THIS IS HOW WE DO IT: UNDERSTANDING FINANCIALLY SUCCESSFUL APPAREL COMPANIES’ ADOPTION OF SUSTAINABLE INITIATIVES OVER TIME

A thesis submitted to the College of Arts of Kent State University in partial fulfillment of the requirements for the degree of Master of Arts

by

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I want to thank my supportive family and friends, who have stood by me and kept me motivated to work hard and finish my degree. I want to thank my committee, who have encouraged me and helped me grow as a researcher and as an individual.
This research sought to explore sustainable practices by financially successful apparel companies with the intention of developing a timeline for implementation of ethical and environmentally conscious behavior. Examining financially successful companies who support sustainable practices can encourage other businesses to follow their lead and governments to formulate policies aimed towards sustainable development. For the purpose of the study, a qualitative analysis was conducted on the Corporate Social Responsibility (CSR) reports of four financially successful multinational apparel companies to explore the environmental and social efforts to understand sustainability initiatives over time. Data analysis revealed six major themes where companies implement sustainability initiatives: reduction of energy use & consumption, development of technology & infrastructure, reduction of negative impact of chemicals on the environment, textile waste reduction, other efforts for conservation & use of alternatives, and social responsibility. Data revealed that each area could be broken down into sub-themes that further described sustainable practices adopted by these financially successful apparel companies. During the initial stages of sustainability implementation, simple steps were taken to increase sustainable business practices. As the companies progressed, companies utilized innovative technology to implement sustainability throughout the supply chain. Data were organized in five-year increments to gain an overall timeline of sustainability implementation.
labeled as four phases: Launch, Evolve, Advance, and Progress, hereby referred to as L.E.A.P. This research makes sustainability understandable and attainable through the L.E.A.P. process.

*Keywords*: apparel, sustainability, economic, environment, social
EXECUTIVE SUMMARY

Sustainability in the textile and apparel industry is important due to its size and impact. Concerning issues regarding environmental sustainability and social responsibility are continually rising. The apparel industry has a significant impact on environmental issues, including: energy, water filtration, chemicals, and landfill waste. When social issues are not a concern to company leaders, working conditions in factories suffer; health and safety considerations are sacrificed, wages are lowered, longer hours are required, and workers confront the presence of verbal, physical, and/or sexual abuse (Neu, Rahaman, & Everett, 2014). This research explored the efforts to improve sustainability of financially successful apparel companies with the intention of analyzing ethical and environmentally conscious behaviors. By focusing on financially successful industry leaders, this study addresses one of the most significant sources of resistance, a loss of profits.

In examining the positive environmental and social impacts of financially successful apparel companies, Adidas, Gap, H&M, and Nike, this study explored the following research questions:

R1: Is there a timeline that financially successful apparel companies follow regarding their implementation of environmentally sustainable and socially responsible practices?

R2: How does a financially successful apparel company apply sustainable initiatives throughout the supply chain?

R3: Are there phases that a company goes through when applying sustainable initiatives?

To investigate the research questions, Corporate Social Responsibility (CSR) reports of the four companies, identified above, were analyzed. Data were collected on companies’ sustainability initiatives related to each of the areas of sustainability: reduction of energy use &
consumption, development of technology & infrastructure, reduction of negative impact of chemicals on the environment, textile waste reduction, other efforts for conservation & use of alternatives, and social responsibility. After analyzing the data from CSR reports, it can be concluded that financially successful apparel companies have adopted environmentally sustainable and socially responsible initiatives and do follow a pattern for applying sustainable practices.

The major areas and themes identified in four financially successful companies CSR reports were organized in five-year increments (1-5, 6-10, 11-15, 16+) to gain an overall timeline of sustainability implementation. The five-year increments of sustainability implementation have been labeled as four phases: Launch, Evolve, Advance, and Progress, hereby referred to as the L.E.A.P. process. Within each phase are sub-themes that include recommendations for specific initiatives under each of the six areas of sustainable implementation based on textual evidence of the CSR reports of the four financially successful apparel companies analyzed.

By documenting initiatives of financially successful, sustainable apparel companies, these insights provide a concrete plan to aid companies towards future success in the industry. Providing evidence of the specific areas and environmentally sustainable and socially responsible practices that financially successful companies adopted serves as a model for other companies and can reduce resistance toward sustainability, especially based on financial concerns. While this study concentrated on four companies, industry stakeholders can utilize these findings to suggest a general timeline of practices to implement in an effort to improve their environmental and social impact while experiencing financial success. The L.E.A.P. process makes sustainability understandable, reachable, and attainable.
CHAPTER I
INTRODUCTION

Sustainability is a general term that covers issues relating to the environment and social justice (Montiel & Delgado-Ceballos, 2014). Interest in the value of sustainable practices is growing with companies becoming more aware of the need for environmentally-friendly and socially conscious behaviors, leading to greater exploration and implementation of sustainable actions (Shen, Wang, Lo, & Shum, 2012). This is especially true in the apparel industry where a heightened need for improvement in environmental and social sustainability has gained attention among consumers, professionals, and scholars. Sustainability initiatives focus on building a society with a balance between economic, social, and environmental concerns; this involves expanding economic growth and shareholder value, adopting ethical business practices, and creating viable jobs (Szekely & Knirsch, 2005).

INDUSTRY OVERVIEW

Sustainability in the textile and apparel industry is important due to its size and range of production locations. The global textile and apparel industry employs more than 75 million people and the global market is worth approximately $1.7 trillion USD (Fashion United, 2015).

In the United States alone, the apparel market has a market value of about $331 billion USD, making the United States the largest consumer of clothing in the world (Statista, 2015).

Moreover, apparel production is mostly done in underdeveloped/developing countries with cheap labor cost and little to no social/environmental regulations, thereby presenting huge potential for
social, environmental and economic impacts (Dicken, 2011). These conditions provide both
challenges and opportunities for improvement. Every stakeholder in the supply process plays a
role in implementing sustainability: consumers, designers, retailers, and other industry insiders
can all have a significant influence on environmental and social concerns (Shen et al., 2012,).

INDUSTRY IMPACT

According to Forbes magazine, “there’s a dark side to production on a mass scale –
namely, making the fashion industry the third most polluting industry on earth after oil and
agriculture” (Forbes, 2014). In a 2013 report on the apparel industry, Deloitte, a financial
advisory firm, found, with current levels of consumption of natural resources we need the
regenerative capacity of 1.5 Earths, and by 2050 we will need 2.3 Earths (Deloitte, 2013).

In addition to environmental concerns, there are opportunities for social improvement.
While consumers may be satisfied in developed countries, the needs of employees in developing
countries are not being met (Ha-Brookshire & Hawley, 2013). In addition, recent tragedies, like
the collapse of an apparel factory in Bangladesh in 2013 killing more than 1100 workers, have
emphasized the need for increased responsibility (Evans, 2015). The well being of the
environment and people in the supply chain must be taken into account when considering the
health, sustainability, and success of a company itself.

INFLUENCES ON THE INDUSTRY

A lack of concern for people who make our clothes is evident not only in consumers but
also among businesses. Throughout its history, the apparel industry has continually sought lower
and lower labor costs. According to The Consumer Price Index, prices for items in the apparel
industry have declined significantly since 1990 with consumer outlay for apparel and other
related products about 3.5 percent of average annual expenditures (Bureau of Labor Statistics,
When shopping for clothing, individuals rarely think about the cost exchange that occurs throughout the supply chain, although these transactions heavily influence the price that the consumer sees (Bureau of Labor Statistics, 2015).

In addition to consumers, apparel firms have also contributed to the lack of social and environmental concern in the industry. The rise of fast fashion has accelerated the “race to the bottom” where companies are cutting corners, especially in labor costs and environmental impact oversight (McNeill & Moore, 2015). In many ways, the standard way of doing business for apparel companies is to continually seek cheaper and cheaper costs in order to be competitive. Brands are focusing on reducing the expense of production with the use of low-cost labor; low-quality materials and methods; and streamlined design in order to satisfy the high turnover of textile products (Cortez, Tu, Anh, ZagitaNg, & Vegafria, 2014). People working throughout the supply chain, from factories to retail stores, suffer from the seemingly continual quest for low price apparel (Cortez, et.al, 2014).

**SUSTAINABILITY EFFORTS**

In an effort to counter environmental and social issues, apparel industry leaders have begun to adopt and implement sustainable practices including conservation of natural resources and protection of workers to foster a more sustainable future (Bin, 2014). Major apparel brands like Adidas and Nike are making strides to produce apparel products that cause reduced harm to the environment and society (Hepburn, 2015). Yet, many other firms are skeptical to undertake sustainability initiatives since believing such efforts add to the total expenditure of the firm and in turn, negatively impact the financial bottom-line. In observing what motivates apparel companies to take leadership in corporate social responsibility, Dickson & Chang (2015) found that 89% of companies are driven by sales and profits and unless sustainability can provide
increases in financial gain, companies are not all that interested in implementing sustainability (p. 66). Thus, the “race to the bottom” for certain firms can often be at odds with sustainable initiatives (Davies & Vadlamannati, 2013).

Initiatives from governmental as well as non-governmental agencies have increased understanding of the importance of adopting sustainable initiatives to protect the future of our planet and its people. In line with the UN initiatives, United States governmental agencies have implemented regulations and policies, challenging companies to be competitive in the market while improving their production and sourcing quality. The United States Environmental Protection Agency (EPA) established the Clean Air Act in 1963, the National Environmental Policy Act (NEPA) in 1970, the Clean Water Act in 1972, the Energy Policy Act in 1992, and many other laws to address the impact that any source, corporate or individual, has on the environment (EPA, 2015). The United States Department of Labor (DOL) has established many laws protecting employees, including the following: the Fair Labor Standards Act (FLSA) to protect wages and hours, the Occupational Safety and Health Act (OSHA) to enforce safety standards, and the Federal Employees’ Compensation Act (FECA) to protect employee compensation in case of injury or death (United States Department of Labor, 2015). Laws passed by Congress to protect the environment and people are enforced by the EPA and the DOL with violators subject to fines and criminal charges (EPA & DOL, 2015).

This ethical scrutiny and the “potential threat to corporate brand value in the event of negative media exposure relating to [environmental and social] harms” further motivates the development of sustainable practices in the apparel industry (Carrigan, Moraes, & McEachern, 2013, p. 1299). Apparel consumers have also provided some of the impetus for adoption of sustainable practices. Consumers are increasingly aware of the ethical, or ethic-less, practices of
apparel companies (McNeill & Moore, 2015). As the public becomes enlightened, they demand the fashion supply chain be more transparent and ethical (Shen et al., 2012). This increases the pressure on companies to be more eco-friendly and socially conscious (Bin, 2014). Consumer and apparel company interest in sustainability has led to an increase in ethical consumerism and corporate social responsibility, playing a significant role in achieving a sustainable apparel industry (Shen et al., 2012, p. 242).

Researchers have indicated that while company sustainability initiatives require focused effort, dedication, and often allocation of resources, there is substantial potential for long-term benefit. A sustainable transformation in a company “can only be achieved by committing resources over a continued period of time” (Carrigan et al., 2013, p. 1299). However, if apparel companies do not take the transition to sustainability seriously, “they face a threat from those who successfully synthesize social responsibility” (Carrigan et al., 2013, p. 1299). Sustainability not only is an ethical and moral concern for apparel companies, it is vital to thrive in a competitive market.

Due to consumer pressure, competition, and regulation, sustainability is gaining more attention among apparel companies, with brands becoming aware of the importance of being ethically and environmentally responsible. To those ends, organizations like the Cradle-to-Cradle Products Innovation Institute provide support and encouragement to “fashion businesses in five categories of sustainability: material health, material reuse, renewable energy, water stewardship, and social fairness” (Forbes, 2014). While this organization and others are championing to implementation of sustainable practices in the apparel industry, the reality is that only a small percentage of companies are making substantial progress in this area (Deloitte, 2013). The Corporate Knights determined that out of 4,000 publicly traded companies, only 350
were considered sustainable based on sustainability disclosure practices (Smith, 2013). To support a healthy industry, companies must be convinced that sustainable methods will be good for their business. Furtherance and growth of sustainable practices in the apparel industry cannot solely rely on consumer practices, but needs business practices to advance. Demonstration of successful sustainable initiative implementation by financially successful industry leaders is a place to start.

PURPOSE STATEMENT

The apparel industry needs to take a serious look at sustainability and develop an awareness of the impacts at every stage of production. According to Pederson & Gwozdz (2013), “More qualitative studies are needed in the future to deepen our understanding of the relation between corporate social responsibility pressures and corporate responses” (p. 261). To fill this gap, this research seeks to explore the efforts to improve sustainability of financially successful apparel companies with the intention of analyzing ethical and environmentally conscious behaviors that have been coupled with economic growth. By focusing on financially successful industry leaders, this study addresses one of the most significant sources of resistance, a loss of profits. Multinational apparel companies such as Adidas, Gap, H&M, and Nike have experienced robust profits, while at the same time been recognized as leaders in sustainability by multiple respected sources like: Ethisphere, Interbrand, Forbes, The Corporate Knights, and the Corporate Responsibility Magazine (Ethisphere, 2015; Interbrand, 2015; Forbes, 2015; The Corporate Knights, 2015; Corporate Responsibility Magazine, 2012).

These four companies serve as examples that sustainability can be implemented by developing methods that benefit the environment and people, while experiencing financial growth. Examining successful companies who promote and support sustainable practices can
encourage others to follow their lead and seriously consider the benefits of environmental and social sustainability in business motivations and goals. This research seeks to explore the positive impacts, environmentally, socially, and financially to applying sustainable principles, creating awareness and motivation for apparel business leaders.

**DEFINITION OF KEY TERMS**

The following is a list of key terms and their definitions used throughout this research.

**Corporate Sustainability (CS)** “Corporate environmental issues or corporate social issues. It can also refer to the triple bottom line approach and identify CS with both social and environmental issues and how those relate to economic sustainability” (Montiel & Delgado-Ceballos, 2014, p. 118).

**Environmental Sustainability (ES)** “Efforts to maintain global life-support systems indefinitely” (Goodland, 1995, p. 2).

**Financial Success** Top in the market and evaluated by market value and profits. (Forbes, 2015). “Successful businesses also earn a substantial revenue and are able to sustain this success in an ever-changing market” (Hill, 2015, p. 1).

