal) fashion and fashion design" are used interchangeably in marketing and often associated with greenwashing (Thomas, 2008). Choices shouldn't be made off green marketing claims, but rather accurate statistics. Everyone has the right to a healthy environment with a sustainable future.

After obtainment of a product, consumers have the right to be heard and should voice a concern if there is any problem with the content or its function. Complaints may be addressed directly to the Better Business Bureau or Attorney General of a certain state, although with Western society's culture, the convenience of purchasing a new product is

valued over the complaint itself (FTC/AATA, 2011). Consumers should have concern if the eco-product was ethically designed and produced to last.

Given the wide accessibility of products throughout the United States, consumers do not practice the right to be informed. Many corporations want to seem transparent through a positive company image, whether they truly are or not. Whereas ethical companies within the apparel and textile industry share and take pride in their environmental activism through socially responsible buying. And while portraying transparency can be difficult without giving away all ethical business trade secrets; without the desire of product knowledge, consumers cannot make confident choices about goods and services. Clear communication between business and consumers is pertinent to customer satisfaction; although for many time hinders this consumer right. In a study on business transparency, four main factors were found to influence purchasing decisions, prior knowledge, participants' hesitancy of past transparency claims, value gained from past purchases, and the power of price and/or quality (Badurdi, 2011).

A deeper understanding of the current environmental crisis has allowed researchers to pinpoint some of the contributing factors, among them patterns of excessive consumption of global resources (Turner, 2010). The concept of sustainable consumption has been promoted as one potential means to change (Leonard, 2010). However, the significance of sustainable consumption is reliant on two important components, the reduction of the amount of goods we use and the availability of sustainable products for consumers to purchase. Recent studies have shown consumers' willingness to pay for apparel based on socially responsible labeling and branding (D' Souza, 2007).

Results of a US study conducted by Bernard and Hustvedt “to determine consumer willingness to pay for apparel products as labor-related information and brand were added” (Hustvedt & Bernard, 2010, p. 492) showed brands can prosper from communicating social responsibility on their products. Recruited college students participated in an auction simulation with stages of various brand, labeling, or credible attributes. Bernard and Hustvedt (2010) found students, especially Hispanic consumers, would pay more for apparel that stated labor related information. When social responsibility was brought into the study, consumers who had a positive attitude towards this issue were willing to pay more for that apparel.

As Western society values convenience, if textile-sourcing information was more accessible, more goods could be redirected towards a greater cause (Turner, 2010). Eco-friendly business labeling strategies that surpass traditional labeling are used to promote eco-products, yet no current standardized labeling regulation for environmentally friendly apparel exists in the United States.

Eco-products derive from past environmental movements. As this barcode system idea incorporates product tracking information, its’ main focus is to encourage more eco-fashion. The Outdoor Industry Association, originating in the 1990’s to expand the U.S. outdoor industry, is now a private trade association working with a wide range of organizations, anywhere from manufacturers, sales representatives and retailers, to suppliers. Figure 2.11, an example of environmental framework, was created to encourage sustainable production. Currently, such organizations exist working to help businesses in reducing environmental impacts of the production process, yet no portrayal of this information to the public through a labeling method.

Although new labeling regulations would work best when more consumers start making ethical decisions, a greater enforcement of product information through government agencies is also possible. Even with strict laws for apparel and textile labeling worldwide and past research contributing greatly to sustainability and the apparel industry, not one focused strictly on a new labeling system for eco-products in the United States. A regulated labeling program for eco-products in the apparel and textiles would only enhance consumer choices and the global environment. It is time for more organizations to take corporate social responsibility by adopting environmentally friendly production process.

Eco-Product Labeling Barcode

In the past decade, the evolution of product labeling has procured. Radio-frequency identification (RFID) tags were created and used as a product tracking and identification tool throughout the distribution process. This technology uses radio waves to transmit data from an integrated circuit to the receiver of the signal. The model, seen in Figure 13 depicts how Wal-Mart incorporates RFID into merchandise. The scanner acts as the receiver of the signal, where the tag acts as the integrated circuit. High-frequency RFID tags are most commonly used in identification badges, although also are seen in the apparel and textile industry within inventory and supply chain management. They can be read from less than three feet away, although transmit data faster than low-frequency tags (RFID, 2011). Once products are sold through a point of sale terminal, the RFID tags are scanned and exit the inventory system. This barcode method only benefits the manufacturer, but does not convey any information to the consumer.

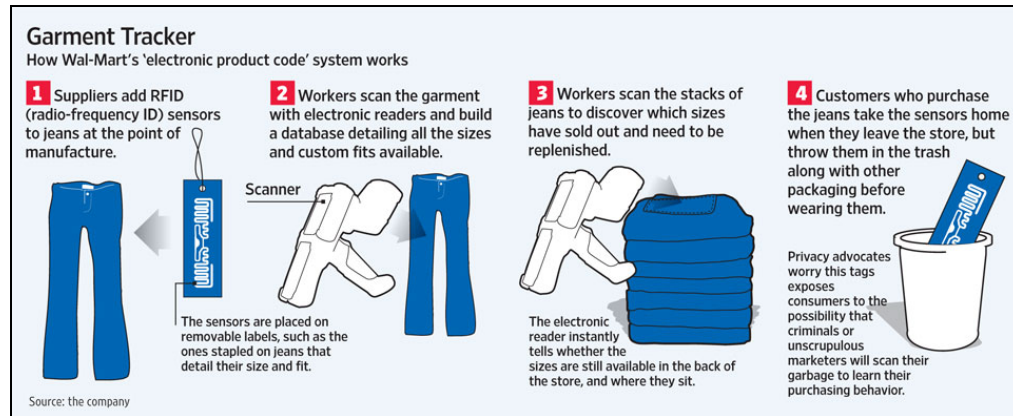


Figure 13: Radio-Frequency Identification System (Bustillo, 2010, para. 9).

A Switzerland based study was administered in 2009 using radio frequency identification, RFID technology in a well-known European department store. RFID was initially used to track point-of-sale purchases to measure the effect of in-store purchases. Also, this study measured businesses processes from an information technology perspective evaluating the gain on investment of RFID and compared it to a similar previous study determining the impact of technological advances (Thiesse and Fleisch, 2009). According to Thiesse and Fleisch (2009) there is an increase of customer satisfaction, higher transaction frequencies, and increased profitability from short-term impact of RFID technology.

Another recent barcode technology system highly incorporated into labels is Quick Response (QR) codes. Similar to a UPC symbol, this label holds and stores information such as web addresses, email addresses, and more (Karimzadeh, 2008). With one in every two Americans owning a smart phone by 2012, the importance of QR codes is on the rise (Entner, 2010). Smart phones are able to scan QR codes on labels to bring up infinite amount of product information. A QR study in June 2011 by comScore, Inc. found 14 million mobile users in the U.S. scanned a QR code on their mobile device,

mostly from magazines, newspapers, and product packaging (Radwanick, 2011). Labels are bound to have lengthy descriptions, especially when an entire production process of a product is included. Companies should want to practice business transparency through being honest, open, and accountable to consumers. QR codes, commonly seen on hang tags, magazines, or on the Internet such as Figure 14 are used as an advertising strategy to draw consumers towards certain purchasing decisions. This is helpful for consumers as QR codes can offer detailed information. Ralph Lauren launched into mobile commerce by introducing QR codes to their magazine in 2008 (Karimzadeh, 2008).



Figure 14: Ralph Lauren use of QR codes, as a marketing tool (Karimzadeh, 2008, para. 4).

This was an intelligent idea at the time for raising awareness of cellular technology capabilities and reaching their better market clientele. Since then, mobile marketing has been further integrated into other popular media campaigns.

Apparel labels, more specifically hang tags, sometimes offer product and company information. This is more apparent on specialty items, to showcase benefits of

the product. With eco-products, environmental information and company ethical initiatives may be represented on hang tags to promote corporate social responsibility. The problem with this marketing method is the offering enough information within the size of the hang tag.

A barcode system proposed in this study offers a means of more product and company information, benefitting unfamiliar customers, whether or not they own a smartphone. Textile and apparel production processes would be fully represented on this barcode system, from pre to post production, along with an encouragement for society to adopt a more sustainable lifestyle. If consumers are not educated with business ethics and detailed product information behind the brands they purchase, they are left with style, fit, and price determining what to buy. A labeling barcode system would provide customers with readily available corporate sourcing and product information, allowing for knowledgeable purchasing decisions. Most commonly, these barcodes would be found on product labels and able to be scanned either with smart phone technology or through devices at retail stores. Advantages to this technology would fulfill consumers right to education of corporate practices, although disadvantages are apparent as well. This technology would not be required for companies to distribute, as cost may be a concern. However, inquiring customers may receive this information online or upon request at any affiliated retailer location. Voluntary participation will optimistically cause inevitable competition leading to a brighter future of informed purchasing decisions.

CHAPTER 3

METHOD

Over the last two decades, concern for environmental issues has become more prevalent. Consumers worldwide are expressing an interest for more sustainable fashion choices and in some cases have modified their buying behavior to deliberately purchase sustainable goods (Diamantopoulos, Schlegelmilch, Sinkovics, & Bohlen, 2003). The purpose of this research study was to explore the current apparel and textile industry's ethical labeling practices for eco-friendly products within the United States and develop a barcode labeling system in order to assist consumers' pre and post eco-product consumption. The population consisted of specific companies that offer eco-products within this industry. The first objective of the study included an investigation of eco-products against conventional products within each apparel company selected for analysis. Then, a barcode labeling system was developed as the second objective to encourage informed purchasing decisions and promotes sustainable consumption.

Objective 1

Research Design

This study followed a conceptual content analysis research design by analyzing current labeling programs and practices that affect the apparel and textile industry today. This detailed approach described procedures to understand the need for altering current information on labels today. Specifically, conceptual analysis was the most appropriate for this study as it quantified the amount of environmental information present through each product or company (Jones, 1995).

Sample Frame

The fashion industry could be segmented as tailored clothing, suits, outerwear, sportswear, activewear, swimwear, and accessories based upon consumer demand and change in lifestyle. Fring's textbook, *Fashion: From Concept to Consumer*, is currently used by various reputable universities, such as Ohio State University and Oregon State to provide students with a complete understanding of fashion business, from concept to consumer. Categories such as dresses and social apparel are exclusive to women's wear, whereas furnishings and work clothes are exclusive to men's wear (Frings, 2005).

Designer, moderate, and budget priced markets span the apparel and textile industry for a thorough analysis of current apparel labeling work that followed government agency or private agency regulations (Burns & Bryant, 2011). Various size and price ranges are used to differentiate between the three women's markets. The women's category was chosen for this convenient sampling for a better comparison of clothing styles. Also, Consumer Intelligence research showed 75.1% of women are considered to be the primary household shopper (Mediamark, 2009). By segmenting the products between three different price-ranged markets, the sample applied to most consumers within the fashion industry.

Frings (2005) explains style ranges for women's wear span couture, designer, bridge, contemporary, missy, and junior based on better, moderate, and budget price markets. Three different apparel companies, segmented based on price and style range, were chosen to distinguish the importance of eco-fashion in each market. Convenient sampling was used to obtain information easily and allow for comprehensive distinction of each fashion market.

One eco-friendly top, dress, and bottom were chosen among three companies within the Apparel and Textile Industry. Sportswear is considered to combine any of the following, priced separately so customers can be combined as desired; tops, bottoms, jackets, skirts pants, shorts, blouses, and shirts (Frings, 2005). This study was structured around sportswear as these separates are most commonly seen in public and allow customers to incorporate versatility into their daily style. As all companies in this research offer apparel merchandise for men, women, and children, the products chosen for analysis consisted of one of the following: top, dress, and bottom. As a pretest, similar items were chosen to compare with one another within the three selected companies.

Sample Selection

Many budget-priced merchandise is offered through discounters and mass merchants, such as Target or Wal-Mart. The current study focused only on an analysis of apparel designers' eco-friendly product lines, and not product lines within discount department stores. H&M, formally known as Hennes & Mauritz AB, originated from Sweden around 1950, although has expanded to America in the early 2000's. As a leader of the fast fashion market segment, their mission statement is "fashion and quality at the best price." Similar to other budget retailers, their goals are to expand rapidly, financially as well as through physical locations worldwide. In April of 2012, H&M launched another *Conscious-Sustainable Collection* in effort to further their focus on sustainability. They claim to use greener materials such as organic cotton, Tencel® and recycled polyester. The research included products taken from this collection.

Patagonia, Inc., Inc. was selected for the moderate price market of this study. As an outerwear apparel company, Patagonia, Inc. offers products within the 100 to 500 dollar price range; this eco-fashion leader acts more as environmental activists than a clothing company. Environmental issues are clearly presented on labels, as well as 100 percent recyclable packaging materials. Helping the planet and reducing toxic impact has been embedded into their mission statement since inception in 1972 (Chouinard, 1974). Involvement in various initiatives has always been important to them, such as *1% for the Planet*, an international organization whose member companies donate one percent of annual sales to environmental causes. The choice to solely use organic cotton, along with other organic materials has brought them to support Textile Exchange since 2002 (Textile Exchange, 2011). Socially responsible sourcing is shown through the *Footprint Chronicles*, an online tool that presents global suppliers in a visually understandable way.

Higher price-ranged vendors provide fashion direction, quality fabrics, and workmanship. In the late 1960's, alike many Italian fashion designers, Alberta Ferretti began showcasing her designs through a small boutique. Not until 1973 did she create her first collection, leading to seasonal collections for Milan fashion shows in the 1980's, and eventually the development of Philosophy di Alberta Ferretti, a lower priced version of her signature line. This allowed the luxury clothing company to focus on quality from semi-casual to formal wear, classifying them in the designer fashion style.

Environmental initiatives have never been part of the company culture, until Ferretti noticed British actress Emma Watson's collaboration with a moderately priced environmental apparel company People Tree. Shortly thereafter, Ferretti and Watson teamed up to launch Ferretti's first eco-fashion collection, *Pure Threads* in the spring of

2011. Certain products from this collection were explained in detail and measured for environmental impacts.

This sample selection of well-known brands was chosen for their diversity of styles among the apparel and textile industry. More importantly, certain clothing lines among these brands were investigated as garments chosen incorporated diverse materials as opposed to basics. This allowed a more in-depth analysis of sourcing and the production process behind mass-produced garments.


Analysis

Certain product labels, eco and conventional, were first collected based on compliance with current government regulations. Labels signify required information displayed on garments (Stone, 2003). Content, care, and brand labels, as well as hang tags were all measured based on government agencies regulated criteria. The following variables were charted in Table 3.1: fiber content (whether animal, plant, mineral, or synthetic based), country of origin, manufacturer identification, content information, and care instructions. These variables were based off the FTC's publication of *Threading Your Way Through the Labeling Requirements Under the Textile and Wool Acts*, as well as the American Society for Testing and Materials' *Annual Book of Standards*. Findings of those regulations were further explained in the results section.

Brand, content, and care information can be presented on one label, or up to three different labels. Charted separately among the three fashion categories stated where and on which label (content, care, brand, or hang tag) the information was found. The following table was developed for conventional and eco-product analysis, taken from

literature review information such as American Society for Testing and Materials and Federal Trade Commission labeling regulations. Please see Table 1.

Table 1
Adopted Government Regulations to Measure Eco-Products

<u>Back Tag Information</u>	<u>Side Tag Information</u>	<u>Hang Tag Information</u>
Manufacturer Country of Origin Size	FTC content information Shell Insulation Lining Ornementation/Details Trim	Retail Price SKU Additional Information
<u>Garment Photograph</u>	ASTM washing instructions Example of Symbols 	
	Text Wash Bleach Dry Iron Dryclean	
	Additional Information	

Note: From "Digging for Diamonds" by J.M. Hawley, 2006, Clothing and Textiles Research Journal, 24, pg. 262

In a past analysis study on environmental quality of textile products, four indicators were posed to measure the production; nonpolluting to obtain, process, or fabricate, made from renewable resources, reusable/recyclable, and fully biodegradable (Chen & Burns, 2006). Business ethics is an honest representation of ethical principles and morals that emerge in a professional business environment (Bews, 2002). This study encompassed complete business transparency of companies within the apparel and textile industry; including ethics from a global environment, consumer health, and social welfare (working condition) standpoint.

Some companies chose to display more corporate social responsibility information on labels for the purpose of informing consumers of its importance. Specifically for objective 1.2, in order to measure a business' portrayal of environmental commitment, certain variables were posed. This measurement criterion was based off past studies (Hustvedt, 2010), independent organizations standards ("Apparel Industry", 2011), and corporations claim of social responsibility. Product life cycle variables also measured eco-products in the apparel and textile industry, as shown in Table 2. Water, energy, waste, and labor conditions were observed among every step of the product life cycle.

After the data collection of three different apparel companies' labeling methods, the analysis of each product, objective 1.1, was combined to evaluate and address the company's ethics as a whole, objective 1.2. Corporate social responsibility and environmental initiative information was then added to present labeling information, gathered from the companies' online websites, published studies, and other statistical representation. Although mission statements, economic growth, or advertisements may

portray environmental responsibility, an analysis of sustainability was not solely based off those factors, as greenwashing in society has at times diverted attention from environmental wrongdoing by corporations. While sustainability efforts may seem ethical as represented on a company website, it may not apply to their own business practices. Even with the comparison between label content and business ethics among eco-fashion companies, one can still question a company's representation of corporate social responsibility. Each product label design within a company is usually standardized; these products were not differentiated in Table 2.

Materials are the source of all products. Socially responsible buying was measured based on the amount of pre and post-consumer recycled fiber content in each product. Packaging encompasses an excess of unnecessary waste. Packaging was not only measured by amount of material content, but also if the content itself promotes reuse and waste. Manufacturing and assembly also involves waste, but an even greater concern was labor conditions in relation to product quality. Both eco-product distribution and use sections of the life cycle heavily revolve around water and energy usage, also known as a company's carbon footprint. The eco-product's end life measures recyclability of the fiber content. The fiber content of the label was also a concern here, as textile-recycling methods vary.

Objective 2

The barcode system was created first by referencing FTC and ASTM guidelines to carefully consider current regulations. Then a list of certain product information was determined missing on current eco-product labels, referenced by non-governmental agencies working to quantify and measure sustainable production. The purpose of this

barcode labeling system is to give consumers the right to business transparency among the apparel industry as well as encourage ethical purchasing decisions. However, throughout the years greenwashing has continued to exist knowing consumers do not have time to allocate research before every purchase. Corporate social responsibility could be presented through companies' eco-products, providing as much production information as possible. Through this barcode proposal, imperative labeling information was charted allowing consumers to fully understand complete production processes preceding purchasing decisions.

Research Design

By following a conceptual content analysis research design, additional needed environmental product information was added to current labeling programs and practices in the apparel and textile industry. Just as companies are starting to incorporate more sustainable initiatives through various business practices, more customers are recognizing this as important in regards to purchasing decisions (Diamantopoulos, Schlegelmilch, Sinkovics, & Bohlen, 2003). A barcode system will only raise the bar within corporate social responsibility, further benefiting the customer. When eco-products are compared to conventional products, customers are presented with reliable information allowing them to make informed choices.

Sample Frame

Even though business practices of the three chosen companies vary slightly, as merchandise price ranges categorize them, all products have a life cycle. The barcode system incorporated steps of the product life cycle information from Table 2. If current technologies such as RFID systems benefit businesses, it would be ethical for businesses

to portray production information, benefitting consumers. Materials tracked from pre-production to point of sale, including post purchase care and disposal directions, would allow consumers their right of this information.

Sample Selection

Conventional product labeling information, based off of FTC and ASTM regulations, along with eco-product information, from Table 1 have been combined to create the current labeling product information section of Table 3.

A barcode system is necessary in order to hold more information systematically and effectively. To assist pre and post consumers purchase decision and post consumption behavior, more exclusive and extensive information is necessary. Additional environmental criteria from existing sustainable garment regulations and guidelines were compiled to fully develop the barcode system and offer as much business transparency to consumers as possible.

Analysis

Certain criteria are crucial to the full lifecycle of eco-products. Environmentally friendly products are not only about the content that was used to create it, but the entire process behind its creation. Factors such as what materials were chosen, where these materials were sourced, who aided in manufacturing, and how were the materials transported, are all important to consider within one product's life cycle. An eco-product should fully encompass all aspects of sustainability. This refers to a complete effort to meet present needs without compromising future generations' ability to meet those needs (United Nations, 1992). For example, an in-depth direction of a proper recycling method should be included on each garment, including fiber, notions, and ornamentation.

For optimal results, environmental indicators from the literature review were compiled after analysis of eco-products within each selected company. Individual product labeling information was no longer charted separately; each product label design within a company is usually standardized. Table 2 and 3 represented information categorized among the three analyzed companies. Characteristics of eco-products life cycle taken from Figure 2 were modified and added to the labeling barcode once all eco-fashion companies' business practices were examined. . These environmental criteria, charted in Table 3, explain the need to alter current information on labels today. Benefits to this additional information are described for consumers. These measurable environmental impacts were used to create a barcode system for new labeling methods.

By communicating business transparency through eco-product labels, consumers can rescind environmental problems and practice conscious consumption. Establishing a standardized barcode system will encourage consumers to be able to base purchasing decisions off reliable information.

Table 2
Environmental Criteria to Examine Apparel Companies

<u>Product Life Cycle Step</u>	<u>Environmental Information</u>	<u>Reference</u>
1. Materials		
2. Manufacturing and Assembly		
4. Packaging and Distribution		
5. Use and Disposal		

Note: The information from the Table above was gathered from various environmental organizations online criteria (Cooper, 2011). The right-hand column will state company information specific to each environmental criteria and where it can be found.

Table 3
Barcode Labeling System Criteria

<u>Labeling Product Information- Current</u>	<u>Reference</u>	<u>Benefits</u>
Manufacturer Identification		
Country of Origin		
Fiber Content		
Lining Content		
Ornamentation/Detail Content		
Trim Content		
Care Instructions		
Retail Price		
Garment Size		
Stock-Keeping Unit		
Company Information		
<u>Labeling Product Information- Proposed for Barcode System</u>	<u>Reference</u>	<u>Benefits</u>

CHAPTER 4

RESULTS

This chapter follows the purpose through two main objectives. For the first objective, current labeling practices among eco-products and conventional products were first analyzed within selected apparel and textile companies. Eighteen garments total have been included in this analysis of conventional and environment conscious labeling practices. By using the convenient sampling research method, eighteen garments have been organized based on market price segmentation among three apparel brands. The content, analyzed based on the following developed tables, included six garments from a budget apparel market, H & M Hennes & Mauritz AB, six garments from a moderate market, Patagonia, Inc., and six garments from a better market, Alberta Ferretti. Each table included the garments hang tag, side tag, and back tag information, categorized among three columns. Each column was analyzed amongst the other within these three companies.

Next within objective 1.2, environmental information of these three companies was analyzed to track environmental business practices throughout the product life cycle. For the second objective, a sustainable eco-product labeling barcode system was developed for consumer awareness of critical environmental information. Labeling product information were categorized into current labeling content and proposed content, to equally incorporate into a barcode system.

The researcher used H&M for the budget market selected frame. A budget market, also known as mass market typically offers merchandise under \$50, allowing for fast paced apparel consumption. Knockoffs of higher priced designer items can be

prevalent within this market, causing unethical behavior usually disregarded by careless consumers. To counteract these business practices, H&M incorporated sustainability into their products first in the spring of 2010 with the launch of their first *Garden Collection*. Later in 2011, they changed the collection name, although continued to pursue the use of organic and natural textiles with the Fall and Spring *Conscious Collection*. Their latest collection, the Spring 2011 *Conscious Collection* launched the same time as their 2011 Conscious Actions Sustainability Report. Being the number one user of organic cotton and having donated 2.3 million garments to charitable were two main items highlighted in the report (Alpen, 2012).

Patagonia, Inc., Inc. was chosen for the moderate market selected frame. Moderate markets most commonly offer dresses, sportswear, and career wear and consist of nationally advertised brands, with apparel generally retailing under \$100. Consumers already aware of this brand, often associate environmentalism with the products offered. Therefore, eco-products chosen for comparison contained environmentally friendly fibers and offered detailed product information on various labels. Patagonia, Inc. incorporates new technologies into their products every year, although has not launched a specific collection, as sustainability is a core value of the company.

Designer market merchandise consists of quality fabrics and is normally priced over \$1,000, therefore garments are sold exclusively, making it difficult to find detailed product information. Alberta Ferretti's eco-friendly collection, *Pure Threads* was chosen for eco-product analysis, although the collection was only available through the online storefront for a short while. The researcher chose recent conventional garments for analysis yielding the most information available.

Analysis of Apparel Labeling Information

Data collection of these garments was taken from brick and mortar stores as well as online, as accessible. In order to measure the importance of sustainability to these companies, eco-products were analyzed in comparison to conventional products. Eco-products chosen for analysis were based on the amount of design detail within the collection and production information available. Most products were manufactured within the same time period for a reasonable comparison. Based on literature review, the researcher examined all labels, including back tags, side tags, and hang tags if present, for all regulation information. This consists of FTC regulations and ASTM care instructions, as well any other certifications or presented information.

Once compiled, overall ethical business practices of these companies were examined to compare against a developed barcode with additional imperative criteria crucial to include on eco-product labels. The data reported in the following tables and corresponding explanations analyzed the content of selected apparel labels.