**Organic Fashion** Clothing and accessories that have been made with a minimum use of chemicals and limited impact on the environment. (Ethical Fashion Forum, 2015).

**Social Sustainability** Increasing the capacity and wellbeing of the people and communities behind apparel. (Ethical Fashion Forum, 2015).
Supply Chain Management

“The management of supply chain operations, resources, information, and funds to maximize the supply chain profitability, at the same time minimizing environmental impacts and maximizing the social well being of the supply chain” (Öztürk & Özçelik, 2014, p. 131).

Sustainability

Creating and maintaining the conditions under which humans and nature can exist in productive harmony, fulfilling the needs of present and future generations (EPA, 2015).

Triple Bottom Line (TBL)

“Takes into account the economic value that businesses create, but also the environmental, and social value they create and destroy” (Öztürk & Özçelik, 2014, p. 131).
CHAPTER II
LITERATURE REVIEW

Introduction

As consumers, companies, and governments become more concerned about our ability to sustain the earth and its people, attention has been turned to developing and implementing sustainable practices. These initiatives include corporate sustainability and efforts towards increasing sustainability in the supply chain. Because of the size and nature of the apparel supply chain, the negative impacts are amplified, and the industry is facing challenges in terms of environmental and social sustainability (Deloitte, 2013). In order to better conceptualize and address the wide-range of issues that fall under the definition of sustainability, scholars and industry leaders have proposed frameworks for understanding. One of these is the “triple bottom line (TBL).” The TBL illustrates relationships between the environment, society, and the economy in relation to sustainability (TCORP, 2012).

Specific to the apparel industry and this research, the three relevant constructs are financial success, social responsibility, and the environment. According to the Ethical Fashion Forum (2015), the top environmental issues facing this industry are: use of energy, development of technology & infrastructure, use of chemicals, recycling, and conservation and use of alternatives. The following sections will present the foundation for an exploration of apparel companies who have implemented ethical and environmentally conscious behaviors coupled with economic growth.

CORPORATE SUSTAINABILITY AND SUSTAINABILITY IN THE SUPPLY CHAIN
The term, ‘sustainable, positive peace’ was established by Carol J. Bond (2014). Sustainable, positive peace refers to the “durability or sustainability of peace that represents the conditions necessary for communities and businesses to thrive. Conditions of thriving can optimize triple bottom line outcomes” (p. 165). Bond found that “it is worth encouraging sustainable, positive peace as an alternative to negative peace. Sustainable, positive peace can thus assist in avoiding or mitigating the negative conflict of environmental, economic and social outcomes that ensue from destructive expressions of conflict” (Bond, 2014, p. 165). The harmonious interactions of the environment, society, and the corporate world are the main goals of modern research on sustainability.

Corporate sustainability includes a variety of issues. In “Defining and Measuring Corporate Sustainability: Are We There Yet?” Ivan Montiel and Javier Delgado-Ceballos presented a few overall themes and challenges for studying corporate sustainability:

CS-related [corporate sustainability-related] terms such as sustainable development, sustainable business, or sustainability were used differently in the management literature analyzed. First, some articles identify CS with corporate environmental issues. Second, some other studies use the term to refer to corporate social issues, that is, the social sustainability aspect of the firm. Finally, there are articles that take the triple bottom line approach and identify CS with both social and environmental issues and how those relate to economic sustainability. (Montiel & Delgado-Ceballos, 2014, p. 118)

Sustainability, triple bottom line, and sustainable supply chain management are all intertwined in their definitions. It is clear that when talking about sustainability, one must specify the realm within the larger concept. To claim that a company is sustainable, it must follow guidelines for economic, environmental, and social aims.
Sustainable supply chain management is an important component of any discussion of corporate sustainability. It “is the management of supply chain operations, resources, information, and funds to maximize the supply chain profitability, at the same time minimizing environmental impacts and maximizing the social well-being of the supply chain” (Öztürk & Özçelik, 2014, p. 131). The apparel supply chain includes a variety of stakeholders “who collaborate to design, manufacture, and sell clothing, shoes, and accessories” (U.S. Bureau of Labor Statistics, 2012, p. 2). Sustainable supply chain management in the apparel industry requires all stakeholders to play a role in increasing sustainability and profits, in effect, fulfilling the triad of the triple bottom line.

**TRIPLE BOTTOM LINE**

Triple bottom line (TBL) is a term that was developed by John Elkington in 1994 in an effort to summarize and define all of the concepts relating to sustainability with a goal of clarifying, understanding, and explaining the issues in a way that professionals in multiple industries could effectively and efficiently discuss (Elkington, 1994). “The TBL [triple bottom line] approach not only takes into account the economic value that businesses create, but also the environmental, and social value they create and destroy” (Öztürk & Özçelik, 2014, p. 131).

Öztürk & Özçelik (2014) further explain the accountability procedures that can be implemented under TBL standards and the transparency of companies to the corporate culture and to the general public regarding their ethical and sourcing practices. “Organizations that engage in activities which are at the intersection of social, environmental, and economic performance, positively affect the natural environment and society. At the same time they gain long-term economic success and competitive advantage” (p. 131). The ideals of TBL enhance
the practicability and ethical ideals of sustainability. TBL is an effective way to infuse the ideals of sustainability into the corporate culture (Öztürk & Özçelik, 2014).

Many sources agree that the TBL framework is appropriately used to achieve sustainability. Milne and Gray (2013) recognized the use of the TBL concept as synonymous with sustainability and corporate sustainability. Sustainable operations work with the TBL perspective to create positive impacts on environmental and social practices (Hollos, Blome, & Foerstl, 2011).

Corporate or organizational sustainability is when entities assess their organization to encompass the economic, environmental, and social performance of the company, as stated by the authors of “Incenting Managers Toward the Triple Bottom Line: An Agency and Social Norm Perspective” (Merriman & Sagnika, 2012). To illustrate components and relationships of the triple bottom line perspective, Figure 1 is adopted from the article, “What is Sustainability” by TCORP Energy Management Services (TCORP, 2012).
Sustainability within the TBL framework is the balance between the economy, environment, and society. Each of these three core concepts and their underlying research as applied to the apparel industry will be outlined.

**FINANCIAL SUCCESS IN THE APPAREL INDUSTRY**

Key indicators of financial success can be located on an income statement that recognizes sales revenue, expenses, and net income (Codjia, 2015). To determine if a company is financially successful, financial data such as profit based on revenue, must be used to gain perspective of a company’s effective financial management (Bausman, 2008). Forbes evaluates sales, profits, market value, and revenue, recognizing financially successful companies for demonstrating substantial economic profits with increase in financial equity (Forbes, 2015). Forbes creates a
Global 2000 list every year with this financial data; companies that make this list can be considered financially successful.

Successful businesses earn significant revenue while thriving in an ever-changing market (Hill, 2015, p. 1). For apparel companies, the changing market includes addressing issues of sustainability. Along with Forbes, many agencies and organizations rank companies based on their sustainable efforts and financial equity. These include Ethisphere, Interbrand, The Corporate Knights, and the Corporate Responsibility Magazine. According to Ethisphere (2015), ethical business standards and practices of successful companies force other companies to follow their leadership or fall behind. Furthermore, Interbrand (2015) recognized that one of the most valuable specializations for a successful brand is corporate sustainability initiatives.

Attention to environmental and social issues is an individual and global concern. “Human satisfaction through socially and environmentally responsible consumption and production is directly related to the sustainable development initiative the United Nations (UN) launched in 1987” (Ha-Brookshire & Hawley, 2013, p. 24). The UN has recognized that these important aspects need to be addressed and understands the connection between the apparel industry and the sustainability of the earth (Ha-Brookshire & Hawley, 2013, p. 24). To these ends, The Corporate Knights (2015) suggest that a company abide by the TBL framework in order to achieve respect and acknowledgment, promoting “clean capitalism,” an economic system in which prices incorporate social, economic, and environmental benefits and costs.

ENVIRONMENTAL IMPACT OF THE APPAREL INDUSTRY

The apparel industry can make significant improvement on environmental resources, including; reducing chemicals, increasing water efficiency, and recycling waste (Fletcher, 2014). Sustainability efforts within the apparel industry seek to conserve these resources and reduce
carbon footprints (Fletcher, 2014). The ultimate goal of these initiatives is to prevent further damage to the environment and perhaps reverse the damage that has occurred due to industrialization and the depletion of natural resources, while maintaining financial success so a company can continue to succeed. Kate Fletcher, a pioneer in sustainability in the apparel industry, has outlined the basic steps to reduce the impact the industry has on the environment: “minimize the number of processing steps; choose ‘clean’ production techniques; minimize processing consumables; choose ‘clean’ processing chemicals; reduce energy and water consumption; and reduce waste production and carefully manage waste streams” (Fletcher, 2014, p. 57).

There are organizations that partner with companies to encourage positive environmental impacts in the apparel industry. For example, the Dow Jones Sustainability Group Index (DJSGI), tracks the performance of leading sustainable companies to share and encourage best practices (Dow Jones Sustainability Indices, 2015). The European Retail Round Table (ERRT) is a collection of companies that promote sustainability, while keeping a company competitive in the apparel market (ERRT, 2015). SmartWay is a program run by the United States Environmental Protection Agency; the certification requires carriers to meet environmental and fuel efficiency targets and commit to reporting emissions data on a yearly basis (H&M, 2009). LEED, the U.S. Green Building Council, saves money and resources through sustainable strategies and partnerships (LEED, 2015). The Business for Innovative Climate and Energy Policy (BICEP) is “a coalition of businesses committed to working with policy makers to pass meaningful energy and climate legislation” (BICEP, 2015, p.1). Companies can also use a Code of Conduct to guide, regulate, and enforce sustainable behavior along the apparel supply chain.

**Energy Use and Consumption**
While many companies state an aim to increase the percentages of organic materials in their products, synthetic materials remain the main components of apparel (Subic, Shabani, & Hedayati, 2012, p. 2128). Synthetic materials are derived from polymers that are primarily produced from petrochemicals, requiring energy-intensive procedures (Subic et al., 2012, p. 2129). Energy-intensive procedures cause a negative impact on the environment, while using organic materials promotes sustainability.

Transportation in the life cycle of a garment is another form of energy consumption in the apparel supply chain (Ethical Fashion Forum, 2015). With manufacturers located all over the world producing various parts of garments or performing a series of manufacturing processes in different factories, transportation is an essential component of production. Programs like H&M’s Clean Shipping Project improve the environmental performance of transportation in the apparel industry (H&M, 2008). By supporting the development of local or national supply chains in countries of production, companies can reduce the complexity of the global transportation footprint and increase sustainability (Ethical Fashion Forum, 2015).

**Development of Technology & Infrastructure**

Water pollution and water shortage are growing concerns in and outside of the apparel industry.

Cotton growing uses vast amounts of water, and needs extensive irrigation when grown out of its natural environment. The Aral Sea, [located between Kazakhstan and Uzbekistan], has shrunk to just 15% of its former volume, largely through cotton farming. (Ethical Fashion Forum, 2015, p.1)

A significant amount of water is also consumed in the manufacturing process. “In the production of a cotton T-shirt approximately 60kg of water is used...about 45kg of waste water
is discharged per kg of output” (Ethical Fashion Forum, 2015, p.1). Water is heavily used during the dyeing process with water waste a concerning issue. Colordry technology is one form of water conservation that Nike has adopted (Nike, 2013). It completely eliminates water from the dyeing process and decreases the chemical waste and runoff in the water supply, effectively decreasing the chemical impact on the environment (Nike, 2013). Sustainable apparel companies make efforts to decrease their water consumption during production and manufacturing, exploring ways to decrease pollution during the creation of their garments (Ethical Fashion Forum, 2015). Organizations that work with companies to support water stewardship, like The CEO Water Mandate and the Business for Social Responsibility’s (BSR) Apparel Water Quality Working Group (AWQWG), are beneficial partners to improve efforts in water efficiency and wastewater treatment (CEO Water Mandate, 2015; H&M, 2005).

**Negative Impact of Chemicals on the Environment**

Each operational step of a raw textile material is a potential source of pollution (Mucella & Yucel, 2005, p.1845). Pesticides are a large portion of the chemical footprint, especially as used in the growing and gathering processes. Chemical fertilizers used in conventional planting and growing of many natural fibers pollute the environment (Shen et al., 2012, p. 234). For example, “cotton uses 22.5% of the world’s insecticides and 10% of all pesticides, on 2.5% of agricultural land. Chlorpyrifos, used in West African cotton, causes brain damage and fetal damage, impotence and sterility” (Ethical Fashion Forum, 2015, p.1). These chemicals not only harm people and animals, but the runoff into streams and the exposure to the soil and other plant life can detrimentally affect nearby ecosystems and the natural balance of the environment (Ethical Fashion Forum, 2015). Due to the high demand for synthetic fibers, which utilize inorganic materials in their production, carbon monoxide, polyvinyl chloride (PVC), and volatile
organic compounds (VOCs) pollute ecosystems at an increasing rate (Ethical Fashion Forum, 2015). The issue of chemicals will be amplified given a predicted 20% per capita increase in global fiber consumption (Deloitte 2013). Examples of groups and/or efforts to reduce the use of chemicals in the apparel industry include: the Zero Discharge of Hazardous Chemicals (ZDHC) and the Nike Green Chemistry Program, organizations to reduce the discharge of toxic chemicals in the environment; Bluesign, an organization that seeks to eliminate toxic substances in the apparel industry; and the creation of restricted substances lists, lists of chemicals prohibited by companies (Nike, 2013; ZDHC, 2015; Bluesign, 2013).

Chemicals are also heavily used in the dyeing process (Ethical Fashion Forum, 2015). Dyeing typically takes place in developing countries where safety regulations for both the employees and the environment are not well enforced. “The global textile industry discharges 40,000 - 50,000 tons of dye into the water system” (Ethical Fashion Forum, 2015, p.1). Even before dyeing fabric a certain color, bleach is used to rid the product of any natural coloring, further increasing the amount of chemicals used in the dyeing process (Ethical Fashion Forum, 2015). “If wastewater is filtered, it cuts river pollution downstream from the dye house, but it does not make a dye process low impact” (Fletcher, 2014, p. 72). Natural dyes provide alternatives. “Five classes of natural dyestuffs are indigo, cutch, weld, madder and cochineal. These dyes can be used to make almost every color” (Ethical Fashion Forum, 2015, p.1). There may not be a solution that completely eliminates the use of chemicals in the apparel industry, but there are certainly ways to increase sustainable methods when using chemicals and dyes.