H&M Conventional Product Analysis

Spring 2011 Collection, Top

Blazer (Table 4). A blazer from H&M as a budget market was selected to analyze as a conventional item. This fitted blazer offers lining and front welt pockets at a price within any shopper's budget. Three different tags, including back tag, side tag and hang tag, have been analyzed in order to show all labeling information available. The back tag listed H&M as the manufacturer, Turkey as the country of origin, and the size in various international conversions.


The side tag fiber content presented a combination of 68% polyester, 30% rayon and 2% spandex and was composed with a 100% polyester lining. Symbols depicted proper care instructions such as do not wash, bleach, or tumble dry, iron at a low temperature less than 110 Celsius, and dry clean. The text instructions read, do not wash, only non-chlorine bleach when needed, line dry, low iron, and dry clean. The side tag also contained fiber content information in various languages, including Czech, German, Spanish, French, Finnish, Croatian, Hungarian, Portuguese, Romanian, Sami, Slovenian, Slovak, and Turkish, as H&M originates from Sweden and sells most predominantly throughout Europe. The manufacturer registered identification number, commonly found on the back tag, was listed at the bottom of the side tag as 0101255. The hang tag included minimal information. A small H&M logo, retail price of \$49.95, the U.S. size, and the stock-keeping unit barcode were all listed on the small white hang tag.

Spring 2011 Collection, Dress

Polka Dot Dress (Table 5). For a conventional item, a blue polka dot dress by H&M was chosen for analysis. This lightweight V-neck polka dress provides comfort, although has a professional design. Three different tags, back tag, side tag and hang tag, have been analyzed in order to show all labeling information available. The back tag lists H&M as the manufacturer, Cambodia as the country of origin, and the size in various international conversions.

Adhering to FTC regulations, the largest fiber content was presented first, then the other fibers descending in order of amount. The side tag fiber content is explained as 95% rayon and 5% spandex. This garment contains no lining, ornamentation, or trim that requires content information.

Table 4
 Conventional Product Analysis- H&M Spring 2011 Collection
 Top- Blazer

<u>Back Tag Information</u>		<u>Side Tag Information</u>		<u>Hang Tag Information</u>	
Manufacturer	H&M	<u>FTC content information</u>		Retail Price	\$49.95
Country of Origin	Turkey	Fiber Content	68% Polyester	Size	4
	Size 4		30% Rayon	SKU	
			2% Spandex		
		Lining	100% Polyester		
		Ornamentation/Details			
		Trim			
		<u>ASTM care instructions</u>			
		<u>Symbols</u>			
					
		<u>Text</u>			
		Wash	do not wash		
		Bleach	only non-chlorine bleach, when needed		
		Dry	line dry		
		Iron	low iron		
		Dryclean	or dry clean		
		<u>Additional Information:</u>			
		<u>Manufacturer Identification:</u>	RN0101255		
			310620		
			CA42271		
			H&M Hennes & Mauritz		
			106.38 Stockholm, Sweden		
			www.hm.com		



Symbols, along with text care instructions were depicted to comply with ASTM regulations. Symbols represented the following laundering instructions; machine-washed at 40 Celsius, do not bleach or tumble dry, iron at a medium temperature under 150 Celsius, and do not dry clean with any solvent. Text instructions presented on the side tag read, machine wash warm, only use non-chlorine bleach, when needed, line dry, and iron under medium temperature. The side tag offered this information in English, Czech, German, Spanish, French, Finnish, Croatian, Hungarian, Portuguese, Romanian, Sami, Slovenian, Slovak, and Turkish. The manufacturer registered identification number, commonly found on the back tag, was listed on the side tag as 0101255.

The hang tag included minimal information. A small H&M logo, a retail price of \$34.95, the U.S. size, and the stock-keeping unit barcode were listed on the small white hang tag.



Spring 2011 Collection, Bottom

Stretch Jean Pants (Table 6). For a conventional item, a pair of H&M colored jeans was chosen for analysis. These pants provide style and comfort for a very inexpensive price. Three different tags, back tag, side tag and hang tag, have been analyzed in order to show all labeling information available. The back tag lists H&M as the manufacturer, China as the country of origin, and the size in various international conversions.

Adhering to FTC regulations, the largest fiber content was presented first, then the other information fibers descending in order of amount. The side tag fiber content is explained as 97% cotton and 3% spandex. This garment contains no lining, ornamentation, or trim that requires content.

Table 5

Conventional Product Analysis- H&M Spring 2011 Collection
 Dress- *Polka Dot Dress*

<u>Back Tag Information</u>	<u>Side Tag Information</u>	<u>Hang Tag Information</u>
Manufacturer H&M Country of Origin Cambodia Size 4	<u>FTC content information</u> Fiber Content 95% Rayon 5% Spandex Lining Ornementation/Details Trim	Retail Price \$34.95 Size 4 SKU
<u>Garment Photograph</u> 	<u>ASTM care instructions</u> <u>Symbols</u>  <u>Text</u> Wash Machine Wash Warm Bleach Only Non-Chlorine Bleach When Needed Dry Line Dry Iron Medium Iron Dryclean Additional Information: Manufacturer Identification: RN0101255 310620 CA42271 H&M Hennes & Mauritz 106.38 Stockholm, Sweden www.hm.com	

Symbols, along with text care instructions were depicted to comply with ASTM regulations. Symbols represented the following laundering instructions; machine-washed at 40 Celsius, line dry, iron at a medium temperature under 150 Celsius, and dry clean with any solvent except trichloroethylene. Text instructions presented on the side tag read, machine wash warm, only use non-chlorine bleach when needed, line dry, iron under medium temperature, and dry-clean. The side tag offered this information in English, Czech, German, Spanish, French, Finnish, Croatian, Hungarian, Portuguese, Romanian, Sami, Slovenian, Slovak, and Turkish. The manufacturer registered identification number, commonly found on the back tag, was listed on the side tag as 0101255.

The hang tag included minimal information. A small H&M logo, a retail price of \$24.95, the U.S. size, and the stock-keeping unit barcode were listed on the small white hang tag.

H&M Eco-Product Analysis



Spring 2012 *Conscious Collection*, Top

Wide-Cut Lace Tank (Table 7). For an eco-product, an H&M top was chosen for analysis. This stylish top was highly marketed as an environmentally friendly garment. Three different tags, back tag, side tag and hang tag, have been analyzed in order to show all labeling information available. The back tag listed H&M as the manufacturer, China as the country of origin, and the size in S/M or M/L.

In compliance to FTC regulations, the largest fiber content was presented first, then the other fibers descending in order of amount. The side tag fiber content is

Table 6

Conventional Product Analysis- H&M Spring 2011 Collection
 Bottom- *Jean Stretch Pants*

<u>Back Tag Information</u>		<u>Side Tag Information</u>		<u>Hang Tag Information</u>	
Manufacturer	H&M	FTC content information		Retail Price	\$24.95
Country of Origin	China	Fiber Content	97% Cotton 3% Spandex	Size	4
Manufacturer Identification	4	Lining		SKU	
<u>Garment Photograph</u>		Ornamentation/Details			
		Trim			
		ASTM care instructions			
		Symbols			
		Text			
		Wash	Machine Wash Warm		
		Bleach	Only Chlorine When Needed		
		Dry	Line Dry		
		Iron	Medium Iron		
		Dryclean	Dryclean		
		<u>Additional Information:</u>			
		Manufacturer Identification: RN0101255			
		310620			
		CA42271			
		H&M Hennes & Mauritz			
		106.38 Stockholm, Sweden			
		www.hm.com			

explained as 70% cotton and 30% polyamide with a lining of 100% recycled polyester post-consumer waste.




Symbols, along with text care instructions were depicted to comply with ASTM regulations. Symbols represented the following laundering instructions; machine wash cold, do not tumble dry, iron at a low temperature under 110 Celsius, and dry clean with any solvent except trichloroethylene. Text instructions presented on the side tag read, machine wash cold in a gentle cycle, only use only non-chlorine bleach when needed, line dry, iron under low temperature, and dry clean. The side tag offered this information in English, Czech, German, Spanish, French, Finnish, Croatian, Hungarian, Portuguese, Romanian, Sami, Slovenian, Slovak, and Turkish. The manufacturer registered identification number, commonly found on the back tag, was listed on the side tag as 0101255.

Two hang tags were attached to the garment. One listed minimal information including a small H&M logo, a retail price of \$14.95, the U.S. size, and the stock-keeping unit barcode. The other boasted H&M's sustainability commitment. It stated information on environmentally friendly fibers in eight languages. Information on the hang tag presented the shell as having 70% organic cotton and the lining with 100% recycled polyester post-consumer waste. This hang tag also encouraged consumers to read more on H&M's sustainability efforts at [HM.COM/CONSCIOUS](https://www.hm.com/conscious). The Green Dot¹ recycling symbol was presented on this label as well.

¹ The Green Dot symbol represents a European network of industry-funded systems contributing to packaging recycling; this does necessarily not mean the packaging or product can be recycled.

Table 7

Eco-Product Analysis- H&M Spring 2012 Conscious Collection
 Top- Wide-Cut Lace Tank

<u>Back Tag Information</u>		<u>Side Tag Information</u>		<u>Hang Tag Information</u>	
Manufacturer	H&M	FTC content information		Retail Price	\$14.95
Country of Origin	China	Shell	70% Organic Cotton 30% Polyamide	Size	M/L
Size	M/L	Lining	100% Recycled Polyester Post-Consumer Waste	SKU	
<u>Garment Photograph</u>		Border		<u>Additional Information</u>	
		<u>ASTM care instructions</u>		H&M Conscious*	
		<u>Symbols</u>		Read more on HM.COM/CONSCIOUS Shell: 70% Organic Cotton Lining: 100% Recycled Polyester Post-Consumer Waste	
					
		<u>Text</u>			
		Wash	machine wash cold gentle cycle		
		Bleach	only non-chlorine bleach when needed		
		Dry	line dry		
		Iron	low iron		
		Dry clean	dry clean		
			use a laundry bag		
		<u>Additional Information:</u>			
		H&M Conscious Collection is part of H&M's conscious actions for a more sustainable fashion future.			
		Manufacturer Identification: RN0101255 310620, CA42271 H&M Hennes & Mauritz 106 38 Stockholm, Sweden www.hm.com			

Spring 2012 *Conscious Collection*, Dress

V-Neck Sleeveless Dress (Table 8). For an eco-product, an H&M dress was chosen for analysis. This dress, complete with lining, stylish structure, pockets, and a retail price of \$14.95 was one of the most marketed products of the 2012 *Conscious Collection*. Three different tags, back tag, side tag and hang tag, have been analyzed in order to show all labeling information available. The back tag listed H&M as the manufacturer, China as the country of origin, and the size in various international number conversions.

In compliance to FTC regulations, the largest fiber content was presented first, then the other fibers descending in order of amount. The side tag fiber content is stated as 65% lyocell, 35% cotton, and 3% spandex with a lining of 100% recycled polyester.

Symbols, along with text care instructions were depicted to comply with ASTM regulations. Symbols represented the following laundering instructions; machine wash cold, do not tumble dry, iron at a medium temperature under 150 Celsius, and dry clean with any solvent except trichloroethylene. Text instructions presented on the side tag read, machine wash cold in a gentle cycle, only use only non-chlorine bleach when needed, line dry, medium iron, and dry clean. The side tag offered this information in English, Czech, German, Spanish, French, Finnish, Croatian, Hungarian, Portuguese, Romanian, Sami, Slovenian, Slovak, and Turkish. The manufacturer registered identification number, commonly found on the back tag, was listed on the side tag as 0101255.

Two hang tags were attached to the garment. One listed minimal information including a small H&M logo, a retail price of \$14.95, the U.S. size, and the stock-keeping

unit barcode. The other boasted H&M's recent sustainability efforts. It stated information on environmentally friendly fibers in seven other languages; the shell contained 70% Tencel® Lyocell and the lining contained 100% recycled polyester post-consumer waste. This hang tag also encouraged consumers to read more on H&M's sustainability efforts at HM.COM/CONSCIOUS. The Green Dot² recycling symbol was presented on this label as well.

Spring 2011 *Conscious Collection*, Bottom

Shorts with Waist Belt (Table 9). For an eco-product, an H&M bottom was chosen for analysis. For a retail price of \$24.95, these shorts offer organic materials, pockets, and a waist belt. Three different tags have been analyzed in order to show all labeling information available. First, back tag, side tag and hang tag has been analyzed. The back tag listed H&M as the manufacturer, China as the country of origin, and the size in various international number conversions.

In compliance to FTC regulations, the largest fiber content was presented first, then the other fibers descending in order of amount. The side tag fiber content is explained as 97% organic cotton and 3% spandex with a lining of 100% polyester.

Symbols, along with text care instructions were depicted to comply with ASTM regulations. Symbols represented the following laundering instructions; machine wash warm, do not tumble dry, iron at a medium temperature under 150 Celsius, and dry clean with any solvent except trichloroethylene. Text instructions presented on the side tag read, machine wash warm, remove belt before wash, only use only non-chlorine bleach

² The Green Dot symbol represents a European network of industry-funded systems contributing to packaging recycling; this does necessarily not mean the packaging or product can be recycled.

Table 8

Eco-Product Analysis- H&M Spring 2012 Conscious Collection
 Dress- *V-Neck Sleeveless Dress*






<u>Back Tag Information</u>		<u>Side Tag Information</u>		<u>Hang Tag Information</u>											
Manufacturer	H&M	FTC content information		Retail Price	\$14.95										
Size	4	Fiber Content	65% Lyocell 33% Cotton 3% Spandex	Size	4										
Country of Origin	Turkey	Lining	100% Recycled Polyester	SKU											
<u>Garment Photograph</u>		Ornamentation/Details		<u>Additional Information</u>											
		Trim		H&M Conscious* Read more on HM.COM/CONSCIOUS Shell: *64% Tencel® Lyocell Lining: *100% Recycled Polyester From Post Consumer Waste											
		ASTM care instructions													
		<u>Symbols</u>													
		<u>Text</u>	<table border="1"> <tr> <td>Wash</td> <td>machine wash cold gentle cycle</td> </tr> <tr> <td>Bleach</td> <td>only non-chlorine bleach, when needed</td> </tr> <tr> <td>Dry</td> <td>line dry</td> </tr> <tr> <td>Iron</td> <td>medium iron</td> </tr> <tr> <td>Dryclean</td> <td>or dry clean</td> </tr> </table>	Wash	machine wash cold gentle cycle	Bleach	only non-chlorine bleach, when needed	Dry	line dry	Iron	medium iron	Dryclean	or dry clean		
Wash	machine wash cold gentle cycle														
Bleach	only non-chlorine bleach, when needed														
Dry	line dry														
Iron	medium iron														
Dryclean	or dry clean														
		<u>Additional Information:</u>	H&M Conscious Collection is part of H&M's conscious actions for a more sustainable fashion future.												
		Manufacturer Identification:	RN0101255 310620, CA42271 H&M Hennes & Mauritz 106 38 Stockholm, Sweden www.hm.com												

Table 9

Eco-Product Analysis- H&M Spring 2012 Conscious Collection
 Bottom- *Shorts with Waist Belt*

<u>Back Tag Information</u>	<u>Side Tag Information</u>	<u>Hang Tag Information</u>																																					
<table border="1"> <tr> <td>Manufacturer</td> <td>H&M</td> </tr> <tr> <td>Country of Origin</td> <td>China</td> </tr> </table>	Manufacturer	H&M	Country of Origin	China	<table border="1"> <tr> <td colspan="2"><u>FTC content information</u></td> </tr> <tr> <td>Fiber Content</td> <td>97% Organic Cotton 3% Spandex</td> </tr> <tr> <td>Lining</td> <td>100% Polyester</td> </tr> <tr> <td>Ornamentation/Details</td> <td></td> </tr> <tr> <td>Trim</td> <td></td> </tr> <tr> <td colspan="2"><u>ASTM care instructions</u></td> </tr> <tr> <td colspan="2"><u>Symbols</u></td> </tr> <tr> <td colspan="2">  </td> </tr> <tr> <td colspan="2"><u>Text</u></td> </tr> <tr> <td>Wash</td> <td>machine wash warm remove belt before wash</td> </tr> <tr> <td>Bleach</td> <td>only non-chlorine bleach when needed</td> </tr> <tr> <td>Dry</td> <td>line dry</td> </tr> <tr> <td>Iron</td> <td>medium iron</td> </tr> <tr> <td>Dryclean</td> <td>or dry clean</td> </tr> <tr> <td colspan="2"><u>Additional Information:</u></td> </tr> <tr> <td colspan="2">H&M Conscious Collection is part of H&M's conscious actions for a more sustainable fashion future.</td> </tr> <tr> <td colspan="2">Manufacturer Identification: RN0101255 310620, CA42271 H&M Hennes & Mauritz 106 38 Stockholm, Sweden www.hm.com</td> </tr> </table>	<u>FTC content information</u>		Fiber Content	97% Organic Cotton 3% Spandex	Lining	100% Polyester	Ornamentation/Details		Trim		<u>ASTM care instructions</u>		<u>Symbols</u>				<u>Text</u>		Wash	machine wash warm remove belt before wash	Bleach	only non-chlorine bleach when needed	Dry	line dry	Iron	medium iron	Dryclean	or dry clean	<u>Additional Information:</u>		H&M Conscious Collection is part of H&M's conscious actions for a more sustainable fashion future.		Manufacturer Identification: RN0101255 310620, CA42271 H&M Hennes & Mauritz 106 38 Stockholm, Sweden www.hm.com	
Manufacturer	H&M																																						
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 | | | |---|---------| | Retail Price | \$24.95 | | Size | 4 | | SKU | | | <u>Additional Information</u> | | | H&M Conscious* | | | Read more on HM.COM/CONSCIOUS | | | Shell: *97% Organic Cotton | | || Garment Photograph | | |

when needed, line dry, medium iron, and dry clean. The side tag offered this information in English, Czech, German, Spanish, French, Finnish, Croatian, Hungarian, Portuguese, Romanian, Sami, Slovenian, Slovak, and Turkish. The manufacturer registered identification number, commonly found on the back tag, was listed on the side tag as 0101255.

Two hang tags were attached to the garment. One listed minimal information including a small H&M logo, a retail price of \$24.95, the U.S. size, and the stock-keeping unit barcode. The other boasted H&M's sustainability commitment. It stated information on environmentally friendly fibers in seven other languages including the shell contents of 97% organic cotton. This hang tag also encouraged consumers to read more on H&M's sustainability efforts at HM.COM/CONSCIOUS. The Green Dot³ recycling symbol was presented on this label as well.

Patagonia, Inc. Conventional Product Analysis

Spring 2012 Collection, Top

Alpine Nano Puff Jacket (Table 10). This jacket from Patagonia, Inc., as a moderate market, was selected to analyze as a conventional item. Three different tags, including back tag, side tag and hang tag, have been analyzed in order to show all labeling information available. The back tag listed Patagonia, Inc. as the manufacturer, Vietnam as the country of origin, and the size as a women's small.

Adhering to all FTC regulations, the side tag presented a fiber content of 100% polyester shell with 100% polyester lining, exclusive of the trim. Symbols, along with

³ The Green Dot symbol represents a European network of industry-funded systems contributing to packaging recycling; this does not necessarily mean the packaging or product can be recycled.

text care instructions were depicted to comply with ASTM regulations. Symbols represented the following laundering instructions; machine-washed at 30 Celsius, do not bleach or tumble dry, iron at a low temperature under 110 Celsius, and dry clean with any solvent except trichloroethylene. Text instructions presented on the side tag read, wash with similar colors and do not use fabric softeners. The side tag offered this information in English and French. The manufacturer registered identification number, normally found on the back tag, was listed on the side tag as 51884.

The hang tag included thorough information regarding product features, company values, and contact information. This information was listed in four languages; English, French, German, and Japanese. This product was recommended for alpine climbing. An in-depth description of synthetic insulation benefits was explained. Information about Patagonia, Inc.'s recycling program, Common Threads Initiative, was listed to encourage repair, recycle, and reuse. Natural textiles commonly used in the company's apparel production were explained to encourage environmental consciousness. Complete descriptions of additional hang tag information are listed under the hang tag information column in Table 10. Examples of how this information is represented on such hang tags is shown below in Figure 15.



Figure 15: Patagonia, Inc. Hang Tag Examples

Two logos were represented on the backside of the hang tag, along with the jacket price, name, style number, and the stock-keeping unit number. The FSC, Forest Stewardship Council, is a non-profit organization that promotes responsible management of the world's forests. This certification provides consumers with credibility of responsible production (FSC, 2009). The hang tag included the FSC website, www.fsc.org and states the paper was made from recycled materials. 1% for the Planet, another non-profit organization, members donate at least 1% of sales to environmental causes. Patagonia, Inc. has been a member since the organization's inception in 2001. All other information presented on the back of the hang tag booklet offers contact information to address any customer questions or concerns.

Spring 2012 Collection, Dress





Corinne Dress (Table 11). This dress from Patagonia, Inc., as a moderate market, was selected to analyze as a conventional item. Three different tags, including back tag, side tag and hang tag, have been analyzed in order to show all labeling information available. The back tag listed Patagonia, Inc. as the manufacturer, Mexico as the country of origin, and the size as a women's small.

Adhering to all FTC regulations, the side tag presented a fiber content of 86% nylon and 14% spandex, exclusive of the trim. Symbols, along with text care instructions were depicted to comply with ASTM regulations. Symbols represented the following laundering instructions; machine-wash at 40 Celsius, do not bleach or tumble dry, iron at a medium temperature under 150 Celsius, and dry clean with any solvent except trichloroethylene. Text instructions presented on the side tag only read wash with similar colors. The side tag offered this information in English and French. The manufacturer

Table 10

Conventional Product Analysis- Patagonia Spring 2012 Collection

Top- *Alpine Nano Puff Jacket*

<u>Back Tag Information</u>		<u>Side Tag Information</u>		<u>Hang Tag Information</u>	
Manufacturer	Patagonia	FTC content information		Retail Price	\$189.00
Country of Origin	Vietnam	Shell	100% Polyester	SKU	8013108034
Size	S	Insulation	100% Polyester	Additional Information	
<u>Garment Photograph</u>		Lining		Common Threads Initiative: Repair, Recycle, Reuse for this product. For more information, please go to patagonia.com/recycle or call 800-638-6464	
		Ornamentation/Details		Alpine Climbing: Everything you need and nothing more: We make the lightest, fast-moving, durable Alpine soft and hard shells for the dedicated alpinist who puts function first. Form follows function, beautifully. Regular fitting technical garments may be worn over heavier midlayers.	
		Trim			
<u>ASTM care instructions</u>					
<u>Symbols</u>					
<u>Text</u>					
		Wash	wash with similar colors		
		Bleach	do not use fabric softeners		
		Dry			
		Iron			
		Dryclean			
<u>Additional Information</u>					
Manufacturer Identification RN: 51884					
Not to be removed until delivered to customer:					
This label is in compliance with the Provincial Law.					
This article contains NEW MATERIAL ONLY.					
Made by Reg. no. 32R6283					
Content Polyester Fibers					
		Environmentally Conscious: Made with either organically grown cotton, chlorine-free wool, hemp, recycled nylon or polyester, or Tencel Lyocell. Tencel is a registered trademark of Lenzig Aktiengesellschaft Corporation.			
		 RECYCLED Paper made from recycled material FSC C022028 www.fsc.org			
					








registered identification number, commonly found on the back tag, was listed on the side tag as 51884.

The hang tag included thorough information regarding product features, company values, and contact information. This information was listed in four languages; English, French, German, and Japanese. An in-depth description of ultraviolet protection benefits was explained. UPF, ultraviolet protection factor, is a common rating for sun protective textiles and clothing, as opposed to SPF, sun protection factor rating human sunburn. Information about Patagonia, Inc.'s recycling program, Common Threads Initiative, was listed to encourage repair, recycle, and reuse. Complete descriptions of additional hang tag information are listed under the hang tag information column in Table 4.8.

Two logos were represented on the back side of the hang tag, along with the dress price, name, style number, and the stock-keeping unit number. The FSC, Forest Stewardship Council, is a non-profit organization that promotes responsible management of the world's forests. This certification provides consumers with credibility of responsible production. The hang tag included the FSC website, www.fsc.org and states the paper was made from recycled materials. 1% for the Planet, another non-profit organization, members donate at least 1% of sales to environmental causes. Patagonia, Inc. has been a member since the organization's inception in 2001. All other information presented on the back of the hang tag booklet offered contact information to address any customer questions or concerns.

Table 11

Conventional Product Analysis- Patagonia Spring 2012 Collection
 Dress- *Corinne Dress*

<u>Back Tag Information</u> (no side tag; information combined)		<u>Hang Tag Information</u>	
Manufacturer	Patagonia	Retail Price	\$79.00
Country of Origin	Mexico	Size	8
Manufacturer Identification	51884	SKU	8565739907
<u>Garment Photograph</u>		<u>Additional Information</u>	
		<p>Common Threads Initiative is a partnership with our customers to reduce consumption, and to repair, reuse, and recycle Patagonia products. To join us - learn more - visit patagonia.com/recycle or call 800-638-6464</p>	
		<p>30 UPF This garment offers very good UV-protection (when tested in accordance with Australian/New Zealand test methods AS/NZS 4399 or AATCC 183/ASTM6603/ ASTM D6544).</p>	
<u>ASTM care instructions</u>		   	
<u>Symbols</u>			
<u>Text</u>		<p>Patagonia, Inc. pledges at least 1% of sales to the preservation and restoration of the natural environment.</p>   <p>RECYCLED. Paper made from recycled material. FSC C022028. www.fsc.org</p>	
<p>Wash with similar colors</p> <p>Bleach</p> <p>Dry</p> <p>Iron</p> <p>Dryclean</p>		<p>REPAIR, REUSE, RECYCLE THIS PRODUCT</p> <p>www.patagonia.com</p> <p>SKU: 8565739907</p> <p>PO: 125066</p> <p>ITEM: 56886SP12</p> <p>MFG DATE AND LOCATION AT PCPSIA.COM</p> <p>Patagonia, PO Box 150 Ventura, CA 93002 USA</p>	

Spring 2012 Collection, Bottom

Solimar Pant (Table 12). These pants from Patagonia, Inc. were selected to analyze as a conventional item. The garment contained a back tag and hang tag, although no side tag. All labeling information available from the two labels was analyzed.