Apparel companies can dramatically reduce their impact on the environment by choosing fabrics composed of organic fibers that do not utilize the same amount of chemicals as other non-organic materials. “Organic” is a term given to clothing that has adopted a certain degree of
sustainability. Companies that utilize organic textiles, “have chosen to reduce the toxic pesticides and chemicals used to make their clothes, through sourcing to organic standards, banning or phasing out the use of certain chemicals in their production processes” (Ethical Fashion Forum, 2015, p.1).

“Organic fashion refers to clothing and accessories that have been made with a minimum use of chemicals and limited impact on the environment” (Ethical Fashion Forum, 2015, p.1). A garment may be partly organic if it uses organic cotton, but the entire garment can only be deemed “organic” if the majority of components, such as the fabric, closures, and trims are of organic origin. An increasing number of apparel companies like Alabama Chanin, Loomstate, and Elroy create quality garments and build successful brands while adopting sustainable practices such as using organic materials (Phelan, 2012).

**Other Efforts for Conservation & Use of Alternatives**

Alternatives to using energy-intensive processes in the apparel supply chain are interwoven with other opportunities in the quest to become more sustainable. Other alternative energy sources used to generate power are wind farms, photovoltaic energy facilities, using plants for biofuels, and generating energy using solar power (Civil Engineering, 2009). Instead of using toxic substances, environmentally preferred materials (EPMs) are ideal. For example, water-based adhesives can be used instead of toxic adhesives (Adidas, 1998). Encouraging local production and using local labor are sustainable conservation alternatives (Fletcher, 2014).

There are many organizations that partner with companies and encourage conservation and the use of alternatives. For example, the Better Cotton Initiative and Cotton Incorporated encourage the use of organic, sustainable cotton to “reduce the negative impacts of mainstream cotton production” (Better Cotton, 2015, p.1; Cotton Incorporated, 2015).
Stewardship Council (FSC) certifies companies in their efforts to use responsible forest products, supported by organizations such as the World Wildlife Fund (WWF) and Greenpeace (FSC, 2015). The Leather Working Group (LWG) provides best practices and guidelines for the leather industry (LWG, 2010). The Natural Resources Defense Council (NRDC) has a Responsible Sourcing Initiative, improving best practices in dye mills and other areas of the supply chain (NRDC, 2015). All of these organizations support companies in the apparel industry.

**Textile Waste Reduction**

Apparel produces waste in both production and disposal. “Solid wastes from textile and apparel factories are made up of textile materials and supplies that do not meet the required quality standards or remain after being used in production” (Mucella & Yucel, 2005, p.1845). This post-producer waste includes fiber, yarn, fabric scraps, and apparel cuttings from fiber producers, textile mills, fabric and apparel manufacturers (Domina & Koch, 1997).

An unsustainable way to dispose textile waste is dumping in landfills. Landfill waste is typically considered waste from individuals, and therefore, the consumer’s responsibility to reduce and recycle, but a significant contributor, post-industrial waste, is the responsibility of companies. According to Waste Online, a resource dedicated to education on waste issues which encourages recycling, “it is estimated that more than one million tons of textiles are thrown away every year…waste textiles also arise during yarn and fabric manufacture, garment-making processes and from the retail industry” (Waste Online, 2006, p.1). Apparel products in landfills create both physical waste and runoff. Landfill sites pose a threat to local ground water supplies; every time it rains, water drains through all the rubbish, and picks up chemicals and hazardous materials from whatever is in the landfill site. By re-using existing fibers and textiles, there is no need to make these textiles from raw materials. This saves energy and reduces
pollution caused during manufacturing processes like dyeing, washing, and scouring. (Ethical Fashion Forum, 2015)

One way that the apparel industry has worked to combat the amount of waste in landfills is the concept of zero-waste pattern cutting (Townsend & Mills, 2013). The objective of zero-waste is to design a pattern that eliminates fabric waste or “fallout” in production. Usually, designs have a 15-20% loss in fabric because of the cutting stages (Townsend & Mills, 2013). Zero-waste pattern cutting uses the entire width and length of a fabric to reduce the amount of fabric waste sent to landfills (Townsend & Mills, 2013).

Recycling textiles and other materials saves energy and reduces the amount of pollution in landfills (Ethical Fashion Forum, 2015). This is a superior sustainability effort that companies can implement in order to reduce use of chemicals, save water, and better protect the environment; achieving overall greater sustainability. The Ethical Fashion Forum presents three ways to recycle clothing: “(1) Using fabric composed of recycled fibers or products, (2) Recycling textile fabric (‘Upcycling’), and (3) Recycling or customizing clothing” (Ethical Fashion Forum, 2015, p. 1). Companies like Worn Again collaborate with other companies to reduce the amount of textiles in landfills by recycling garments (Worn Again, 2013). Upcycling refers to taking used materials and creating new products (Worn Again, 2015). Fletcher (2014) states, “countermanding the trend towards deteriorating quality are the activities of upcycling, where the processes and practices of reclamation and reuse enhance a piece’s perceived value” (p.118).

Packaging of apparel also presents a waste issue. When retailers introduce recyclable packaging, it decreases the amount of waste sent to landfills. But, this alone does not tackle problems linked to over-design of packaging and overconsumption of resources more generally.
(Fletcher, 2014). By adopting and increasing recycling and upcycling practices, an apparel company can decrease their negative impacts on the environment. There is a possibility for waste at every stage of a garment’s lifecycle, from production to end-use. Concepts like zero-waste, textile recycling, and upcycling are viable ways to reduce the amount of waste produced by the apparel industry and increase environmental sustainability. Environmental sustainability coupled with financial success fulfills two of the three constructs of the TBL framework.

SOCIAL IMPACT OF THE APPAREL INDUSTRY

The demand for low-price apparel production is driven by a competitive market where consumers make purchases based on price with little concern for environmental and social impacts (Neu, et.al, 2014). In this market, prices are driven lower and lower in order to compete and costs are cut wherever possible. Working conditions in factories are typically where compromises are made; health and safety considerations are sacrificed, wages are lowered, longer hours are required, and workers confront the presence of verbal, physical, and/or sexual abuse (Neu, et.al, 2014). These conditions are unsustainable. The International Labor Organization estimates that 2.3 million people die every year from work-related accidents and diseases in all industries (ILO, 2015). This organization seeks to decrease the negative effects of hundreds of millions of employees who suffer from discrimination and unfair treatment across the apparel supply chain (ILO, 2015).

The apparel industry is notorious for unsustainable labor practices. Sweatshops and the use of child labor have received considerable attention (Emmelhainz & Adams, 1999; H&M, 2006; ILO, 2015; Tiwari, 2014) with production of clothing linked to “labor abuses including poverty wages, excessive working hours, forced overtime, lack of job security and denial of trade union rights” (Fletcher, 2014, p. 51). To address these social issues, several initiatives have
emerged to advocate for workers and provide oversight. For example, the Accord for Building and Fire Safety and the Alliance for Bangladesh Worker Safety specifically work to improve the conditions for those working in Bangladesh factories (The Accord for Building and Fire Safety, 2015; Alliance for Bangladesh Worker Safety, 2015). The ILO and the Fair Labor Association (FLA) support and enforce health and safety across the supply chain, seeking to decrease the negative effects of hundreds of millions of employees who suffer from discrimination and unfair treatment (ILO, 2015; FLA, 2012). The ILO’s Committee on Freedom of Association examines unfair and unsafe treatment and enforces the protection of workers’ rights (ILO, 2015). The FLA’s Fair Wage Method is a tool for companies to assess fair compensation (FLA, 2012). Complaint grievance systems may be established in factories to increase communication between workers and management, encouraging workers to raise their voices, therefore, protecting workers’ rights (Nike, 2014).

While there are efforts to eliminate the worst forms of child labor by 2016, prevailing cases of child labor in the apparel industry persist, especially in developing countries (ILO, 2015; Tiwari, 2014). An important component of sustainability includes social responsibility initiatives that “support public policy to protect the health and well-being of children” (Perera, 2014, p. 1862). Homeworking for a manufacturer is an example of unregulated hours; it is defined as “work from home with no formal contract of employment” (H&M, 2006, p. 3). Homeworking typically refers to needlework that is completed by women and children in their residences, when working in a factory is not an option (H&M, 2006). An example of an unsafe working condition, still practiced in some countries, is sandblasting. This is “a process used to treat denim that involves propelling a stream of abrasive material against the fabric at high
pressure to gradually soften and lighten the material” (p.1) and has harmful, and sometimes deadly, consequences for those commonly exposed to this practice (Mills, 2011).

Within the TBL framework, social responsibility includes many themes along the apparel supply chain. The EFF defines the social aspect in the TBL framework as “increasing the capacity and wellbeing of the people and communities behind fashion…poverty and exploitation of the human workforce behind fashion affects the stability of the industry itself” (Ethical Fashion Forum, 2015, p. 1). Apparel companies confronted with these issues and governmental regulations are seeking ways to satisfy laws and increase sustainable practices, but, according to Foss (2010), “we are still rather in the dark concerning how to address those challenges, both theoretically and practically (p. 13). A solution can be found in the sustainability initiatives of financially successful apparel companies. “Defending fair wages, working conditions and workers’ rights” are all ways to increase social responsibility and fulfill the triple bottom line framework (Ethical Fashion Forum, 2015, p.1).

Many types of organizations work with companies to support social responsibility including: The Ethical Trading Initiative (ETI), a leading alliance of companies; The Fairtrade Foundation, a global movement; The World Trade Organization (WTO); the International Labor Organization (ILO), an agency dealing with labor standards and social justice; MADE-BY, a consultancy service used by Eileen Fisher, Gucci, G-Star Raw, and Tommy Hilfiger to improve their social responsibility and the Sustainable Apparel Coalition, seeking industry transformation by collaborating with apparel companies in their efforts towards sustainability (see Table 2). These and a wide variety of other organizations increase awareness of sustainability and promote ethical behavior in the apparel industry.

Table 1
*Examples of Social Responsibility Organizations*
<table>
<thead>
<tr>
<th>Organizations</th>
<th>Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Ethical Trading Initiative (ETI)</td>
<td>• Eliminate exploitation and discrimination in the workplace</td>
</tr>
<tr>
<td><a href="http://www.ethicaltrade.org">http://www.ethicaltrade.org</a></td>
<td>• Support the lives of workers and encourage fair trade production to</td>
</tr>
<tr>
<td>The Fairtrade Foundation</td>
<td>reduce negative environmental impacts</td>
</tr>
<tr>
<td><a href="http://www.fairtrade.org.uk">http://www.fairtrade.org.uk</a></td>
<td></td>
</tr>
<tr>
<td>The World Trade Organization</td>
<td>• Build trade negotiations between governments</td>
</tr>
<tr>
<td><a href="https://www.wto.org">https://www.wto.org</a></td>
<td>• Promote labor standards and policies</td>
</tr>
<tr>
<td>International Labor Organization</td>
<td></td>
</tr>
<tr>
<td><a href="http://www.ilo.org">http://www.ilo.org</a></td>
<td></td>
</tr>
<tr>
<td>MADE-BY</td>
<td>• Provide consultancy services to improve sustainable practices</td>
</tr>
<tr>
<td><a href="http://www.made-by.org">http://www.made-by.org</a></td>
<td>• Encourage sustainable practices with the Apparel Consideration Index</td>
</tr>
<tr>
<td>The Sustainable Apparel Coalition</td>
<td></td>
</tr>
<tr>
<td><a href="http://apparelcoalition.org">http://apparelcoalition.org</a></td>
<td></td>
</tr>
</tbody>
</table>


**SUSTAINABILITY IN THE APPAREL INDUSTRY**

Despite evidence of the benefits, there has not been widespread adoption of sustainable practices in the apparel industry. In the 2013 report on sustainability, Deloitte analyzed the impact of the industry and the changes to be made, to improve the environmental and social impacts and reduce business risks in the market. They found that seven out of 10 apparel companies are not focused on managing environmental resources in the supply chain.

Furthermore, it was reported that 80% of the companies studied were not using cooperation and collaboration when managing supply chain sustainability (Deloitte, 2013).

The cause of resistance towards sustainability may be partially attributed to the global nature of apparel production, amplified by a fear of a loss in profits (McDonough & Braungart, 2002). The book, *Cradle to Cradle*, explains this hypothesis further:

> A manufacturer might spend more money to provide an improved product under regulations, but its commercial customers…may find what they need elsewhere, perhaps
offshore, where regulations are less stringent. In an unfortunate turnaround, the unregulated and potentially dangerous product is given a competitive edge. (McDonough & Braungart, 2002, p. 60)

In this example, it is clear why apparel companies hesitate to implement sustainable methods; competitive sourcing depends on selecting factories with the goal of completing work cheaper and faster (Cortez, et.al, 2014). But this competition can also foster improvement. With the assumption that businesses are driven by sales and profits, apparel companies can be motivated by the potential to increase sustainability and profits at the same time (Dickson & Chang, 2015).

Efforts like reduction of harmful chemical use, water consumption, and energy use, coupled with increases in recycling and the utilization of organic fashion can improve the negative impact the apparel industry has on the environment. Likewise, providing safe work environments, defending fair wages, and protecting workers’ rights also make a positive impact on the sustainability of the apparel industry and society. If efforts to improve production and manufacturing are more widely adopted, the hope is that apparel will be a leading industry in sustainable efforts. Yet, the implementation of sustainable practices is not achieved overnight. It is an incremental process, where a company makes careful and deliberate decisions in taking steps to fulfill the triple-bottom line. According to Carrigan, et. al (2013), this transformation “can only be achieved by committing resources over a continued period of time” (p. 1299).