The back tag listed Patagonia, Inc. as the manufacturer, Vietnam as the country of origin, and the women's numerical size. Adhering to all FTC regulations, the back tag presented a fiber content of 93% nylon and 7% spandex, exclusive of the trim. Symbols, along with text care instructions were depicted to comply with ASTM regulations. Symbols represented the following laundering instructions; machine-wash at 40 Celsius, do not bleach, tumble dry at low heat, and iron at a medium temperature under 150 Celsius. Text instructions presented on the side tag suggested wash with similar colors.

The back tag offered this information in English and French. The manufacturer registered identification number, 51884, was listed on the backside of the back tag. The hang tag included thorough information regarding product features, company values, and contact information. This information was listed in four languages; English, French, German, and Japanese. An in-depth description of ultraviolet protection benefits for apparel was explained. Information about Patagonia, Inc.'s recycling program, Common Threads Initiative, was listed to encourage repair, recycle, and reuse. Complete descriptions of additional hang tag information are listed under the hang tag information column in Table 12.

Two logos were represented on the back side of the hang tag, along with the retail price, name, style number, and the stock-keeping unit number. The FSC, Forest Stewardship Council, is a non-profit organization that promotes responsible management

of the world's forests. This certification provides consumers with credibility of responsible production. The hang tag includes the FSC website, www.fsc.org and states the paper was made from recycled materials. 1% for the Planet, another non-profit organization, members donate at least 1% of sales to environmental causes. Patagonia, Inc. has been a member since the organization's inception in 2001. All other information presented on the hang tag booklet offered contact information to address any customer questions or concerns.

Patagonia, Inc. Eco-Product Analysis





Spring 2012 Collection, Top

Summertime Tank (Table 13). This Patagonia, Inc. top was selected to analyze as an environmentally friendly item. A total of two different tags were presented, the back tag and hang tag. Both were analyzed in order to show all labeling information available.

The back tag listed Patagonia, Inc. as the manufacturer, China as the country of origin, and the numerical women's size. Adhering to all FTC regulations, the back listed a fiber content of 55% Hemp and 45% Organic Cotton, exclusive of trim. Back tag information was listed in English and French. Symbols, along with text care instructions were depicted to comply with ASTM regulations. Symbols represented the following laundering instructions; machine-washed at 30 Celsius, do not bleach, tumble dry at a low temperature, and iron at a medium temperature under 150 Celsius. Text instructions suggested washing the garment with similar colors. The manufacturer registered identification number, 51884, along with basic contact information was listed on the back tag as well.

Table 12

Conventional Product Analysis- Patagonia Spring 2012 Collection
Bottom- *Solimar Pant*

<u>Back Tag Information (no side tag; information combined)</u>		<u>Hang Tag Information</u>	
Manufacturer	Patagonia	Retail Price	\$79.00
Country of Origin	Vietnam	Size	8
Manufacturer Identification	51884	SKU	8565739907
Size	8	<u>Additional Information</u>	
<u>Garment Photograph</u>		<p><i>Common Threads Initiative is a partnership with our customers to reduce consumption, and to repair, reuse, and recycle Patagonia products. To join us - learn more - visit patagonia.com/recycle or call 800-638-6464</i></p>	
		<p>30 UPF This garment offers very good uv-protection (when tested in accordance with Australian/NewZealand test methods AS/NZS 4399 or AATCC 183/ASTM6603/ ASTM D6544).</p>	
		<p>Patagonia, Inc. pledges at least 1% of sales to the preservation and restoration of the natural environment.</p> 	
<p>ASTM care instructions</p> <p><u>Symbols</u></p> 		<p>RECYCLED. Paper made from recycled material. FSC C022028. www.fsc.org</p> 	
<p><u>Text</u></p> <p>Wash with similar colors</p> <p>Bleach</p> <p>Dry</p> <p>Iron</p> <p>Dryclean</p>			
<p><u>Additional Information</u></p> <p>COMMON THREADS INITIATIVE</p> <p>Repair, Reuse, Recycle This Product</p> <p>www.patagonia.com</p> <p>SKU: 8565739907</p> <p>PO: 125066</p> <p>ITEM: 56886SP12</p> <p>MFG DATE AND LOCATION AT PCPSIA.COM</p> <p>Patagonia, PO Box 150 Ventura, CA 93002 USA</p>			

The hang tag included thorough information regarding product features, company values, and contact information. This information was listed in four languages; English, French, German, and Japanese. Patagonia, Inc.'s recycling program, Common Threads Initiative, was explained to encourage repair, recycle, and reuse of garments. This product's regular fit style was explained as a main content on the hang tag. Patagonia, Inc.'s *Ironclad Guarantee* was stated to insure complete customer satisfaction with every purchase. Various environmentally conscious textiles, used in the company's production, are also listed to highlight sustainability efforts. Complete descriptions of additional hang tag information are listed under the hang tag information column in Table 13.





An FSC logo was represented on the back page of the hang tag booklet, along with the tank retail price, name, style number, and the stock-keeping unit number. The FSC, Forest Stewardship Council, is a non-profit organization that promotes responsible management of the world's forests. This certification provides consumers with credibility of responsible production. The hang tag includes the FSC website, www.fsc.org and states the paper was made from recycled materials. 1% for the Planet, another non-profit organization, members donate at least 1% of sales to environmental causes. Patagonia, Inc. has been a member since the organization's inception in 2001. All other information presented on the hang tag booklet offered contact information to address any customer questions or concerns.

Spring 2012 Collection, Dress

Margot Dress (Table 14). This dress from Patagonia, Inc., was selected to analyze as an environmentally friendly item. Three different tags, including back tag, side tag and hang tag, have been analyzed in order to show all labeling information

Table 13

Eco-Product Analysis- Patagonia Spring 2012 Collection
 Top- *Summertime Tank*

<u>Back Tag Information</u> (no side tag; information combined)		<u>Hang Tag Information</u>	
<u>Manufacturer</u>	Patagonia	<u>Retail Price</u>	\$59.00
<u>Country of Origin</u>	China	<u>Size</u>	2
<u>Manufacturer Identification</u>	RN: 51884	<u>SKU</u>	8856573990342
<u>Size</u>	2	<u>Additional Information</u>	REGULAR FIT: Neither slim nor oversized. (Regular-fitting technical garments may be worn over heavier midlayers).
<u>Garment Photograph</u>		Common Threads Initiative: Repair; Recycle, Reuse for this product. For more information, please go to patagonia.com/recycle or call 800-638-6464	
		The Patagonia Ironclad Guarantee: We guarantee everything we make. If you are not satisfied with one of our products at the time you receive it, or if one of our products does not perform to your satisfaction, return it to the store you bought it from or to Patagonia for a repair, replacement, or refund. Damage due to wear and tear will be repaired at a reasonable charge. Patagonia pledges at least 1% of sales to the preservation and restoration of the natural environment.	
		Environmentally Conscious: Made with either organically grown cotton, chlorine-free wool, hemp, recycled nylon or polyester, or Tencel Lyocell. Tencel is a registered trade-mark of Lenzig Aktiengesellschaft Corporation.	
<u>ASTM care instructions</u>			
<u>Symbols</u>			
<u>Text</u>	Wash	wash with similar colors	
	Bleach		
	Dry		
	Iron		
	Dryclean		
<u>Additional Information</u>		 Patagonia, Inc. pledges at least 1% of sales to the preservation and restoration of the natural environment.	
SKU: 8856573990342 PO: 125829 ITEM: 44820SP12 MFG DATE AND LOCATION AT PCPSIA.COM Patagonia, PO Box 150 Ventura, CA 93002 USA COMMON THREADS INITIATIVE Repair, Reuse, Recycle This Product www.patagonia.com		 RECYCLED. Paper made from recycled material. FSC C022028. www.fsc.org	

available. The back tag listed Patagonia, Inc. as the manufacturer, Turkey as the country of origin, the size as a women's small, manufacturer identification as 51884, and all fiber content information. Complying with FTC regulations, the back printed tag presented a fiber content of 95% organic cotton and 5% spandex.

The side tag contained garment care instructions. Symbols, along with text care instructions were depicted to comply with ASTM regulations. Symbols represented the following laundering instructions; machine-washed at 30 Celsius, do not bleach, tumble dry on low heat, and iron at a medium temperature under 150 Celsius. Text instructions presented on the side tag only read wash with similar colors. The side tag offered this information in English and French.

The hang tag included thorough information regarding product features, company values, and contact information. This information was listed in four languages; English, French, German, and Japanese. This product's slim fit style was listed as a main content on the hang tag. The Patagonia, Inc. offered an *Ironclad Guarantee*, insuring complete customer satisfaction with every purchase. Information about Patagonia, Inc.'s recycling program, Common Threads Initiative, was listed to encourage repair, recycle, and reuse. Listing natural textiles commonly used in the company's apparel production emphasized environmental efforts. Complete descriptions of additional hang tag information are listed under the hang tag information column in Table 14.

Two logos were represented on the back of the hang tag, along with the dress price of \$65.00, name, style number, and the stock-keeping unit number. The FSC, Forest Stewardship Council, is a non-profit organization that promotes responsible management of the world's forests. This certification provides consumers with

credibility of responsible production. The hang tag includes the FSC website, www.fsc.org and states the paper was made from recycled materials. 1% for the Planet, another non-profit organization, members donate at least 1% of sales to environmental causes. Patagonia, Inc. has been a member since the organization's inception in 2001. All other information presented on the back of the hang tag offered contact information to address any customer questions or concerns.





Spring 2012 Collection, Bottom

Bootcut Jean (Table 15). These Patagonia, Inc. pants were selected to analyze as an environmentally friendly item. Two different tags, the back tag and hang tag, have been analyzed in order to show all labeling information available. The back tag listed Patagonia, Inc. as the manufacturer, India as the country of origin, and the women's numerical size. All back tag information was listed in English and French. Adhering to all FTC regulations, the back tag presented a fiber content of 98% organic cotton and 2% spandex, exclusive of the trim. Symbols, along with text care instructions were depicted to comply with ASTM regulations. Symbols represented the following laundering instructions; machine wash at 40 Celsius, do not bleach, tumble dry at low temperature, and iron at a medium temperature under 150 Celsius. Text instructions presented on the back tag only read wash with similar colors. The manufacturer registered identification number was listed with other contact information as 51884.

The hang tag included thorough information regarding product features, company values, and contact information. This information was listed in four languages; English, French, German, and Japanese. Information about Patagonia, Inc.'s recycling program, Common Threads, was listed to encourage repair, recycle, and reuse. Listing natural

Table 14

Eco-Product Analysis- Patagonia Spring 2012 Collection
 Dress- *Margot Dress*

<u>Back Tag Information</u>	<u>Side Tag Information</u>	<u>Hang Tag Information</u>
Manufacturer Patagonia Size S Manufacturer Identification 51884 FTC content information Fiber Content 95% Organic Cotton 5% Spandex Exclusive of Trim Country of Origin Turkey	COMMON THREADS INITIATIVE Repair, Reuse, Recycle This Product www.patagonia.com RN: 51884 PO: 122583 ITEM: 75526SP12 MFG DATE AND LOCATION AT PCPSIA.COM Patagonia, PO Box 150 Ventura, CA 93002 USA <u>ASTM care instructions</u> <u>Symbols</u>	Retail Price \$65.00 Size S SKU 8565741253 Additional Information <i>Common Threads Initiative: Repair, Recycle, Reuse for this product. For more information, please go to patagonia.com/recycle or call 800-638-6464</i> <i>Environmentally Conscious: Made with either organically grown cotton, chlorine-free wool, hemp, recycled nylon or polyester; or Tencel Lyocell. Tencel is a registered trade- mark of Lenzing Aktiengesellschaft Corporation.</i>
<u>Garment Photograph</u> 		<i>SLIM FIT: Closer-fitting. (Slim-fitting technical garments may be worn over base-layers and light midlayers).</i> <i>The Patagonia Ironclad Guarantee: We guarantee everything we make. If you are not satisfied with one of our products at the time you receive it, or if one of our products does not perform to your satisfaction, return it to the store you bought it from or to Patagonia for a repair, replacement, or refund. Damage due to wear and tear will be repaired at a reasonable charge. Patagonia pledges at least 1% of sales to the preservation and restoration of the natural environment.</i>
		 Patagonia, Inc. pledges at least 1% of sales to the preservation and restoration of the natural environment.  RECYCLED. Paper made from recycled material. FSC C022028. www.fsc.org

textiles commonly used in the company's apparel production emphasized environmental efforts. Complete descriptions of additional hang tag information are listed under the hang tag information column in Table 15.