Every effort towards corporate sustainability and sustainability in the supply chain is impactful. At the same time, it must be recognized that the apparel industry is a highly competitive one and fear of a loss in profits is very real (Dickson & Chang, 2015; McDonough & Braungart, 2002). To that end, a need exists for research that supports sustainable initiatives and encourages changes in the apparel industry (Fletcher, 2014). By exploring the process of
implementation by financially successful apparel companies recognized for their sustainable practices, this research seeks to heighten awareness and encourage business motivations towards a more sustainable future. “The more awareness there is in environmental and social issues, the more opportunities there will be – both inside and outside of the market – to foster change in this area” (Fletcher, 2014, p. 78).

RESEARCH QUESTIONS

In examining triple bottom line in sustainable companies, this study seeks to explore the following research questions:

R1: How does a financially successful apparel company apply sustainable initiatives throughout the supply chain?

R2: Is there a timeline that financially successful apparel companies follow regarding their implementation of environmentally sustainable and socially responsible practices?

R3: Are there phases that a company goes through when applying sustainable initiatives?
CHAPTER III

METHOD

For the purpose of the study, a qualitative analysis of the social, environmental and economic sustainability efforts of financially successful, multinational apparel companies was conducted. The goal was to understand the implementation of a timeline of sustainability initiatives under the lens of the triple bottom line (TBL) framework. Triple bottom line (Elkington, 1994; 2006) indicates that true sustainability of a company lies in being sustainable in all three aspects: economic, social, and environmental. The balance between economic, social, and environmental issues within a business increases the capacity of well being between people and the planet (Elkington, 1994; 2006).

According to Elkington (1994; 2006), it is important to acknowledge the financial success of companies, along with their social and environmental sustainability efforts. Several multinational apparel companies have experienced robust profits, while at the same time been recognized as leaders in sustainability by multiple leading sources like: Ethisphere, Interbrand, Forbes, The Corporate Knights, and the Corporate Responsibility Magazine (Ethisphere, 2015; Interbrand, 2015; Forbes, 2015; The Corporate Knights, 2015; the Corporate Responsibility Magazine, 2012). Rationale for selecting these companies is explained in the following section.

BRAND SELECTION

Four apparel companies were identified that provide evidence of success in all three areas of the TBL framework: Adidas, Gap, H&M, and Nike. Beginning with financial success, Table 2 is an overview of the rankings for Nike, H&M, Gap, and Adidas based on data that Forbes collected on the world’s biggest public companies in 2015. Sales, profits, assets, and market value are screened by Forbes FactSet Research systems every year (Forbes, 2015). These four
companies range in market value from $17.1 billion to $86.2 billion. These apparel companies combined represent over $88 billion in revenue. They make substantial economic profits with a yearly increase in equity (Forbes, 2015), and therefore, can be considered financially successful. The sales of all four companies are in the top 30% on the Forbes Global 2000. Two are in the top 15% and all four are in the top 50% in profit. These rankings demonstrate that all four companies are financially successful in the apparel industry. Thus, based on their recognition for implementing sustainability related initiatives and financial success, the four brands: Nike, H&M, Gap, and Adidas were deemed appropriate for the study. Table 2 shows sales, profit, market value, and revenue for all four companies.

Table 2: Forbes Rank on Global 2000

<table>
<thead>
<tr>
<th>Company</th>
<th>Sales Rank</th>
<th>Profit Rank</th>
<th>Market Value Rank</th>
<th>Market Value (Billions)</th>
<th>Revenue (Billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adidas</td>
<td>485</td>
<td>997</td>
<td>727</td>
<td>$17.1</td>
<td>$19.53</td>
</tr>
<tr>
<td>Gap</td>
<td>598</td>
<td>541</td>
<td>693</td>
<td>$18</td>
<td>$16.44</td>
</tr>
<tr>
<td>H&amp;M</td>
<td>422</td>
<td>230</td>
<td>132</td>
<td>$67.8</td>
<td>$22.33</td>
</tr>
<tr>
<td>Nike</td>
<td>311</td>
<td>214</td>
<td>99</td>
<td>$86.2</td>
<td>$30.32</td>
</tr>
</tbody>
</table>


Not only are these apparel companies highly ranked for their market value and profits, but also acknowledged for their environmental and social sustainability initiatives (Ethisphere 2015, Interbrand 2015, Corporate Responsibility Magazine 2012, The Corporate Knights 2015, Forbes 2015). Adidas, Gap, H&M, and Nike are financially successful multinational apparel companies who have been recognized as leaders in sustainability. Demonstrating success in all three areas of the TBL framework, these four companies can provide examples of implementation of sustainability initiatives while also experiencing financial success.

Much research, effort, and technology has been dedicated to these initiatives and fortunately, these companies have made sustainability a pillar in their business strategy.
Sustainable companies fully comprehend the impact that the apparel industry has on the environment and people, working towards protecting the earth’s resources and its inhabitants. These companies reflect the triple bottom line: addressing environmental, social, and economic issues. They have adopted ways to be sustainable and financially successful at the same time.

These four companies have been recognized for their sustainability efforts by various organizations, which are noted for their authority in evaluating businesses’ sustainability initiatives. Examples of organizations include Interbrand, Ethisphere, and the Corporate Knights. Table 3 shows the recognitions related to ethical business practices, public leadership, and company growth that these companies have received.

Table 3
Company Recognitions

<table>
<thead>
<tr>
<th>Company</th>
<th>Awards</th>
<th>Forbes Rank on Global 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adidas</td>
<td>• The Corporate Knights top Most Sustainable Corporations</td>
<td>684</td>
</tr>
<tr>
<td>Gap</td>
<td>• #1 on Ethisphere’s 2015 World’s Most Ethical Companies</td>
<td>745</td>
</tr>
<tr>
<td></td>
<td>• Interbrand’s Best Global Brands,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 16th Annual Business Ethics Award</td>
<td></td>
</tr>
<tr>
<td>H&amp;M</td>
<td>• #2 on Ethisphere’s 2015 World’s Most Ethical Companies,</td>
<td>473</td>
</tr>
<tr>
<td></td>
<td>• Interbrand’s Best Global Brands,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• The Corporate Knights top Most Sustainable Corporations</td>
<td></td>
</tr>
<tr>
<td>Nike</td>
<td>• Interbrand’s Best Global Brands</td>
<td>289</td>
</tr>
</tbody>
</table>


DATA COLLECTION

To investigate the research questions, Corporate Social Responsibility (CSR) reports of the four companies identified above were analyzed. CSR reports allow organizations to be more transparent about their impacts on sustainable issues (Global Reporting Initiative, 2015). These reports provided evidence of the various environmental and social sustainable practices implemented over time to help measure their environmental and social performance (Global
Reporting Initiative, 2015). Content analysis of the CSR reports produced by each of the four companies was chosen for this research in order to find meaning and purpose behind the reports of actions taken in relation to sustainability. The purpose of content analysis is to “attempt to uncover or capture the essence of an account. This approach provided a means for discovering the practical understandings of meanings and actions” (Stemler, 2001, p. 239).

For the purpose of this study, all available Corporate Sustainability Responsibility (CSR) reports for these four companies were analyzed, beginning with the first year that each published CSR reports. CSR reports were obtained from each company’s website. It is important to note that not all companies began reporting their sustainability initiatives in the same year. Adidas produced CSR reports starting in 1998, Nike started in 2001, H&M started in 2002, and Gap started in 2003. When analyzing data, ‘year one’ represents the first year that each company started using CSR reports. For Adidas, year one was 1998, Nike’s year one was 2001, H&M’s was 2002, and Gap’s was 2003. Information from all CSR reports was recorded through 2014, but the number of years recorded for each company varied from twelve to sixteen years.

This study recorded the presence of environmental or social sustainability initiatives and textual data on the nature of the initiatives to gain deeper, richer information. Based on the review of literature, the sustainability initiatives included social responsibility and five areas of environmental sustainability: reduction of energy use & consumption, development of technology & infrastructure, reduction of negative chemical impacts on the environment, textile waste reduction, and other efforts for conservation & use of alternatives.

An electronic codebook was created as a means to collect, analyze and interpret the textual evidence of environmental and social sustainability in the CSR reports. Criteria for coding was established before data collection to objectively analyze the messages (Stemler,
The areas of sustainability initiatives recorded in the codebook were the criteria for determining the presence of environmental and social sustainability initiatives as mentioned in the CSR reports (Stemler, 2001).

Data was collected on companies’ sustainability initiatives related to each of the areas of sustainability: reduction of energy use & consumption, development of technology & infrastructure, reduction of negative impact of chemicals on the environment, textile waste reduction, other efforts for conservation & use of alternatives, and social responsibility. The compilation of data was used as textual evidence of sustainability initiatives within each company over time. Sentences, phrases, and words were used as qualitative data to gain deeper understanding of the research questions. Based on the textual evidence of environmental and social sustainable practices discussed in the CSR reports, a timeline of sustainability implementation was determined. This research aims to provide evidence and examples of sustainable practices that four of the world’s financially successful apparel companies implemented as published in CSR reports.

DATA ANALYSIS

In total 42 CSR reports from the four companies were analyzed. This included Adidas (16 years starting from 1998 to 2014), Nike (13 years starting from 2001 to 2014), H&M (12 years starting from 2002 to 2014), and Gap (11 years starting from 2003 to 2014). Rather than concentrating on these four companies as individuals, CSR initiatives, as evidenced from their CSR reports, were coded with the goal of identifying patterns in efforts to improve sustainability. Content analysis of the CSR reports revealed six major areas related to which companies undertake sustainability initiatives: reduction of energy use & consumption, development of technology & infrastructure, reduction of negative impact of chemicals on the environment,
textile waste reduction, other efforts for conservation & use of alternatives, and social responsibility. In analyzing the content of CSR reports, sub-themes emerged within the six areas. Details of individual company initiatives are included under each theme. Table 4 presents the major areas in which companies undertake sustainability related initiatives, together with their subthemes.

Table 4
*Areas of Sustainability Initiatives and Associated Sub-Themes*

<table>
<thead>
<tr>
<th>Areas of Sustainability Initiatives</th>
<th>Number of Sub-Themes</th>
<th>Sub-Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction of Energy Use &amp; Consumption</td>
<td>6</td>
<td>(a) Improvement in Lighting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(b) Energy Management and Training</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(c) Efficiency in Transportation/Shipment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(d) Retail/factory energy efficiency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(e) Use of Solar/Renewable Energy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(f) Reduction of GHGs/CO2 Emissions</td>
</tr>
<tr>
<td>Development of Technology &amp; Infrastructure</td>
<td>4</td>
<td>(a) Participation in and Development of Programs and Partnerships</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(b) Development of Code of Conduct/Guidelines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(c) Improvement of Water Efficiency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(d) Development of Wastewater Treatment</td>
</tr>
<tr>
<td>Reduction of Negative Impact of Chemicals on the Environment</td>
<td>4</td>
<td>(a) Use of alternate substances</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(b) Partnerships with Organizations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(c) Development of Restricted Substances List</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(d) Chemical Management</td>
</tr>
<tr>
<td>Textile Waste Reduction</td>
<td>4</td>
<td>(a) Use of recycled/Alternate Materials</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(b) Waste Reduction Partnerships</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(c) Waste Elimination</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(d) Textile Recycling</td>
</tr>
<tr>
<td>Other Efforts for Conservation &amp; Use of Alternatives</td>
<td>5</td>
<td>(a) Waste Reduction and Management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(b) Programs and Collaboration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(c) Building Efficiency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(d) Development of Product Technology</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(e) Use of Alternate Materials</td>
</tr>
<tr>
<td>Social Responsibility</td>
<td>6</td>
<td>(a) Improvement of Health/Safety/Working Conditions</td>
</tr>
</tbody>
</table>
(b) Education/training/organization partnership  
(c) Accountability for Working Hours/Overtime/Leave  
(d) Payment of Living Wages  
(e) Avoidance of Forced/Child Labor/Abuse  
(f) Acknowledgement of Workers’ Rights

Table 4: Areas of Sustainability Initiatives and Associated Sub-Themes.

The CSR reports were analyzed to identify sustainability initiatives that the four companies undertook over time with the goal of identifying patterns in efforts to improve sustainability in business practices. Data were organized in five-year increments (Launch: 1-5, Evolve: 6-10, Advance: 11-15, Progress: 16+) to gain an overall timeline of efforts undertaken by these companies to improve sustainability in business practices. Results are presented with the number of companies who demonstrated the six major sustainability areas during four 5-year time increments. It is important to note that data were available for all four companies in year increments 1-5 and 6-10. Yet, for years 11-15, Adidas produced five CSR reports, Nike produced three reports (years 11-13), H&M produced two reports (years 11-12), and Gap produced one report (year 11). Only Adidas provided data for years 16+.

Inter-coder-Reliability

Inter-coder reliability was ensured when coding and analyzing for themes identified within the CSR reports. To demonstrate the trustworthiness of data, reliability should be measured because if inter-coder agreement was not reached, the data might not have been considered reliable (Joyce, 2013). The first author, Sarah Mizener, and co-researcher, Dr. Gargi Bhaduri, independently coded 5% of the data and then convened to address any individual differences in coding. For example, in the 2004 CSR report for Gap (p. 32) both researchers discussed whether the sustainability initiatives in the logistics division would be categorized under the efficiency in transportation/shipment sub-theme or the retail/factory energy efficiency
sub-theme regarding the “reduction in production inefficiencies” (Gap, 2004, p. 32). It was concluded that because the specific segment of the report related to logistics mentioned about warehouse/distribution center, it would be categorized under the retail/factory energy efficiency theme because the initiatives discussed were related to the energy efficiency of the factory/warehouse building itself. Another example, Adidas DryDye, which uses 50% fewer chemicals and eliminates water was also discussed, and considered to be under both the reduction of negative impact of chemicals on the environment and development of technology & infrastructure areas. After reaching satisfactory consensus amongst both researchers, the first author continued with the remainder of data collection and analyses.
CHAPTER IV
RESULTS

Analysis of CSR reports of Adidas, Gap, H&M, and Nike revealed six main areas of sustainability initiatives undertaken by these companies: reduction of energy use & consumption, development of technology & infrastructure, reduction of negative impact of chemicals on the environment, textile waste reduction, other efforts for conservation & use of alternatives, and social responsibility. After providing evidence of financial success for all four companies, the following data provides evidence of environmental and social sustainability initiatives, satisfying all three areas in the triple bottom line framework.

REDUCTION OF ENERGY USE & CONSUMPTION

Reduction of energy use & consumption encompasses companies’ initiatives to improvise energy-intensive procedures that cause a negative impact on the environment. Energy-intensive procedures are required when producing synthetic materials, which are derived from polymers, primarily produced from petrochemicals, requiring energy-intensive procedures (Subic et al., 2012). The energy impact of transportation used for the apparel industry is also notable. With manufacturers located all over the world producing various parts of garments or performing a series of manufacturing processes in different factories across the globe, transportation is an essential component of production. Companies can reduce the complexity of the global transport footprint and increase sustainability efforts by decreasing energy-intensive processes and reducing CO2 emissions by means of transportation (Ethical Fashion Forum, 2015). Reduction of energy use & consumption is also conceptualized as energy efficiency within company buildings; office, headquarter buildings and factories can be made more efficient through the use of energy-efficient lighting and temperature controls, and the like.
Analysis of the data revealed six sub-themes within reduction of energy use & consumption that were observed across the four companies: 1) improvement in lighting, 2) energy management and training, 3) efficiency in transportation/shipment, 4) retail.factory energy efficiency, 5) use of solar/renewable energy, and, 6) reduction of GHGs/CO2 emissions. Table 5 and Figure 2 represent reduction of energy use & consumption with observance of the sub-themes for the four brands over the different time periods.

Table 5

<table>
<thead>
<tr>
<th>Themes</th>
<th>Launch: Years 1-5</th>
<th>Evolve: Years 6-10</th>
<th>Advance: Years 11-15</th>
<th>Progress: Years 16+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvement in Lighting</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Energy Management and Training</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Efficiency in Transportation/shipment</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Retail/factory energy efficiency</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Use of Solar/renewable energy</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Reduction of GHGs/CO2 emissions</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

*Note.* This table portrays the number of companies undertaking reduction of energy use & consumption-related sub-themes during the four 4-year increments.
In the beginning years of the CSR reports, all four companies addressed reduction of energy use & consumption in their supply chain. Efficient heating in buildings and efficiency in transportation were common first steps in seeking sustainable energy initiatives. Energy efficient lighting and working with other organizations to improve their sustainability were commonly seen in years six through ten. Energy reduction and optimization projects and factory audits occurred in the later years of the CSR reports.

**Launch: Years 1-5**

During the launch, or the first five years of a company’s implementation of sustainability initiatives, as evidenced from the sustainability reports, six sub-themes were observed: 1)
improvement in lighting, 2) energy management and training, 3) efficiency in transportation/shipment, 4) retail/factory energy efficiency, 5) use of solar/renewable energy, and, 6) Reduction of GHGs/CO2 emissions.

**Improvement in Lighting.**

A prominent sub-theme observed under the four companies’ energy-related initiatives was reduction of energy consumption by using energy efficient lighting. Examples of practices implemented are increased use of natural light and closely monitoring automated mechanisms to reduce energy waste. Only two companies demonstrated this sub-theme in years 1-5. According to CSR reports (Adidas, 1998), Adidas started using energy-saving lamps in year one and continued using energy-efficient lighting. In year one, Gap took substantial steps in lighting efficiency by using occupancy sensors, computer-activated lamps, utilizing natural light from windows, and installing energy-efficient lighting (Gap, 2003).

**Energy Management and Training**

The second sub-theme that emerged under the reduction of energy use and consumption category was efforts to develop and implement energy management programs/training initiatives and organizational partnerships that work to decrease the energy impact of the companies. Two out of the four companies demonstrated this sub-theme in years 1-5. Gap started energy management training in year three (Gap, 2005) and continued to develop an Energy Management Program in year five (Gap, 2007). Nike became a member of the Business for Innovative Climate and Energy Policy (BICEP) in year five (Nike, 2007).

**Efficiency in Transportation/Shipments**

A third sub-theme that emerged from the data was efforts for improvement of transportation and/or shipment practices to reduce fuel consumption and in turn, reduce negative
environmental impact. Three out of the four companies showed presence of this sub-theme in their CSR reports in years 1-5. For example, Adidas worked to optimize their shipping route by increasing sea freight and reducing airfreight all throughout their CSR reports. In years one through five, Adidas reduced transport volume and weight by using new designs for boxes (Adidas, 1998). For shoes and balls, Adidas used outcartons for transportation purposes (Adidas, 1998). H&M put restrictions on airfreight and increased train transportation to avoid utilization of planes and trucks (H&M, 2003). In year one, Nike encouraged their employees to reduce the energy impact by practicing “responsible commuting” (p. 12) through the Traveling Responsibly via Alternative Commuting Program (Nike, 2001) and started using biodiesel in their landscape vehicles in years three and four (Nike, 2006). In years five and six, Nike:

“reduced traffic and miles traveled by implementing a pooled distribution network and reducing long-distance shipping by finding a supplier who uses sustainable materials and delivers from manufacturing plants located near Nike centers. Nike developed a supplier scorecard to assess the match between Nike’s CR values and those of existing and potential suppliers” (Nike, 2006, p. 126).

Retail/Factory Energy Efficiency

The fourth theme that emerged from the study data was efforts to reduce negative environmental impact by increasing the energy efficiency in retail and factory buildings. All four companies demonstrated this sub-theme in years 1-5. For example, Gap implemented retail/factory energy efficiency practices in year one with resetting thermostats, using automatic controls for conveyor systems, opening up exterior windows for natural temperature control, and using an under-floor ventilation system that “stores cold air and uses it to cool the building throughout the day” (Gap, 2003, p. 33). In year three, Adidas started working with efficient
heating (Adidas, 2001). H&M reduced heating requirements in their factories in year five (H&M, 2007). Nike reduced CO2 emissions in footwear manufacturing to improve the energy efficiency in factories in year five (Nike, 2007).

Use of Solar/Renewable Energy

A fifth sub-theme that emerged from the data was efforts to increase the use of solar or renewable energy. Only two companies demonstrated this sub-theme in years 1-5. For example, Nike worked on using renewable energy in years three and four. In year four, “Nike's European distribution center in Laakdal, Belgium installed 6 wind turbines, providing enough capacity to power the 2 million-square-foot facility – Nike is the first company of its size in Belgium to operate solely on green energy that is produced on site” (Nike, 2006, p. 70). In years five and six, Gap installed a one-megawatt solar array at one of the distribution centers in Fresno, California to increase their energy efficiency (Gap, 2008).

Reduction of GHGs/CO2 Emissions

The sixth sub-theme that emerged in years 1-5 was efforts to reduce the amount of greenhouse gas and carbon dioxide emissions. This sub-theme was observed in three out of the four companies’ CSR reports. For example, Nike was the first company to look at their greenhouse gas emissions in year three followed by H&M in year three and Gap in year five (Nike, 2001; H&M, 2004; Gap 2007).

Evolve: Years 6-10

During the evolve or the second five years of a company’s implementation of sustainability initiatives as evidenced from the sustainability reports, five sub-themes were observed: 1) improvement in lighting, 2) energy management and training, 3) efficiency in transportation/shipment, 4) retail/factory energy efficiency, and, 5) reduction of GHGs/CO2
emissions. The sub-theme that was not represented in years six through ten was the use of solar/renewable energy.

**Improvement in Lighting**

A sub-theme observed in years 6-10 was reduction of energy consumption by using energy efficient lighting. Two out of the four companies demonstrated this sub-theme in years 6-10. In year six, H&M started working with improving their lighting practices with the use of timers for lighting and lighting sensor controls. H&M then moved to dimming lighting in year seven and energy-efficient lighting and LED lighting in years nine and ten (H&M, 2011). Adidas started working with environmental consultants in year eight to aid in improving environmental impact by reducing energy consumption (Adidas, 2006).

**Energy Management and Training**

A second sub-theme observed in years 6-10 was energy management and training. All four companies demonstrated this sub-theme in years 6-10. Previously companies implemented efforts locally in their own firms, but in years 6-10, they became leaders, by either creating policies, obtaining certifications, or joining forces. Years 6-10 was a time for getting noticed in the global industry as well as becoming a leader. For example, Gap hired LEED accredited designers in years seven and eight. In years five and six, Nike became a founding member of the Business for Innovative Climate and Energy Policy (BICEP). H&M joined the European Retail Round Table (ERRT) in year six, working to reduce energy consumption. H&M also received their SmartWay certification in year eight (H&M, 2009). Adidas provided energy efficiency workshops in year ten (Adidas, 2008).

**Efficiency in Transportation/Shipmenet.**
A third sub-theme was efforts for improvement of transportation and/or shipment practices to reduce fuel consumption and in turn, reduce negative environmental impact. Three out of the four companies demonstrated this sub-theme in years 6-10. In year seven, H&M launched the Clean Shipping Project to improve the environmental performance of the shipping industry (H&M, 2008). In year seven, H&M also started using biodiesel and reduced transport labeling. By optimizing their shipping methods in year eight, H&M was able to reduce the number of shipments via transit warehouse in year eight and reduced business travel of employees, which reduced the emissions caused by such travel (H&M, 2009). Gap started using space-efficient containers in year seven to improve energy efficiency in transportation and shipment (Gap, 2009). Nike made efforts to reduce CO2 transport emissions in year seven (Nike, 2010).

Retail/Factory Energy Efficiency

The fourth theme that emerged in years 6-10 was efforts to reduce negative environmental impact by increasing energy efficiency in retail and factory buildings. This sub-theme was observed in two out of the four companies’ CSR reports. For example, H&M started using energy-efficient escalators in year six (H&M, 2007) and remote access energy meters in year seven (H&M, 2008). Nike reduced energy use in distribution centers and corporate offices in year nine (Nike, 2012). Energy efficiency was not prominent in years 6-10 with only two companies exhibited this sub-theme.

Reduction of GHGs/CO2 Emissions

The fifth sub-theme that emerged in years 6-10 was efforts to reduce the amount of greenhouse gas and carbon dioxide emissions. Only one company demonstrated this sub-theme in the CSR reports in years 6-10. Nike worked to reduce CO2 emissions in their footwear
manufacturing, distribution centers, corporate offices, and retail stores in years five through eleven (Nike, 2007).

**Advance: Years 11-15**

During the advance or the third five years of a company’s implementation of sustainability initiatives as evidenced from the sustainability reports, five sub-themes were observed: 1) improvement in lighting, 2) energy management and training, 3) retail/factory energy efficiency, 4) use of solar/renewable energy, and, 5) reduction of GHGs/CO2 emissions. The sub-theme that was not represented in years six through ten was the efficiency in transportation/shipment.

**Improvement in Lighting**

A sub-theme observed in years 11-15 was reduction of energy consumption by using energy efficient lighting. Two out of the four companies demonstrated this sub-theme in years 11-15. In year fourteen, Adidas took a further step by installing LED lighting in their retail stores. Adidas launched the Adidas Group GreenEnergy Fund, which encouraged more energy audits to identify and implement energy-saving projects in years twelve through fourteen (Adidas, 2012). In year eleven, Nike developed an emissions-tracking system and worked to have better data accuracy in their facilities regarding their energy efficiency (Nike, 2014).

**Energy Management and Training**

A second sub-theme to emerge in years 11-15 was energy management and training. Two out of the four companies demonstrated this sub-theme in years 11-15. Adidas started energy-efficient workshops and programs in years ten and eleven and made sure that staff training on energy efficiency was given in year thirteen. Adidas’s energy saving practices were shared and
an energy management program was developed in year fourteen (Adidas, 2012). Nike launched an energy-saving program for manufacturing in year eleven (Nike, 2014).

Retail/Factory Energy Efficiency

The third sub-theme that emerged in years 11-15 was efforts to reduce negative environmental impact by increasing the energy efficiency in retail and factory buildings. Three out of the four companies demonstrated this sub-theme in years 11-15. In year eleven of their sustainability reporting, Nike developed an energy-saving program for the manufacturing sector of their supply chain (Nike, 2009). Adidas started using more energy-saving measures and systems in their buildings in year eleven (Adidas, 2009). In year fourteen, 70% of Adidas’s headquarters internet servers became virtual, which uses less energy, reduces the carbon footprint, and optimizes the storage space and cooling system that is required (Adidas, 2012). In year seven, H&M utilized remote access energy meters and continued to reduce energy consumption in retail stores in years ten through twelve (H&M, 2008).

Use of Solar/Renewable Energy

A fourth sub-theme that emerged from the study data in years 11-15 was efforts to increase the use of solar or renewable energy. Only one company exhibited this sub-theme in years 11-15. H&M started working with solar energy in years eleven and twelve by developing their own solar photovoltaic panels, producing 784,200 kwh of solar energy (H&M, 2013). H&M also started working towards their goal of 100% energy to be sourced from renewables in year eleven.

Reduction of GHGs/CO2 Emissions.

The fifth sub-theme that emerged in years 11-15 was efforts to reduce the amount of greenhouse gas and carbon dioxide emissions. Three companies identified this sub-theme in their
CSR reports during years 11-15. H&M took steps to reduce their carbon footprint in years eight through thirteen. Adidas and Nike mentioned reducing their total carbon emissions in year eleven.

**Progress: Years 16+**

During the progress phase, the last five years of a company’s implementation of sustainability initiatives as evidenced from the sustainability reports, only one sub-theme was observed: retail/factory energy efficiency. The sub-themes that were not represented during this time period were: 1) improvement in lighting, 2) energy management and training, 3) efficiency in transportation/shipment, 4) use of solar/renewable energy, and, 5) reduction of GHGs/CO2 emissions.

**Retail/Factory Energy Efficiency**

In year sixteen, the theme that emerged was efforts to reduce negative environmental impact by increasing the energy efficiency in retail and factory buildings. Only one company reported in a CSR reports in year 16. Adidas conducted energy reduction and energy saving projects. Adidas also explored the use of carbon neutral printing to decrease their energy use (Adidas, 2014).

**DEVELOPMENT OF TECHNOLOGY & INFRASTRUCTURE**

In accordance to the literature review, analysis of the data found four sub-themes related to companies’ initiatives for improvement of the development of technology & infrastructure: 1) participation in and development of programs and partnerships, 2) development of code of conduct/guidelines, 2) improvement of water efficiency, and 4) development of wastewater
treatment. Table 6 and Figure 3 represent the development of technology & infrastructure with observance of the sub-themes for the four brands over the different time periods.