Two logos were represented on the back of the hang tag, along with a retail price of \$79.00, name, size, style number, and the stock-keeping unit number. The FSC, Forest Stewardship Council, is a non-profit organization that promotes responsible management of the world's forests. This certification provides consumers with credibility of responsible production. The hang tag includes the FSC website, www.fsc.org and states the paper was made from recycled materials. 1% for the Planet, another non-profit organization, members donate at least 1% of sales to environmental causes. Patagonia, Inc. has been a member since the organization's inception in 2001. All other information presented on the back of the hang tag offers contact information to address any customer questions or concerns.

Alberta Ferretti Conventional Product Analysis

Spring 2012 Collection, Top

Sleeveless Top (Table 16). A top from Alberta Ferretti, as a designer market, was selected to analyze as a conventional item. Two tags, including back tag and hang tag, have been analyzed in order to show all labeling information available. This information was listed in five languages; Italian, English, French, German, and Spanish. The back tag listed Alberta Ferretti as the manufacturer, Italy as the country of origin, and the size in various international conversions.

Adhering to all FTC regulations, the back tag presented a fiber content of 96% rayon and 4% other fibers. Symbols, along with text care instructions were depicted to

Table 15

Eco-Product Analysis- Patagonia Spring 2012 Collection
Bottom- *Bootcut Jeans*

<u>Back Tag Information (no side tag; information combined)</u>		<u>Hang Tag Information</u>	
Manufacturer	Patagonia	Retail Price	\$89.00
Country of Origin	India	Size	24
Size	24	SKU	8565765138
<u>Garment Photograph</u>		<u>Additional Information</u>	
		<p>Common Threads Recycling Program: Products that are recyclable via our Common Threads Recycling Program can be identified with a bobbin logo on the care and content label. Visit patagonia.com/recycle or call 800-638-6464.</p>	
		<p>Environmental Fibers: Made with either organically grown cotton, chlorine-free wool, hemp, recycled nylon or polyester, or Tencel Lyocell.</p>	
		<p>Patagonia, Inc. pledges at least 1% of sales to the preservation and restoration of the natural environment.</p> 	
		<p>RECYCLED. Paper made from recycled material. FSC C022028. www.fsc.org</p> 	
		<p><u>FTC content information</u></p> <p>Fiber Content 98% Organic Cotton 2% Spandex Exclusive of Trim</p>	
		<p><u>ASTM care instructions</u></p>	
		<p><u>Symbols</u></p> 	
		<p><u>Text</u></p> <p>Wash with similar colors Bleach Dry Iron Dryclean</p>	
		<p><u>Additional Information</u></p> <p>COMMON THREADS INITIATIVE Repair, Reuse, Recycle This Product www.patagonia.com MFG DATE AND LOCATION AT PCPSIA.COM RN: 51884 PO: 126974 ITEM: 56645SP12 Patagonia, PO Box 150 Ventura, CA 93002 USA</p>	

comply with ASTM regulations. Symbols represented the following laundering instructions; do not wash, bleach, or tumble dry, and iron at a low temperature less than 110 Celsius. Dry cleaning is highly recommended. Text instructions presented on the back tag read, no bleach, tumble cool, cool iron, and professionally dry clean only, perchloroethylene with like colors.

The hang tag included basic garment and company contact information. The manufacturer , Alberta Ferretti took up one side of the hang tag. The other side listed the retail price of \$995.00, model number, fabric number, color number, size, stock-keeping unit, and company contact information. The manufacturer identification was not listed on the back tag or the hang tag, as registered identification numbers are not required and not issued to businesses outside the United States. All other hang tag information is listed under the hang tag column of Table 16.



Spring 2012 Collection, Dress

Long Dress (Table 17). This Alberta Ferretti dress was selected to analyze as a conventional item. Two tags, including back tag and hang tag, have been analyzed in order to show all labeling information available. This information was listed in five languages; Italian, English, French, German, and Spanish. The back tag listed Alberta Ferretti as the manufacturer, Italy as the country of origin, and the size in various international conversions.

Adhering to all FTC regulations, the back tag presented a fiber content of 100% silk. Symbols, along with text care instructions were depicted to comply with ASTM regulations.

Table 16

Conventional Product Analysis- Alberta Ferretti Spring 2012 Collection
 Top- Sleeveless Top

<u>Back Tag Information (no side tag; information combined)</u>		<u>Hang Tag Information</u>	
<u>Manufacturer</u>	Alberta Ferretti	<u>Retail Price</u>	\$995.00
<u>FTC content information</u>		<u>Model</u>	
<u>Fiber Content</u>	96% Rayon 4% Other Fibers	<u>Fabric</u>	
<u>Lining</u>		<u>Color</u>	
<u>Ornamentation/Details</u>		<u>Size</u>	6
<u>Trim</u>		<u>SKU</u>	
<u>Garment Photograph</u>		<u>Additional Information</u>	
		AFFE, SPA	
		VIA DELLE QUERCE, 51 47842 S. GIOVANNI IN M.NO (RN) ITALY	
<u>ASTM care instructions</u>			
<u>Symbols</u>			
<u>Text</u>			
<u>Wash</u>		<u>Bleach</u>	no bleach
<u>Dry</u>		<u>Iron</u>	cool iron
<u>Dryclean</u>		<u>professionally dry clean only</u>	perchloroethylene with like colors
<u>Country of Origin</u>	Italy		

Symbols represented the following laundering instructions; do not wash, bleach, or tumble dry, iron at a low temperature less than 110 Celsius, and dry clean. Text instructions presented on the back tag read, no bleach, cool iron, and professionally dry clean only using perchloroethylene with like colors.

The hang tag included basic garment and company contact information. One side of the hang tag stated Alberta Ferretti in a large font. At the top of the back side listed the retail price of \$4,440.00, model number, fabric number, color number, and size for inventory purposes; whereas the bottom stated a stock-keeping unit barcode and company contact information. The manufacturer identification was not listed on the back tag or the hang tag, as registered identification numbers are not required and not issued to businesses outside the United States. All other hang tag information is listed under the hang tag column of Table 17.



Spring 2012 Collection, Bottom

Printed Silk Wide-Leg Pants (Table 18). The Alberta Ferretti pants were selected to analyze as a conventional item. Two tags, including back tag and hang tag, have been analyzed in order to show all labeling information available. This information was listed in five languages; Italian, English, French, German, and Spanish. The back tag listed Alberta Ferretti as the manufacturer, Italy as the country of origin, and the size in various international conversions.

Adhering to all FTC regulations, the back tag presented a fiber content of 100% silk. Symbols, along with text care instructions were depicted to comply with ASTM regulations. Symbols represented the following laundering instructions; do not wash, bleach, or tumble dry, iron at a low temperature less than 110 Celsius, and dry clean.

Table 17

Conventional Product Analysis- Alberta Ferretti Spring 2012 Collection
 Dress- Long Dress

<u>Back Tag Information</u>		<u>Side Tag Information</u>		<u>Hang Tag Information</u>	
Manufacturer	Alberta Ferretti	FTC content information		Retail Price	\$4,440.00
Country of Origin	Italy	Fiber Content		Model	
		Lining		Fabric	
		Ornamentation/Details		Color	
		Trim		Size	6
<u>Garment Photograph</u>					
		<u>ASTM care instructions</u> Symbols			
					
		<u>Text</u>			
		Wash			
		Bleach	no bleach		
		Dry			
		Iron	cool iron		
		Dryclean	professionally dry clean only perchloroethylene with like colors		
		Country of Origin	Italy		

Text instructions presented on the back tag read, no bleach, cool iron, and professionally dry clean only using perchloroethylene with like colors.

The hang tag included basic garment and company contact information. One side of the hang tag stated Alberta Ferretti in a large font. At the top of the back side listed the retail price of \$995.00, model number, fabric number, color number, and size for inventory purposes; whereas the bottom stated a stock-keeping unit barcode and company contact information. The manufacturer identification was not listed on the back tag or the hang tag, as registered identification numbers are not required and not issued to businesses outside the United States. All other hang tag information is listed under the hang tag column of Table 18.

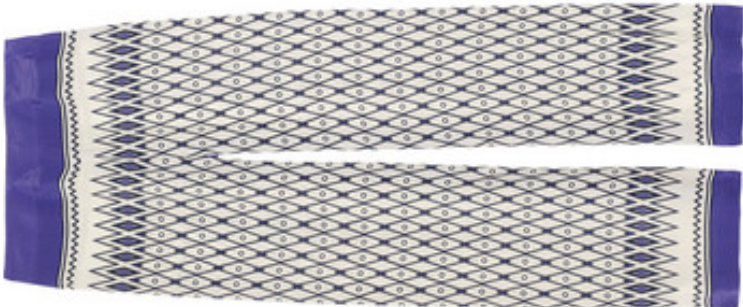

Alberta Ferretti Eco-Product Analysis

The selected Alberta Ferretti garments chosen for eco-product analysis all derive from an environmentally friendly collection titled *Pure Threads*. Prior to this collection, Alberta Ferretti had not offered environmentally friendly apparel. Alberta Ferretti became motivated to launch an environmentally conscious collection when noticing actress Emma Watson's collaboration with People Tree just a few months prior. People Tree is a fair trade focused budget market based out of London. *Pure Threads* incorporated organic materials into every step of production, from picking and spinning of the cotton to weaving and dyeing of the fibers" (Talbot, 2011).

This collection received an abundance attention when it launched in March of 2011, however these garments were only offered online for one season. This did not allow the researcher to examine all aspects of the garment labels. Labeling information

Table 18

Conventional Product Analysis- Alberta Ferretti Spring 2012 Collection
 Bottom- *Wide Leg Pant*

<u>Back Tag Information</u>		<u>Side Tag Information</u>		<u>Hang Tag Information</u>	
Manufacturer	Alberta Ferretti	<u>FTC content information</u>		Retail Price	\$995.00
Country of Origin	Italy	Fiber Content	100% Silk	Model	
Manufacturer Identification				Fabric	
		Lining		Color	
				Size	6
<u>Garment Photograph</u>		Ornamentation/Details			
		Trim			
		<u>ASTM care instructions</u> <u>Symbols</u>			
					
		<u>Text</u>			
		Wash	no bleach		
		Bleach			
		Dry	cool iron		
		Iron	professionally dry clean only		
		Dryclean	perchloroethylene with like colors		
		Country of Origin	Italy		

was drawn from online resources, such as published editorials along with other press information.

Spring 2011 *Pure Threads* Collection, Top

Long-Sleeve Lace-Embroidered Shirt (Table 19). For an eco-product, an Alberta Ferretti top from the exclusive *Pure Threads* collection was chosen for analysis. This top was highly marketed as an environmentally friendly garment.

In compliance to FTC regulations, the largest fiber content was presented first, then the other fibers descending in order of amount. The fiber content consisted of 100% organic cotton muslin. Care instructions did comply with ASTM regulations, although were not depicted online. The representation of text washing instructions in Table 19 explains that information was not available, as these garments were offered online for a short period of time.

Some hang tag information was presented online. The shirt was offered in sizes from 2 through 10 and retailed for \$670.00.



Spring 2011 *Pure Threads* Collection, Dress

Sleeveless Dress (Table 20). For an eco-product, an Alberta Ferretti dress from the exclusive *Pure Threads* collection was chosen for analysis. This top was highly marketed as an environmentally friendly garment.

In compliance to FTC regulations, the largest fiber content was presented first, then the other fibers descending in order of amount. The fiber content was composed of 100% organic cotton poplin with a 100% cotton muslin lining. Care instructions did comply with ASTM regulations, although were not depicted online. The representation

Table 19

Eco-Product Analysis- Alberta Ferretti Spring 2011 Pure Threads Collection
 Top- Long-Sleeve Lace-Embroidered Shirt

<u>Back Tag Information</u>		<u>Side Tag Information</u>		<u>Hang Tag Information</u>		
Manufacturer	Alberta Ferretti	FTC content information		Retail Price	\$670.00	
Country of Origin	Italy	Fiber Content	100% Organic Cotton Muslin	Size	S	
Manufacturer Identification				SKU	N/A	
<u>Garment Photograph</u>		Lining		<u>Additional Information</u>		
		Ornamentation/Details		<i>All materials are GOTS-certified*. Partial proceeds go to the People Tree Foundation, focusing on Fair Trade worldwide.</i>		
		Trim				
		<u>ASTM care instructions</u>				
		<u>Symbols</u>				
<u>Text</u>		Wash	N/A			
		Bleach	N/A			
		Dry	N/A			
		Iron	N/A			
		Dryclean	N/A			

*Global Organic Textile Standard, a worldwide textile processing standard, measures and certifies organic fibers throughout the textile supply chain.

of text washing instructions in Table 20 explains that information was not available, as these garments were offered online for a short period of time.