Table 6
*Number of Companies Demonstrating Development of Technology & Infrastructure Themes by Year Increments*

<table>
<thead>
<tr>
<th>Themes</th>
<th>Launch: Years 1-5</th>
<th>Evolve: Years 6-10</th>
<th>Advance: Years 11-15</th>
<th>Progress: Years 16+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation in and Development of Programs and Partnerships</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Development of Code of Conduct/Guidelines</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Improvement of Water Efficiency</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Development of Wastewater Treatment</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Note.* This table portrays the number of companies undertaking development of technology & infrastructure-related sub-themes during the four 4-year increments.
Improvement of water efficiency was the first theme addressed and continued to be a theme throughout all of the CSR reports. Projects to analyze water use and reporting systems to track water consumption were first steps for some of the companies, which then moved into projects to treat wastewater and monitor wastewater quality. Partnerships with programs and organizations started occurring in years three and four and these partnerships continued to grow and develop throughout all companies. Water quality guidelines were only used by the two companies that exhibited the greatest number of initiatives in this area.
Launch: Years 1-5

During the launch or the first five years of a company’s implementation of sustainability initiatives as evidenced from the sustainability reports, four sub-themes were observed: 1) participation in and development of programs and partnerships, 2) development of code of conduct/guidelines, 2) improvement of water efficiency, and 4) development of wastewater treatment.

Participation in and Development of Programs and Partnerships

The first sub-theme that emerged in this area was the development of programs to improve the impact on water use in the supply chain and partnerships with other organizations to guide the company in this effort. Two out of the four companies demonstrated this sub-theme in years 1-5. Nike started the Nike Water Program, which “introduced a web-based reporting system to make enrollment and participation more convenient to suppliers. According to the CSR report, this system collects production data, water use, discharge volume, and wastewater quality lab results for evaluation against the Nike Water Program guidelines and locally regulated environmental standards (Nike, 2006). In year four, H&M participated in Business for Social Responsibility’s (BSR) Apparel Water Quality Working Group (AWQWG), which is “committed to responsible practices concerning water use and wastewater discharge in textile and apparel supply chains around the world” (H&M, 2005, p.67). In year five, H&M started educating fabric suppliers on environmental considerations in bleaching, dyeing and washing fabrics (H&M, 2006).

Development of Code of Conduct/Guidelines

The second sub-theme that emerged from the study data was the development of guidelines and a Code of Conduct that aided companies in improving their impact on water
quality, thus reducing their negative environmental impacts. Two of the companies demonstrated this sub-theme in years 1-5. Nike developed the Global Water Quality guidelines in year two (Nike, 2004) and H&M developed quality of water guidelines in year five to track water use and direct contract factories to meet local wastewater discharge standards (H&M, 2006).

Improve of Water Efficiency

The third sub-theme that emerged from the data was efforts to improve water efficiency in the companies’ supply chain. Three out of the four companies demonstrated this sub-theme in years 1-5. For example, Adidas analyzed water consumption in year one and reduced water consumption by 20% by year five. In year one, Nike started a closed-loop project where environmentally benign groundwater was stored and used to warm/cool buildings along with a rainwater collection system that saves four million liters of water per year (Nike, 2001). Gap started the Denim Laundry Wastewater Project in year two and continued developing it through year four. This project tested for pH, total suspended solids, BOD, COD, color and temperature of wastewater (Gap, 2004).

Development of Wastewater Treatment

The fourth sub-theme that emerged in years 1-5 was efforts to reduce the negative effects that wastewater has on the environment. Three of the four companies demonstrated this sub-theme in years 1-5. For example, Nike installed wastewater treatment facilities in factories where local capabilities did not exist in year two (Nike, 2004). Nike recorded their wastewater quality and compared lab results against Nike Water Program guidelines and locally regulated environmental standards (Nike, 2005). In year three, H&M developed the Supplier Environmental Motivation Strategy (SEMS), “pilot project focused on the possibilities of reducing the environmental impact of fabric production, particularly fabric dyeing and other
processes that can lead to water pollution – working towards cleaner production” (H&M, 2004, p.53). In years five and six, H&M and Adidas analyzed their wastewater treatment and monitored wastewater quality (H&M, 2006; Adidas, 2003).

**Evolve: Years 6-10**

During the evolve or the second five years of a company’s implementation of sustainability initiatives as evidenced from the sustainability reports, four sub-themes were observed: 1) participation in and development of programs and partnerships, 2) development of code of conduct/guidelines, 2) improvement of water efficiency, and 4) development of wastewater treatment.

**Participation in and Development of Programs and Partnerships**

The first sub-theme that emerged in years 6-10 was the development of programs to improve the impact on water use in the supply chain and the partnerships with other organizations to guide the company in this effort. Three out of the four companies demonstrated this sub-theme in years 6-10. For example, in year seven H&M signed the CEO Water Mandate, which was a voluntary initiative that improved the transparency in their water efficiency initiatives and the quality of wastewater. In year seven, Gap started their Water Quality Program and set standards for how jeans must be produced, which became a requirement for doing business with Gap. Gap then partnered with Conservation International to develop a Water Risk Management system in years nine and ten to deal with risks associated with water (Gap, 2012). Nike continued developing the Nike Water Program (Nike, 2009).

**Development of Code of Conduct/Guidelines**

The second sub-theme that emerged in years 6-10 was the development of guidelines and a Code of Conduct that aided companies in improving their impact on water quality. Two
companies demonstrated this sub-theme in years 6-10. In year five, H&M developed guidelines with the BSR to set requirements for the quality of water discharged followed by a Code of Conduct for wastewater treatment in year six. In years seven and eight, Nike developed a water-use baseline for footwear manufacturers and a green technology innovation that worked on leak detection and elimination in the mid-sole washing process.

Improvement of Water Efficiency

The third sub-theme that emerged in years 6-10 was efforts to improve water efficiency in the supply chain. One company showed this sub-theme in years 6-10 of their CSR. H&M started collecting water use data in year seven (H&M, 2008) and then worked on store and distribution center efficiency in year eight (H&M, 2009). This included installing low-flow toilets and low-flow taps in hand basins and kitchen sinks in stores (H&M, 2009). H&M also installed low-consumption toilets and shower armatures with an automatic stop function at distribution centers (H&M, 2008). In an effort to minimize potable water usage, rainwater was used to rinse toilets and for external irrigation (H&M, 2008). In year nine, H&M substituted rainwater for non-drinking water and continued to collect water efficiency data (H&M, 2010).

Development of Wastewater Treatment

The fourth sub-theme that emerged in years 6-10 was efforts to reduce the negative effects that wastewater has on the environment. Three out of four companies demonstrated this sub-theme in years 6-10. In year six, H&M conducted visits to factories to see how wastewater treatment plants were working (H&M, 2007). Gap cleaned and filtered wastewater coming out of denim laundries in year seven (Gap, 2008). Nike continued to monitor wastewater quality through the Nike Water Program in year six (Nike, 2009).

Advance: Years 11-15
During the advance phase, the third five years of a company’s implementation of sustainability initiatives as evidenced from the sustainability reports, two sub-themes were observed: 1) participation in and development of programs and partnerships and, 2) improvement of water efficiency. The two sub-themes that were not observed in this yearly increment were: 1) development of code of conduct/guidelines and, 2) development of wastewater treatment.

Participation in and Development of Programs and Partnerships

The first sub-theme that emerged in years 11-15 was development of programs to improve impact on water use in the supply chain and partnerships with other organizations to guide the company in this effort. Two out of the four companies demonstrated this sub-theme in years 11-15. In year eleven, Nike continued the Nike Water Program and developed the H2O Insight Tool, an online data-collection system for vendors to report water efficiency (Nike, 2014). H&M partnered with World Wildlife Fund (WWF) and worked towards a “holistic water stewardship strategy” to set new industry standards (H&M, 2012, p. 11). H&M improved internal water efficiency, minimized the impact of suppliers on water, and trained all colleagues in water issues (H&M, 2012).

Improvement of Water Efficiency

The second sub-theme that emerged in years 11-15 was efforts to improve water efficiency in the companies’ supply chain. Two of the companies demonstrated this sub-theme in years 11-15. Adidas developed Adidas DryDye in years fourteen through sixteen; DryDye is a “polyester fabric dyeing process that uses no water, 50% fewer chemicals and 50% less energy than the traditional fabric dyeing process” (Adidas, 2012, p. 25). In year eleven, Nike’s CSR report noted improving water efficiency by “15% per unit in apparel materials dyeing and finishing and in footwear manufacturing” (Nike, 2014, p. 28).
REDUCTION OF NEGATIVE IMPACT OF CHEMICALS ON THE ENVIRONMENT

A theme that presented itself in the CSR reports was using alternate substances instead of harmful chemicals; rather than using toxic adhesives, water-based adhesives were used along with increased use of environmentally preferred materials (EPMs). Programs to encourage companies on sustainable alternatives were also found in the data, along with collaboration with organizations that provided guidance on how to recycle. Each company discussed their Restricted Substances List that listed the chemicals that they are committed to phasing out and eliminating. Chemical management is a theme that encompassed all efforts to audit factories and eliminate hazardous waste.

In accordance with the literature review, analysis of the data found four major sub-themes: 1) use of alternate substances, 2) partnerships with organizations, 3) development of Restricted Substances List, and 4) chemical management as seen in Table 7 and Figure 4.

Specific examples of individual company initiatives are presented under each theme.

Table 7
Number of Companies Demonstrating Reduction of Negative Impact of Chemicals on the Environment Themes by Year Increments

<table>
<thead>
<tr>
<th>Themes</th>
<th>Launch: Years 1-5</th>
<th>Evolve: Years 6-10</th>
<th>Advance: Years 11-15</th>
<th>Progress: Years 16+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of Alternate substances</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Partnerships with Organizations</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Development of Restricted Substances Lists</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Chemical management</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

>Note. This table portrays the number of companies undertaking reduction of negative impact of chemicals on the environment-related sub-themes during the four 4-year increments.
Figure 4: Reduction of Negative Impact of Chemicals on the Environment Themes: Year Increments by Number of Companies. This figure illustrates the number of companies that demonstrated each theme under the ‘reduction of negative impact of chemicals on the environment’ area.

This area was addressed in all CSR reports and every theme was mentioned in years one through five. All four companies started with the development of a Restricted Substances List and found alternatives for phasing out and/or eliminating chemicals altogether. Companies were noted to record and monitor their chemical usage and then worked to properly handle chemical waste and storage. Partnerships with programs provided guidance on sustainable practices and offered encouragement on how to decrease negative chemical impact on the environment.

**Launch: Years 1-5**
During the launch, the first five years of a company’s implementation of sustainability initiatives as evidenced from the sustainability reports, four sub-themes were observed: 1) use of alternate substances, 2) partnerships with organizations, 3) development of Restricted Substances Lists, and, 4) chemical management.

Use of Alternate Substances

The first sub-theme to emerge in the data were efforts to increase the use of alternates instead of harmful or toxic substances. Three out of four companies explored alternate substances in years one through five. In year one, Adidas decided to use non-coated shoeboxes and use print colors that did not contain heavy metals (Adidas, 1998). Also in year one, Adidas also started using water-based adhesives and water-based cementing and printing to reduce solvent consumption (Adidas, 1998). In year one, Gap started using low-toxic paints, carpets and tile adhesives, as well as formaldehyde-free particleboard when building new buildings (Gap, 2003). In year one, Nike began researching gas and barrier film alternatives with proven performance to allow a substitution of a benign cushioning gas in their shoes (Nike, 2001). Nike also replaced organic solvents in year one, which brought $4.5 million savings in raw materials and eliminated 1.6 million gallons of solvent annually (Nike, 2001). Nike achieved a 77% increased use of environmentally preferred materials (EPMs) between years four and six (Nike, 2009).

Partnerships with Organizations

The second sub-theme to emerge in the data was partnership with knowledgeable organizations to improve the company’s chemical footprint on the environment. Two out of the four companies demonstrated this sub-theme in years 1-5. In year two, Adidas was selected to join the Dow Jones Sustainability Group Index (DJSIGI), “the first global index tracking the
performance of leading sustainability-driven companies” (Adidas, 2000, p.45). In year one, Nike made all information regarding chemicals and manufacturing processes available to appropriate parties in an effort to become more transparent (Nike, 2001). Nike started the Environment, Safety & Health (ESH) program in corporate operations that addressed environment, safety, and health considerations in factories in year two (Nike, 2004).

Development of Restricted Substances Lists

The third sub-theme that emerged in the data was the development of Restricted Substances Lists in order to phase out and eliminate harmful chemicals in the supply chain. In years one through five, all four companies developed a Restricted Substances List to reduce and eliminate the amount of harmful chemicals used in the supply chain and continued to add and develop these lists throughout all their CSR reports (Adidas, 2001; Gap, 2006; H&M, 2004; Nike, 2004). In years one through five, there was a strong focus on phasing out and reducing the use of PVCs and VOCs by Adidas, H&M, and Nike (Adidas, 2000; H&M, 2002; Nike, 2001).

Chemical Management

Efforts to reduce the negative impacts of chemicals on the environment was the fourth sub-theme to emerge in the data. All four companies demonstrated this sub-theme in years 1-5. For example, in years one through sixteen, all companies reviewed factories and tracked chemical consumption (Adidas, 1998; Gap, 2003; H&M, 2002; Nike, 2001). In years three and four, Nike started tracking hazardous waste and worked on “understanding the need to identify the compliance and technical capabilities of contract facilities to treat and dispose of the approximate 5 million kilograms of hazardous waste generated by Nike contract facilities” (Nike, 2006, p. 49). In year five and six, Gap included chemical handling and storage in their Code of Conduct (Gap, 2008). Year five marked the commencement of polymer waste material
Evolve: Years 6-10

During the evolve, the second five years of a company’s implementation of sustainability initiatives as evidenced from sustainability reports, three sub-themes were observed: 1) use of alternate substances, 2) partnerships with organizations, and, 3) development of Restricted Substances List. The only sub-theme that was not represented was chemical management.

Use of Alternate Substances

The first sub-theme to emerge in years 6-10 was efforts to increase the use of alternate substances to improve the company’s environmental impacts. Three of the four companies demonstrated this sub-theme in years 6-10. Nike continued to increase the use of EPMs in years six through ten, specifically environmentally preferred rubber in their shoes in years nine and ten (Nike, 2013). H&M focused on water-based adhesives starting in year eight and Adidas continued to reduce their solvent consumption (H&M, 2009). Adidas also continued reducing solvent consumption by using water-based alternatives in year six (Adidas, 2004).

Partnerships with Organizations

The second sub-theme to emerge in years 6-10 was partnership with knowledgeable organizations to improve the company’s chemical footprint on the environment. This sub-theme was exhibited by three companies in years 6-10. In years six through ten, Nike had partnerships with Bluesign and the Sustainable Apparel Coalition and developed the Nike Green Chemistry program (Nike, 2013). In year eight, 373 Nike brand footwear and apparel material vendors provided a signed commitment to the Nike Green Chemistry program (Nike, 2011). In year nine, thirteen companies joined the Zero Discharge of Hazardous Chemicals (ZDHC) coalition that Nike helped launch (Nike, 2013). Nike also started working with Bluesign and the Sustainable
Apparel Coalition. In year six, H&M provided guidance to stores on handling hazardous waste including: fluorescent tube lights, batteries, electronic equipment, glues, and other chemicals (H&M, 2007). In year ten, Adidas “reviewed and verified internal tools for the selection of environmental materials used in their products” (Adidas, 2008, p. 51).

Development of Restricted Substances Lists

The third sub-theme that emerged in years 6-10 was the development of Restricted Substances Lists. Three out of the four companies continued to exhibit this sub-theme. In years six through ten, Adidas and H&M continued reducing VOCs (Adidas, 2004). H&M also worked to reduce the amount of pesticides used in growing and gathering process of fibers in year ten (H&M, 2011). Nike focused on a zero discharge of hazardous chemicals through the ZDHC partnership in years nine and ten (Nike, 2013).

Chemical Management

The fourth sub-theme to emerge in the data was chemical management. All four companies demonstrated this sub-theme in years 6-10. Gap and H&M developed safe chemical handling/storage of chemicals in year six (Gap, 2008; H&M, 2007). Adidas (2008) and Nike (2009, 2010) both monitored the use of chemicals in their supply chain in order to reduce harmful chemicals.

Advance: Years 11-15

During the advance, the third five years of a company’s implementation of sustainability initiatives as evidenced from the sustainability reports, four sub-themes were observed: 1) use of alternate substances, 2) partnerships with organizations, 3) development of Restricted Substances Lists, and, 4) chemical management.

Use of Alternate Substances
The first sub-theme to emerge in the data was efforts to increase the use of alternate substances. Two companies, Adidas and H&M, demonstrated this sub-theme in years 11-15. In year eleven of both company’s CSR reporting, Adidas started working with non-solvent based synthetics and H&M’s continued use of water-based adhesives (Adidas, 2009; H&M, 2012).

Partnerships with Organizations

The second sub-theme to emerge in years 11-15 involved partnership organizations to improve chemical impact on the environment. Two out of the four companies demonstrated this sub-theme in years 11-15. For example, Adidas “committed itself to the goal of Zero Discharge of Hazardous Chemicals from its supply chain via all pathways, with a 2020 deadline” in year fourteen (Adidas, 2012, p. 19). Nike collaborated with Bluesign and the Nike Green Chemistry Program to eliminate toxic chemicals in year eleven (Nike, 2014).

Development of Restricted Substances Lists

The third sub-theme that emerged in years 11-15 was the development of a Restricted Substances List in order to phase out and eliminate harmful chemicals in the supply chain processes. Three companies exhibited this sub-theme in years 11-15. In years eleven through sixteen, Adidas, H&M, and Nike had a strong focus on banning PFCs (Adidas, 2014; H&M, 2012; Nike, 2014).

Chemical Management

The fourth sub-theme to emerge in years 11-15 was efforts to reduce the negative impacts of chemicals on the environment. One company showed this sub-theme in years 11-15. Adidas implemented an initiative that “streamlines and optimized the processes and documentation of the ISO 14001 management system” in year fourteen (Adidas, 2012, p. 44). Through the Adidas DryDye technology, which was created in year fourteen, 50% fewer chemicals are used
compared to the traditional fabric dyeing process (Adidas, 2012)

TEXTILE WASTE REDUCTION

Textile waste reduction is conceptualized as any apparel post-producer waste that is deposited into landfills including fiber, yarn, fabric scraps, and apparel cuttings from fiber producers, textile mills, fabric and apparel manufacturers (Domina & Koch, 1997). Packaging of apparel also presents a waste issue; when retailers introduce recyclable or alternate forms of packaging, the amount of waste sent to landfills is decreased. Zero-waste pattern cutting is one concept that some companies have started to use that eliminates fabric waste by using the entire width and length of a fabric (Townsend & Mills, 2013, p. 104). Textile recycling is another sustainability effort to reduce the amount of waste otherwise heading to landfills.

In accordance with the literature review, analysis of the data found four themes: 1) use of recycled/alternate materials, 2) waste reduction partnerships, 3) waste elimination, and 4) textile recycling as seen in Table 8 and Figure 5. Specific examples of individual company initiatives are presented under each theme.

Table 8

<table>
<thead>
<tr>
<th>Themes</th>
<th>Launch: Years 1-5</th>
<th>Evolve: Years 6-10</th>
<th>Advance: Years 11-15</th>
<th>Progress: Years 16+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of Recycled/alternate materials</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0</td>
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<tr>
<td>Waste Reduction Partnerships</td>
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<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Waste elimination</td>
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<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Textile recycling</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Note. This table portrays the number of companies undertaking textile waste reduction-related sub-themes during the four 4-year increments.
Companies started by recording the amount of waste within their supply chain and then developed plans to reduce the amount of waste accumulated through the design and manufacturing stages. Some companies tried to reuse garments and materials for new products to reduce the amount of waste sent to landfills and save money by not purchasing new materials. H&M developed a clothing recycling process that proved to be the most notable initiative in this area.

**Launch: Years 1-5**

During the launch or the first five years of a company’s implementation of sustainability initiatives as evidenced from the sustainability reports, two sub-themes were observed: 1) use of recycled/alternate materials and, 2) waste elimination. The two sub-themes that were not observed were: 1) waste reduction partnerships and, 2) textile recycling.

**Use of Recycled/Alternate Materials**
The first sub-theme to emerge in the study data in this area was the increased use of recycled and alternate materials. One company exhibited this sub-theme in years 1-5. For example, in year two, Nike reused rubber scraps and used recycled polyester in footwear. “Rubber scrap waste, previously managed as a fuel source in inefficient and polluting incinerators, is now re-incorporated into our outsoles or our Nike Grin licensing program” (Nike, 2004, p. 67).

Waste Elimination

The second sub-theme to emerge in the data was efforts to decrease waste and improve environmental performance. Three of the four companies demonstrated this sub-theme in years 1-5. For example, Adidas started recording their waste in year one and began to separate used and polluted rags in factories in year five (Adidas, 2003). In year one, Gap asked all employees to reduce waste, recycle, and purchase products that contained post-consumer recycled material (Gap, 2003). Nike began working on zero-waste in footwear manufacturing. In year one, they “created accurate data on waste, set targets for reduction, began systemic reduction, worked with local entrepreneurs to develop secondary markets for recyclable materials – ultimately zero waste” (Nike, 2001, p. 18).

Evolve: Years 6-10

During the evolve or the second five years of a company’s implementation of sustainability initiatives as evidenced from the sustainability reports, four sub-themes were observed: 1) use of recycled/alternate materials, 2) waste reduction partnerships, 3) waste elimination, and 4) textile recycling.

Use of Recycled/Alternate Materials

The first sub-theme to emerge in the study data in years 6-10 was the increased use of
recycled and alternate materials. One company demonstrated this sub-theme in years 6-10. In years nine through ten, 35% of Nike’s polyester garments contained recycled polyester (Nike, 2013).

Waste Reduction Partnerships

The second sub-theme to emerge in years 6-10 was an increase in training regarding ways to improve environmental impacts and partnerships that helped to reduce waste in landfills. Three out of four companies demonstrated this sub-theme in years 6-10. In year six, Nike partnered with the Apparel Consideration Index to track their waste consumption (Nike, 2009). In year eight, Gap partnered with Cotton Inc. to launch the “Recycle Your Blue” campaign to encourage customers to drop off their old, outworn pairs of jeans (Gap, 2010). In year eight at Adidas, “training to footwear factories was focused on further improving the accuracy of environmental indicator systems” (Adidas, 2006, p. 8).

Waste Elimination

The third sub-theme to emerge in the study data was efforts to decrease waste. All four companies demonstrated this theme in years 6-10. In years six through ten, H&M, Gap, Nike, and Adidas began the development of company-wide waste strategies to eliminate waste to landfills (Adidas, 2004; Gap, 2010; H&M, 2008; Nike, 2010). Adidas also developed waste management systems in years seven and eight (Adidas, 2006).

Textile Recycling

The fourth sub-theme that emerged in years 6-10 was efforts to recycle garments. One company showed this sub-theme in CSR reports during years 6-10. For example, H&M used textile remnants from production of their Lanvin for H&M Collection to create their Waste Collection where recycled materials were converted into new clothes in year nine (H&M, 2010).
In year ten, the company initiated a pilot project to return worn garments from any brand in any condition to H&M stores for recycling and creating into new garments (H&M, 2011).

**Advance: Years 11-15**

During the advance, the third five years of a company’s implementation of sustainability initiatives as evidenced from the sustainability reports, four sub-themes were observed: 1) use of recycled/alternate materials, 2) waste reduction partnerships, 3) waste elimination, and 4) textile recycling.

**Use of Recycled/Alternate Materials**

The first sub-theme to emerge in the study data in years 11-15 was increased use of recycled and alternate materials. Two out of four companies demonstrated this sub-theme in years 11-15. In year eleven, Adidas worked to maximize utilization of recycled materials in their products and started using recyclable parts in shoes (Adidas, 2009). H&M began using recycled polyester in products in year twelve. “The amount of recycled polyester we used is equivalent to 9.5 million PET bottles” (H&M, 2013, p. 60).

**Waste Reduction Partnerships**

The second sub-theme to emerge in years 11-15 was the increase in partnerships to reduce waste in landfills. One company showed evidence of this sub-theme in their CSR reports during years 11-15. In year thirteen, H&M developed one of the world’s biggest retail garment collecting programs, partnering with a UK-based innovation company, Worn Again, to develop promising technologies for textile-to-textile recycling (H&M, 2014).

**Waste Elimination**

The third sub-theme to emerge in years 11-15 was efforts to decrease waste and improve environmental performance. Two companies demonstrated this sub-theme in years 11-15. In year
eleven, Adidas incorporated zero-waste into shoes by injecting components or pre-mold blockers to produce zero-waste, reducing waste by 45%. In the same year, Adidas also maximized the use of recycled materials, such as 5% of reground rubber in the outsole of shoes and recycled uppers and laces (Adidas, 2009). In year fourteen, Adidas designed a low-waste sustainable shoe that debuted in year fifteen. A collection of men’s and women’s clothing with over 95% pattern efficiency was also debuted in year fifteen by Adidas as part of their low-waste initiative (Adidas, 2013). In year eleven, H&M targeted 95% of warehouse waste to be recycled by the end of 2013 (H&M, 2012).

Textile Recycling

The fourth sub-theme that emerged in years 11-15 was efforts to recycle garments. One company was observed to contain this sub-theme during years 11-15. In year thirteen, H&M reported the collection of more than 7,600 tons of garments in their garment recycling initiative (H&M, 2014).

OTHER EFFORTS FOR CONSERVATION AND USE OF ALTERNATIVES

This area encompasses alternative processes in the apparel supply chain and other opportunities in the supply chain that encourage sustainability. Other alternative energy sources used to generate power to increase building efficiency are wind farms, photovoltaic energy facilities, using plants for biofuels, and generating energy using solar power (Civil Engineering, 2009). In shipping and transportation, using recycled materials or redesigning the transport process to reduce weight and/or volume being transported can also be considered under this area. Any alternate material or source that reduces negative impacts on the environment can be considered under this area.
In accordance to the literature review, analysis of the data found five themes during the coding of CSR reports for other efforts for conservation and the use of alternatives: 1) waste reduction and management, 2) programs and collaboration, 3) building efficiency, 4) development of product technology, and, 5) use of alternate materials as seen in Table 9 and Figure 6. Specific examples of individual company initiatives are presented under each theme.

Table 9
Number of Companies Demonstrating Other Efforts for Conservation & Use of Alternatives Themes by Year Increments

<table>
<thead>
<tr>
<th>Themes</th>
<th>Launch: Years 1-5</th>
<th>Evolve: Years 6-10</th>
<th>Advance: Years 11-15</th>
<th>Progress: Years 16+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste Reduction and Management</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Programs and Collaboration</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Building Efficiency</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Development of Product Technology</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Use of Alternate Materials</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Note. This table portrays the number of companies undertaking other efforts for conservation & use of alternatives-related sub-themes during the four 4-year increments.

Figure 6: Other Efforts Conservation & Use of Alternatives Themes: Year Increments by Number of Companies

Figure 6: Other Efforts Conservation & Use of Alternatives Themes: Year Increments by
Number of Companies. This figure illustrates the number of companies that demonstrated each theme under the ‘other efforts for conservation & use of alternatives’.

In this area, other efforts for conservation & use of alternatives, waste reduction was the most popular theme; recycling store materials like paper, cardboard, plastic, filling paper, and hangers seem to be simple alternatives that companies applied in years one through five. All companies demonstrated using organic cotton and/or working with Better Cotton. All four companies established ways to improve transportation and shipping methods, which was a popular sub-theme in years six through ten. Building efficiency and product technology themes were advanced and seen in fewer CSR reports compared to other themes.

**Launch: Years 1-5**

During the launch, the first five years of a company’s implementation of sustainability initiatives as evidenced from the sustainability reports, five sub-themes were observed: 1) waste reduction and management, 2) programs and collaboration, 3) building efficiency, 4) development of product technology, and, 5) use of alternate materials.