Some hang tag information was presented online. The dress was offered in sizes from 2 through 10 and retailed for \$1,080.00.

Spring 2011 *Pure Threads* Collection, Bottom

Denim Shorts (Table 21). For an eco-product, an Alberta Ferretti pair of shorts from the exclusive *Pure Threads* collection was chosen for analysis. This top was highly marketed as an environmentally friendly garment.

In compliance to FTC regulations, the largest fiber content was presented first, then the other fibers descending in order of amount. The fiber content was composed of 70% stonewashed GOTS⁴ certified cotton denim and 30% organic hemp. This pair of shorts featured embroidered lace on the side panel, although was not included in the trim content information. Care instructions did comply with ASTM regulations, although were not depicted online. The representation of text washing instructions in Table 21 explains that information was not available, as these garments were offered online for a short period of time.

Some hang tag information was presented online. These shorts were offered in sizes from 2 through 10 and retailed for \$340.00.



Examination of Apparel Companies' Environmental Criteria

Within the environmental criteria analysis of the three selected apparel companies, H & M Hennes & Mauritz AB, Patagonia Inc., and Alberta Ferretti, specific

⁴ Global Organic Textile Standard, a worldwide textile-processing standard, measures and certifies organic fibers throughout the textile supply chain.



Table 20

Eco-Product Analysis- Alberta Ferretti Spring 2011 Pure Threads Collection
 Dress- Sleeveless Dress

<u>Back Tag Information</u>		<u>Side Tag Information</u>		<u>Hang Tag Information</u>		
Manufacturer	Alberta Ferretti	FTC content information		Retail Price	\$1,080.00	
Country of Origin	Italy	Fiber Content	100% Organic Cotton Poplin	Size		
Manufacturer Identification				SKU		
<u>Garment Photograph</u>		Lining	100% Organic Cotton Muslin	<u>Additional Information</u>		
		Ornamentation/Details		<i>All materials are GOTS-certified*. Partial proceeds go to the People Tree Foundation, focusing on Fair-Trade worldwide.</i>		
		Trim				
		<u>ASTM care instructions</u>				
		<u>Symbols</u>				
		<u>Text</u>				
		Wash	N/A			
		Bleach	N/A			
		Dry	N/A			
		Iron	N/A			
		Dryclean	N/A			

*Global Organic Textile Standard, a worldwide textile processing standard, measures and certifies organic fibers throughout the textile supply chain.

Table 21
 Eco-Product Analysis- Alberta Ferretti Spring 2011 Pure Threads Collection
 Bottom- *Denim Shorts*

<u>Back Tag Information</u>		<u>Side Tag Information</u>		<u>Hang Tag Information</u>	
Manufacturer	Alberta Ferretti	FTC content information		Retail Price	\$340.00
Country of Origin	Italy	Fiber Content	70% Stonewashed GOTS (Global Organic Textiles Standard) Certified Cotton Denim	Size	N/A
Manufacturer Identification		Lining	30% Organic Hemp	SKU	N/A
<u>Garment Photograph</u>		Ornamentation/Details		<u>Additional Information</u>	
		Trim		<i>All materials are GOTS-certified*.</i>	
		ASTM care instructions		<i>Partial proceeds go to the People Tree Foundation, focusing on Fair Trade worldwide.</i>	
		Symbols			
		Text			
		Wash	N/A		
		Bleach	N/A		
		Dry	N/A		
		Iron	N/A		
		Dryclean	N/A		

*Global Organic Textile Standard, a worldwide textile processing standard, measures and certifies organic fibers throughout the textile supply chain.

environmental information and references were categorized among the four steps of the product life cycle (EPA, 2012). The four steps of the product life cycle used, as stated by the Environmental Protection Agency, occur in the following order, materials, manufacturing and assembly, packaging and distribution, and use and disposal. Among these life cycle steps, major contributions were listed that each company took to encourage more sustainability actions. Concise explanations of this environmental information were categorized through steps of the product life cycle in order to thoroughly understand the production process. Most environmental information consisted of eco-friendly organizations affiliated with each of the companies. Brief descriptions were included under the environmental information row for clarification and construction of a barcode system. References were also listed below all environmental information to provide further exploration of this information.

In April of 2012, H & M published a document of sustainability actions from 2011, which included statistical comparisons of production among past years. Proposed goals from 2011 and predictions for 2012 were also displayed throughout their company's value chain, consisting of design, raw materials, fabric processing, manufacturing, transport, sales, and use. In this publication, H & M agreed more sustainability information should be presented to consumers, however only presented sustainable fiber content on the hang tags of apparel in their eco-friendly collections. Current statistics of this value chain were not presented on hang tags of offered eco-products. The environmental information section of Table 22 mainly lists organizations in affiliation with H&M working towards sustainable production.

Table 22

Environmental Practice Analysis - H&M

Product Life Cycle Assessment Step	Environmental Information	Reference
1. Materials	Environmental Materials: organic cotton, recycled polyester, recycled polyamide, recycled plastic, organic linen, recycled cotton, recycled wool, Tencel®, organic hemp	H&M Conscious Actions Sustainability Report 2011, pg. 14 Website- http://about.hm.com/content/hm/AboutSection/en/About/Sustainability/Commitments/Use-Resources-Responsibly/Raw-Materials/Conscious-Materials.html
	<u>Better Cotton Initiative</u> : works to improve environmental and social impacts of cotton cultivation worldwide	H&M Conscious Actions Sustainability Report 2011, pg. 3
	Number one user of use organic cotton worldwide	H&M Conscious Actions Sustainability Report 2011, pg. 2
	<u>Textile Exchange</u> : non-profit organization promoting the sustainability across the textile supply chain.	H&M Conscious Actions Sustainability Report 2011, pg. 13 Website- http://about.hm.com/content/hm/AboutSection/en/About/Sustainability/Commitments/Use-Resources-Responsibly/Raw-Materials/Cotton.html
2. Manufacturing and Assembly	<u>Sustainable Apparel Coalition</u> : reduce the apparel and footwear industry's carbon footprint through an industry-wide index	H&M Conscious Actions Sustainability Report 2011, pg. 3 Website- http://hm.com/apparelcoalition
	<u>Fair Wage Network</u> : organization promoting fair wages throughout the global supply chain	H&M Conscious Actions Sustainability Report 2011, pg. 3, 15
	<u>UN Global Impact</u> : strategic policy initiative asking company members to embrace a set of ten values regarding human rights, labour standards, the environment and anti-corruption	H&M Conscious Actions Sustainability Report 2011, pg. 3
	<u>Business for Social Responsibility</u> : member organization developing sustainable business strategies and solutions through consulting, research, and cross-sector collaboration	Website- hm.com/members hm.com/water
	<u>Buyers Forum Bangladesh</u> : Initiated by H&M and GAP, Inc. in 2006, this group addresses workers' rights issues and labor laws in Bangladesh	Website- hm.com/members
	<u>Better Factories Cambodia</u> : a mandatory program for all export factories in Cambodia to assess working conditions with advisory and training services	Website- hm.com/members
	<u>Better Work</u> : International Labor Organization initiated program to find solutions to workers's sustainable labor issues	Website- hm.com/members
	<u>Leather Working Group</u> : promote sustainable actions and leather from certified tanneries	H&M Conscious Actions Sustainability Report 2011, pg. 25
	<u>Ethical Trade Initiative</u> : H&M joined this group of companies, trade unions and voluntary organisations in 2011 to improve the lives of poor workers around the world	H&M Conscious Actions Sustainability Report 2011, pg. 42
	<u>Responsible Sourcing Network</u> : facilitated pledge to ban the use of cotton from Uzbek, where forced child labor is prevalent	H&M Conscious Actions Sustainability Report 2011, pg. 43
	<u>Chemical Use</u> : H&M is working to ban fluorocabrons in water-resistant garments and toluene, commonly found in accessories. They have successfully launched an alternative for children's garments with a Bionic Finish eco-label.	H&M Conscious Actions Sustainability Report 2011, pg. 74 Website- hm.com/bionicfinish
	<u>UN Global Compact, CEO Walter Mandate</u> : a commitment to improve suppliers and their own water efficiency	H&M Conscious Actions Sustainability Report 2011, pg. 75 Website- hm.com/water
3. Packaging and Distribution	<u>Recycled Materials</u> : packaging boxes, mail order packaging paper and plastic carrier bag. Packaging of garments individually has been almost eliminated.	H&M Conscious Actions Sustainability Report 2011, pg. 69
	<u>Forest Stewardship Council</u> : independent, non-profit organization promoting responsible management of forests worldwide. Paper bags in H&M stores originate from FSC certified forests.	H&M Conscious Actions Sustainability Report 2011, pg. 72 Website- hm.com/carrierbags
	<u>Environmental Protection Agency Smart Way</u> : program that evaluates and certifies performance of road carriers in the United States. H&M is trying to establish a similar program in Europe.	H&M Conscious Actions Sustainability Report 2011, pg. 63 Website: http://www.way-ahead.org/
4. Use and Disposal	<u>Cause-Related Projects</u> : H&M launched various collections to raise awareness of issues they address. Percentage of the net sales support these projects.	H&M Conscious Actions Sustainability Report 2011, pg. 81 Website: hm.com/faa hm.com/allforchildren hm.com/wateraid hm.com/consciousfoundation
	<u>Donations</u> : All unsold products are either to be donated to charity or recycled for further use.	H&M Conscious Actions Sustainability Report 2011, pg. 86 Website: hm.com/communities

Most environmental information Patagonia, Inc. offered was clearly stated separately on apparel hang tags, back tags, and side tags. Majority of the information, represented on the hang tags, directed consumers to the company's website for a more detailed understanding of each environmental organization in association with their company. Patagonia, Inc. did not offer a sustainability report in 2011 such as H&M, although detailed corporate responsibility information can be found throughout their website, and more specifically under the environmentalism section of the website. Table 23 shows environmental organizations working with Patagonia, Inc., throughout the product life cycle to create the lowest impact value chain.

Because the exclusivity of Alberta Ferretti's *Pure Threads* eco-friendly collection, environmental information is currently not publicized on her website. This collection received a good amount of press through published articles worldwide, as during that time few designers were incorporating environmental concerns into production. Information in Table 23 was gathered from the production information publically released during the time the collection was available for purchase.

Table 24 exhibited a barcode system for eco-products. It was designed to quantify sustainability through all stages of the product life cycle, design and materials, manufacturing and assembly, packaging and distribution, and use and disposal. Current labeling product information was listed in the first section of the table, according to Federal Trade Commission regulations (FTC/AATC, 2011). Features currently existing on eco-product and conventional labels have been assigned to the first twelve digits of the proposed barcode system. Those features include fiber content, country of origin, identification number, manufacturer identification, detail content, trim content, care

instructions, company information, retail price, garment size, and stock-keeping units (FTC/AATC, 2011).

Twelve additional components were proposed in Table 25 to complete the eco-product barcode system based on the research found (Cooper, 2011). Steps of the product life cycle were extensively analyzed to identify information missing from current eco-product labels (EPA, 2012). Benefits of the additional twelve product information were included for consumer rights. The first proposed product information in Table 25 for the barcode system was an in-depth explanation of materials origin, not just the content. Sourcing information included in this barcode system provided more information than products country of origin, such as how and where all materials were sourced. Treatment of materials was chosen to provide consumers with information regarding health concerns, such as potential hazardous finish or solvent-based adhesives used during manufacturing. By quantifying sustainability, for example tracking chemical and water usage through the production process, consumers will be able to compare companies based on environmental consciousness. Detail of garments occurs during the manufacturing and assembly process, although are commonly disregarded on product labels (FTC/AATC, 2011). This information also contributes to waste, therefore should also be tracked and presented on garment labels. From the research, when claiming to be environmentally conscious, companies can easily use recyclable packaging products, although consumers should be encouraged to do the same. Precise packaging and distribution changes can be marketed on product labels to clearly communicate sustainable business practices.

Conspicuous consumption can help purchasing decisions; consumers may feel more apt to obtain eco-products if their purchase supports certain organizations. All companies analyzed in this study donated a percentage of sales to organizations supporting the environment and reported this information on eco-labels. Style and fit information as well as recommended use of the garment, aids in customer purchasing decisions for maximum use. ASTM care instructions should be easier to understand and provide more environmentally conscious information, expanded from current symbol or text information. Environmentally conscious care alternatives allow for a decrease of consumers' ecological footprint. Recycling recommendations on all garments, whether ethically produced or no, allow consumers to have a clear idea of proper, yet convenient disposal methods.

This barcode system will be available to consumers through the Internet, at brick and mortar retail stores, or by using smart phone technology to scan eco-product labels. Retail merchandising associates can provide customers with a list of product environmental criteria, upon request. Discount department stores may have in-store scanners to bring up such product information. Each of the 24 product features will be listed for consumer product knowledge and environmental awareness and correspond with each two digits on the barcode. By quantifying certain production processes that determine if products are environmentally friendly, this barcode system encourages sustainable purchasing decisions. Consumers can recognize clear statistical data of production processes and relate that information to their purchase. The barcode will provide inquisitive consumers with comprehensive sustainability business practices being used in the apparel and textile industry today.

Table 23
Environmental Practice Analysis - Patagonia, Inc.

<u>Product Life Cycle Assessment Step</u>	<u>Environmental Information</u>	<u>Reference</u>
1. Materials	<u>Environmentally Conscious</u> : Made with either organically grown cotton, chlorine-free wool, hemp, recycled nylon or polyester, or Tencel Lyocell. Tencel is a registered trademark of Lenzig Aktiengesellschaft Corporation.	Product Hang tags- Environmentally Conscious Materials
	<u>Textile Exchange</u> : non-profit organization promoting the sustainability across the textile supply chain.	Website- http://www.patagonia.com/us/patagonia.go?assetid=15431
2. Manufacturing and Assembly	<u>Bluesign® Standard</u> : independent organization evaluating textiles based on standards throughout production processes.	Website- http://www.patagonia.com/us/patagonia.go?assetid=57495
	<u>Forest Stewardship Council</u> : independent, non-profit organization promoting responsible management of forests worldwide.	Hang tags; FSC.org Website- http://www.patagonia.com/us/patagonia.go?assetid=16102
3. Packaging and Distribution	<u>Footprint Chronicles</u> : a visual online map that tracks suppliers worldwide.	Website- http://www.patagonia.com/us/footprint/
	<u>1% for the Planet</u> : member based organization donating 1% of sales to environmental organizations worldwide.	Website- http://www.patagonia.com/us/patagonia.go?assetid=1960 Hangtags- 1% for the Planet logo
	<u>Product Features and Benefits</u>	Hang tags
	<u>Common Threads</u> : Patagonia's initiative to encourage consumers to reduce, repair, reuse, recycle, and reimagine.	Hang tags Website- http://www.patagonia.com/us/common-threads/

*Tencel is a registered trademark of Lenzig Aktiengesellschaft Corporation.

Table 24

Environmental Practice Analysis - Alberta Ferretti

Product Life Cycle Assessment Step	Environmental Information	Reference
1. Materials	<u>Environmental Materials</u> : certified organic cotton, organic hemp, organic cotton muslin, organic cotton poplin	(Chua, 2011)
2. Manufacturing and Assembly	<u>Sourcing</u> : Picking and spinning of cotton was chosen ethically	(Talbot, 2011)
	<u>Chemicals</u> : Washing, weaving, and dyeing of textiles was completed in an ethical manner with natural dyes.	(Talbot, 2011)
3. Packaging and Distribution	<u>Environmental Materials</u> : organic materials such as paper and cardboard, were used to ship merchandise to customers	(Zargani, 2011)
	<u>Online Storefront</u> : <i>Pure Threads</i> collection was available exclusively online for a short period of time, and not distributed to retail stores.	Website- www.albertaferretti.com
4. Use and Disposal	<u>Cause Related Projects</u> : Percentage of proceeds from the collection support Emma Watson's non-profit organization <i>People Tree</i> , which works to improve the lives and environment of the artisans and farmers in developing countries.	(Pfander, 2011)

Table 25

Existing Labeling Product Information by the Federal Trade Commission, American Society for Testing and Materials, and American Apparel & Footwear Association

<u>Labeling Product Information- Current</u>		<u>Reference</u>	<u>Benefits</u>
01	Fiber Content	(FTC/AATC, 2011, pg. 7)	Largest fiber content must be presented first, followed by other fiber content in descending order.
02	Country of Origin	(FTC/AATC, 2011, pg. 20)	Location of a product production can be associated with quality.
03	Identification Number	(FTC/AATC, 2011, pg. 23)	RN can be useful to look up business information, but not required for imported products
04	Manufacturer	(FTC/AATC, 2011, pg. 23)	Full company name must be present.
05	Lining Content	(FTC/AATC, 2011, pg. 11)	All fiber content information is crucial for post purchase care of garment.
06	Ornamentation/Detail Content	(FTC/AATC, 2011, pg. 10)	Normally this consists of a minimal amount and is not presented on labels, although can significantly alter care instructions.
07	Trim Content	(FTC/AATC, 2011, pg. 8)	Normally trim does not exceed 15 percent of the garment, so is not disclosed on the label. Complete trim content, sourcing, and replacement information may extend the post purchase use of the garment.
08	Care Instructions	ASTM Standard D5489 (2011)	Either symbols or text instructions are required on apparel labels, although not every consumer understands care symbols (Yan, 2008).
09	Company Information	(FTC/AATC, 2011, pg. 23)	Company contact information is not required, although consumers may always have inquiries about products.
10	Retail Price	(Cotton Inc., 2010, pg. 1)	Found on hangtags, price is one of the most regarded factors in purchasing decisions.
11	Garment Size	(FTC/AATC, 2011, pg. 27)	Description of international size variations allow all consumers to choose the right style.
12	Stock-Keeping Unit	(Karimzadeh, 2008)	SKU numbers aid in inventory management, if consumer needed to return or exchange a product.

Table 26
Proposed Barcode System for Eco-Products in the Apparel and Textile Industry

Labeling Product Information- Proposed for Barcode System		Reference	Benefits
01	Materials	(GreenBlue, 2009, pg. 15)	The disclosure of the amount of materials used and whether they are new, renewable, post consumer recycled, or post industrial recycled, gives consumers better knowledge of the origin of the garment.
02	Sourcing	(Urlaub, 2011)	By including a detailed description of how all materials of each garment were sourced, consumers will have a better understanding of the production
03	Fiber Treatment (Material Health)	(Safe Cosmetics Act, 2011)	With the Safe Cosmetics Act of 2011, cancer causing chemicals are now disclosed on cosmetic products. All chemicals used during manufacturing of garments will allow for further consumer knowledge before
		H&M Conscious Actions Sustainability Report 2011, pg. 3; Website- hm.com/care	Adhesives used in shoes and accessories should be disclosed, whether water-based or solvent-based, to determine how important sustainability is to a
04	Chemical and Water Usage	(Patagonia, 2012)	Chemical and water usage information can be tracked through the manufacturing and assembly product life cycle step. With more information available on this topic, consumers would understand the pollution effects water and chemicals have on the production
05	Notions/Garment Detail	(Frings, 2005)	Fibers are not the only factor to consider within production. Notions and detail on garments also contribute to waste and unethical business sourcing
06	Packaging	(O'Dea, 2009)	Sustainable packaging can encourage consumers to recycle or reuse the garment as well as the packaging.
07	Distribution	(Forest Stewardship Council, 2009)	Product tracking, including energy used in transport and shipping method information, can further inform consumers of the production process.
08	Conspicuous Consumption	H&M Conscious Actions Sustainability Report 2011, pg. 81 hm.com/consciousfoundation	Examples of who benefits from the purchase of this garment should be included on garment labels.
09	Style/Fit Information	(Cotton Inc., 2010, pg. 1)	The fit of a garment is highly regarded within purchasing decisions. This may speed up the purchasing process if the fit is clearly stated and the customer does not need to try on the garment. If purchasing online, product fit and exact
10	Recommended Use	<i>Patagonia Hang tags</i>	Product features and benefits allow consumers maximum use out of garments, resulting in less textile
11	Environmentally Conscious Care Instruction Alternatives	H&M Conscious Actions Sustainability Report 2011, pg. 3; Website- hm.com/care	The "user phase" accounts for 40% of climate impact of garment life cycle. The life cycle may be extended with environmentally conscious care instructions.
12	Recycling/Disposal	(Bourland, 2011)	Proper garment recycling information encourages ethical disposal decisions. Listing appropriate recycling center locations allow consumers the choice to discard garments for the proper break down of textiles.
			Disclosure of how each fiber content breaks down for recycling aids in consumer education.



CHAPTER 5

CONCLUSION/DISCUSSION

As the current Western culture is substantially unaware of their personal environmental impact, corporations as well as consumers need to strive harder to make ethical decisions. The FTC, independent agencies, and eco-friendly companies all understand the importance of corporate social responsibility and consumer rights in unison. With fast fashion actively influencing consumer-purchasing decisions, promotion of sustainable production through accurate product labeling of organic and eco-friendly apparel has become more important than ever. By creating precise certifications, reputable organizations can encourage businesses to show corporate social responsibility through the use of their standards. Consumers have a rightful expectation of factual information to make informed purchasing decisions. In order for an increase of eco-fashion consumption, consumers must be informed of more comprehensive eco-production processes.

This research followed two main objectives. First, current labeling practice among eco-products versus conventional products was analyzed for the purpose of identifying missing environmental information among those selected companies. Current apparel and textile industry products were analyzed by selecting three companies from a range of different market categories, budget, moderate, and designer. This research exemplified sustainability among the apparel and textile industry by including brands from these three market categories. Three different types of labeling systems, hang tags, side tags, and back tags, were investigated for eco-product sustainability information. Each company's sustainable business practices were then analyzed to determine

imperative environmental information for the barcode system. The 2011 H&M Conscious Actions Sustainability Report consisted of detailed sustainability initiatives through every step of the value chain. Statistical data confirmed most expectations set for 2011 were not met. An ambitious sustainable direction is vital to a company marketing products as environmentally friendly, although consumers have a right to statistical information for every product available. Affiliations with sustainable organizations are rather vague for a company to claim sustainable business practices.

Patagonia exemplified proper labeling methods for their offered eco-products. Beneficial environmental information was presented on product hang tags, as shown in tables 4.7 through 4.12. This made information convenient to customers, aiding in ethical purchasing decisions. Information on hang tags also directed customers to their website for further exploration of environmental initiatives.

Alberta Ferretti's eco collection, *Pure Threads*, was offered exclusively during the spring of 2011. Within the designer market, the collection appropriately demonstrated environmental production processes taken. Publicity during the time aided in consumer awareness of such sustainability business actions. Unfortunately, detailed information regarding the production process, specifically sourcing of materials and manufacturing, are not publically available any longer.

From the analysis of all 18 tables, there was not much data information difference among the products and companies in the left columns, demonstrating back tag information. Back tag information tended to be exclusive of manufacturer, country of origin, and size information. Some back tag information included FTC content

information, although that was dependent on the kind of label, for example, printed as opposed to a physical tag.

Within the middle column depicting side tag information, some difference was seen, specifically among the type of care instructions. All companies analyzed used care symbols to represent these instructions, although only some advised consumers of these instructions through text. Most companies that used text instructions only included certain instructions, more specific than represented in a symbol, or additional recommended care instructions the companies reckoned important. Also, some companies chose to list additional product or company information on the side tag.

The right column of the 18 tables, representing hang tag information, had the largest difference of information. Most all products listed a price and way of tracking the garment, such as a stock-keeping unit, however did not include detailed production process information. Both Patagonia, Inc. and H & M offered environmental product information, including guidance to their websites for further reference. Most organizations these companies have substantial affiliation with also were represented on the hang tags or product packaging.

As objective 1.1, tables 22, 23, and 25 were generated to analyze each company's environmental information, as well as determine crucial missing information throughout the product life cycle. This information should be better represented on labels and available to the general public. Consumers have the right to be fully aware and educated of production processes before purchasing products they use daily.

From these environmental practice analyses, a sustainable eco-product labeling barcode system was then proposed to support consumer rights and encourage ethical

purchasing decisions. This barcode system was developed to add necessary environmental criteria to the current labeling system and serve as a better communication tool between companies and their customers. This allowed consumers to acknowledge the importance of this topic among industry executives. By tracking production and individually measuring companies for their sustainable actions, consumers have a better idea of waste at every step of a product's life cycle.

Contributions to this Study

The application and findings of this study will contribute to two main functions. Future academia research regarding eco-fashion will benefit from this study. With no standardized labeling barcode system in the U.S, consumers are currently left to trust environmentally friendly fashion advertisements in the media today. This study will contribute to the knowledge of eco-fashion labeling among three different market categories, spanning the apparel and textile industry today. This conceptual analysis-based apparel labeling research is also relevant to the significance of eco-fashion in the textile and apparel industry today. The analysis presented views of the apparel and textile industry not commonly seen in marketing today. A greater concern for consumer rights, represented by business ethics, should be apparent within the marketing of eco-products. Consumers have the right to know precise environmental actions being taken in the apparel and textile industry today and how it affects our future.

A barcode system for eco-products within the apparel and textile industry would provide consumers with reliable product information. The time has come for more companies to take initiative in motivating manufacturers to adopt environmentally safe

procedures. A worldwide regulation would help inform consumers about the textile and apparel production process and would promote sustainable lifestyles.

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