**Waste Reduction and Management**

The first sub-theme to appear in the study data in this area was efforts to increase recycling of waste materials and the use of sustainable materials and to improve supply chain practices. All four companies demonstrated this sub-theme in years 1-5. For example, in year one Adidas used recycled paper for shoeboxes and recycled packaging materials as well as recycled cardboard containers for transportation purposes, in order to reduce packaging materials in year one (Adidas, 1998). In year five, Adidas used recycled paper envelopes and cartons and recycled printer cartridges in offices.

Gap programmed the default on all copy machines to make two-sided copies in year one
(Gap, 2003). The interior wood and wood veneer used in Gap’s buildings was retrieved from certified, well-managed forests (Gap, 2003).

[In year four], much of the paper and corrugate [Gap] purchased directly has a minimum post-consumer recycled content of 15%, and some has post-consumer recycled content as high as 68% and [Gap] is currently working with paper mills to explore ways to increase the amount of recycled post-consumer waste pulp used in Gap’s price tags. (Gap, 2006, p. 61)

Gap also redesigned hangers to make them easier to recycle in year two (Gap, 2004). In year four, Gap affiliates donated store holiday decorations in year four to charities, which diverted 102,500 pounds of artificial trees and 150,500 feet of garland from landfills (Gap, 2006). Gap also worked with other retailers and developers to recycle store waste at shopping malls, beginning in year five (Gap, 2008). Gap implemented a composting program that diverted 19,000 pounds of waste from landfills each month in an effort to reduce the negative impacts of excessive waste in landfills (Gap, 2003).

In year one, Nike replaced printed catalogs with the Nike China business-to-retailer web site that saved 130,000 pages and US $40,000 per year in China alone and improved customer satisfaction by providing accurate, timely product information customized for the retailer. Sales representatives were more efficient because they were able to contact more customers over a larger territory and the business-to-retailer web site was used as a vehicle to initiate sustainability discussions with retailers (Nike, 2001). Also in year one, Nike used recycled and sustainable materials, such as biomass-based synthetics that are both biodegradable and compostable and single polymer textiles with enhanced performance such as elasticity or weather protection (Nike, 2001). Nike started using sustainable rubber in shoes in year two (Nike, 2004). In years
five and six, the company “sourced bags using 100% FSC-certified paper printed at FSC-certified printers using soy-based inks and distributed by an FSC-certified fulfillment company” (Nike, 2009, p. 126). In year four, Nike “assessed their packaging footprint as part of a company-wide waste mapping exercise” (Nike, 2006, p. 55) and started to rethink the shoebox design and shipping carton design in year five, which led to a new shoebox design that launched in year seven (Nike, 2007). This new shoebox design reduced weight by 19% (Nike, 2010), leading to less waste.

H&M worked to reduce plastic, filling paper, hangers, and carton boxes in year two and recorded the amount of recycled cardboard that they utilized with their products (H&M, 2003).

Programs and Collaboration

The second theme to emerge in the study data was the increase in programs to increase the use of alternative materials and/or conserve natural materials to reduce the negative impact on the environment. Three out of the four companies demonstrated this sub-theme during years 1-5. This theme also incorporates the collaboration with other organizations that aided in the reduction of the companies’ negative impact on the environment. Gap joined the Better Cotton initiatives along with H&M (Gap, 2005; H&M, 2005). Nike partnered with LWG in year five and Creative Commons in year six to promote sustainability practices in the industry (Nike, 2007).

Building Efficiency

The third theme to emerge from the study data is the increase in building efficiency by using alternate materials and methods to increase conservation of natural resources. One company exhibited this sub-theme in years 1-5. In year one, Gap’s CSR report announced that their “corporate office has a grass roof and fly ash (a waste by-product from coal-burning power
plants, was used in the concrete for the foundation) – diverted 1,800 tons of fly ash from landfills, also eliminated approximately 2,000 tons of carbon dioxide emissions that would have been generated during cement production (equivalent of roughly 350 people not driving their cars for an entire year)” (Gap, 2003, p. 32).

Development of Product Technology

The fourth theme in this area is the increase in new product technology to improve the impacts on the environment. This sub-theme was observed in the CSR reports for one company in years 1-5. In year two, Nike found an alternative to pressurized cushioning, which is a greenhouse gas used in shoes (Nike, 2004).

Use of Alternate Materials

The fifth theme that emerged from the study data in this area is the increase use of raw materials that were better for the environment such as organic cotton as an alternative material. Two companies demonstrated this sub-theme in years 1-5. In years one through five, H&M and Nike made big pushes to using organic cotton (H&M, 2002; Nike, 2001).

Evolve: Years 6-10

During the evolve or the second five years of a company’s implementation of sustainability initiatives as evidenced from the sustainability reports, three sub-themes were observed: 1) waste reduction and management, 2) programs and collaboration, and, 3) use of alternate materials. The two sub-themes that were not represented during these years were: 1) building efficiency and, 2) development of product technology.

Waste Reduction and Management

The first sub-theme to appear in years 6-10 in this area was efforts to increase recycling and reduce waste. All four companies demonstrated this sub-theme in years 6-10. In year seven,
Adidas started using recycled rubber in years seven (Adidas, 2005). Gap explored recycling store waste in year six, began using recyclable material in their products in years seven and eight, and offered recyclable plastic gift cards in year eight (Gap, 2010). In years six through ten, H&M started using alternatives to plastic carrier bags recycling hangers and consumer bags and other organic materials; H&M used recycled plastic bags, paper from certified forests, organic cotton, and recycled polyester (H&M, 2007). In year eight, H&M developed new packaging for men’s boxer shorts with 50% less material that was fully recyclable; this new packaging reduced costs by over 60% (H&M, 2009). H&M used reusable transport boxes starting in year nine to deliver their products from distribution centers to stores, which helped to eliminate transport packaging (H&M, 2010). Nike used recycled cardboard in shoeboxes and reduced waste from landfills in year eight (Nike, 2011). In year ten, Nike diverted 44% of retail store waste, 69% of Nike world headquarters waste, and 92% of major global distribution center waste from landfills (Nike, 2013). Also in year ten, ten sustainable materials innovation finalists surfaced through LAUNCH 2020, a program hosted with NASA where “150 materials specialists, designers, academics, manufacturers, entrepreneurs and NGOs catalyze action around the sustainability of materials” (Nike, 2013, p. 23).

Programs and Collaboration

The second theme to emerge in years 6-10 was the increase in programs and the collaboration with other organizations that aided in the reduction of the companies’ negative impact on the environment. All four companies demonstrated this sub-theme in years 6-10. In years six through ten, Adidas and Nike started working with Better Cotton to increase their use of sustainable cotton (Adidas, 2005; Nike, 2014). Beginning in year seven, Gap partnered with NRDC’s Responsible Sourcing Initiative, “working with key mills in China to develop 10 best
practices for improving operational efficiencies in fabric mills” (Gap, 2009, p. 77). H&M developed the cleaner production program; the goal was to increase the use of alternative dyes and chemicals, which would decrease the use of water, salt, and the number of times the fabric needed to be washed (H&M, 2007). H&M started labeling their products with the EU Flower label, symbolizing and eco-friendly product in year seven (H&M, 2008). In year nine, H&M trained 68,000 cotton farmers on Better Cotton’s sustainable farming techniques (H&M, 2010).

Use of Alternate Materials

The third theme that emerged from the study data in years 6-10 is the increase use of raw materials that were better for the environment such as organic cotton as an alternative material. One company showed this sub-theme in CSR reports during years 6-10. H&M continued their efforts in using organic cotton through years six through ten and also worked with transitional cotton and recycled cotton (H&M, 2007).

Advance: Years 11-15

During the advance or the third five years of a company’s implementation of sustainability initiatives as evidenced from the sustainability reports, four sub-themes were observed: 1) waste reduction and management, 2) programs and collaboration, 3) building efficiency, and, 4) use of alternate materials. Development of product technology was the only sub-theme not observed during these years.

Waste Reduction and Management

The first sub-theme to appear in the study data in years 11-15 in this area was efforts to improve supply chain practices and reduce the amount of waste sent to landfills. In years 11-15, two out of the four companies demonstrated this sub-theme. In year eleven, Nike worked to improve the processing of leather in their factories (Nike, 2014). In years nine through eleven,
Nike developed Flyknit technology, which reduced footwear waste by 80% along with Colordry and DyeCoo technology, dyeing techniques that eliminate water (Nike, 2013). As part of a larger effort to make all footwear sustainable, Adidas ensured that their leather tanneries were certified to Gold Standard and that leather finishing achieved Silver Standard based on the Leather Working Group (LWG) audit protocol in year fourteen (Adidas, 2012). Adidas also used recycled materials and reduced paper use (Adidas, 2012). Adidas developed the digital prototype in year eleven so the company does not need to send physical samples all over the world, reducing the carbon footprint (Adidas, 2009). Adidas also reduced color-material combinations to reduce the amount of waste at suppliers’ factories (Adidas, 2012).

Programs and Collaboration

The second theme to emerge in years 11-15 was the increase in programs and the collaboration with other organizations that aided in the reduction of the companies’ negative impact on the environment. Two companies showed this sub-theme in their CSR reports in years 11-15. In years eleven through sixteen, Adidas collaborated with Greenpeace, BLC, and Better Cotton to address measures against future deforestation and increasing sustainable cotton (Adidas, 2009). Nike also continued working with Better Cotton Initiative in year eleven (Nike, 2014).

Building Efficiency

The third theme to emerge from the data in years 11-15 is the increase in building efficiency by using alternate materials and methods to support conservation of natural resources. This sub-theme was observed in one company’s CSR report during years 11-15. In years fourteen and fifteen, seven of Adidas’s supplier factories were designed and built adopting green building practices and there was full traceability of more sustainable materials (Adidas, 2013).
Use of Alternate Materials

The fourth theme that emerged in years 11-15 is the increased use of raw materials that were better for the environment such as organic cotton as an alternative material. One company, H&M, exhibited this sub-theme in years 11-15 by starting to use sustainable cotton in year eleven (H&M, 2012).

Progress: Years 16+

During the progress, the fourth five years of a company’s implementation of sustainability initiatives as evidenced from the sustainability reports, two sub-themes were observed: 1) waste reduction and management and, 2) use of alternate materials. The three sub-themes that were not represented during these years were: 1) programs and collaboration and 2) building efficiency, and, 3) development of product technology.

Waste Reduction and Management

The first sub-theme in other efforts for conservation & use of alternatives was efforts to reduce waste and improve sustainable supply chain practices. One company, Adidas, demonstrated this sub-theme in year 16 by reducing paper consumption; they began consolidating hangtags and used single-walled cartons to save paper (Adidas, 2014). Adidas also began using non-dyed fabrics and continued to improve leather practices in year sixteen (Adidas, 2014).

Use of Alternate Materials

The second theme that emerged from the data in this area is increased use of raw materials that were better for the environment such as organic cotton as an alternative. This sub-theme was observed in one company’s CSR reports in year 16. Adidas continued to trace the origin of the cotton they use (Adidas, 2014).
SOCIAL RESPONSIBILITY

Social responsibility encompasses efforts to protect the rights of employees and working conditions in factories, which can be enforced through protecting worker’s freedom of association. Working conditions in factories are typically where compromises are made to satisfy the demands of the market; health and safety considerations are sacrificed, wages are lowered, longer hours required, and workers confront the presence of verbal, physical, and/or sexual abuse (Neu, et.al, 2014). Adding to the list of labor abuses in the apparel industry, child labor is also a major problem in developing countries (Tiwari, 2014). “Defending fair wages, working conditions and workers’ rights” are all ways to improve social responsibility efforts (Ethical Fashion Forum, 2015, p.1).

In accordance with the literature review, analysis of the data found six sub-themes regarding treatment of employees and working conditions in factories: 1) improvement of health/safety/working conditions, 2) education/training/organization partnership, 3) accountability for working hours/overtime/leave, 4) payment of living wages, 5) avoidance of forced/child labor/abuse, 6) acknowledgment of workers’ rights as seen in Table 10 and Figure 7. Specific examples of individual company initiatives are presented under each theme.

Table 10
Number of Companies Demonstrating Social Responsibility Themes by Year Increments

<table>
<thead>
<tr>
<th>Themes</th>
<th>Launch:</th>
<th>Evolve:</th>
<th>Advance:</th>
<th>Progress:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Years 1-5</td>
<td>Years 6-10</td>
<td>Years 11-15</td>
<td>Years 16+</td>
</tr>
<tr>
<td>Improvement of Health/Safety/Working Conditions</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Education/training/org. partnership</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Accountability for Hours/Overtime/Leave</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Payment of Living Wages</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Avoidance of Forced/Child Labor/Abuse</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Acknowledgement of Workers' Rights</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>
Note. This table portrays the number of companies undertaking social responsibility-related sub-themes during the four 4-year increments.

**Figure 7: Social Responsibility Themes: Year Increments by Number of Companies.** This figure illustrates the number of companies that demonstrated each theme under “social responsibility”.

CSR reports revealed that all four companies established a set of guidelines to aid in enforcing good treatment of employees and safe working conditions. Adidas developed the Standards of Engagement (SOE) that outlined their core values and worked with suppliers. Gap developed the Code of Vendor Conduct and the Code of Business Conduct. H&M also developed a Code of Conduct that inspectors would use to audit factories. Nike started monitoring and auditing factories. All of these documents and acts to enforce social responsibility demonstrated that all four companies would not work with any partners that displayed acts of discrimination, used forced or child labor, had excessive overtime hours, did
not respect the rights of workers or support freedom of association, abuse, and did not provide a safe and healthy working environment. Mentioned below are examples of significant practices that were implemented over the years.

### Launch: Years 1-5

During the launch or the first five years of a company’s implementation of sustainability initiatives as evidenced from the sustainability reports, six sub-themes were observed: 1) improvement of health/safety/working condition, 2) education/training/organization partnership, 3) accountability for working hours/overtime/leave, 4) payment of living wages, 5) avoidance of forced/child labor/abuse, and, 6) acknowledgment of workers’ rights.

#### Improvement of Health/Safety/Working Conditions

The first sub-theme that emerged in the study data in this area was the attention and efforts towards increasing the health and safety of employees of the company and providing adequate working conditions. Two out of the four companies demonstrated this sub-theme in years 1-5. In year three, Adidas conducted a health and safety project in China that addressed and corrected workplace hazards (Adidas, 2001). In year four, Nike developed a human resource management system and provided educational training for workers to build up the standards of factories and provide safer working environments (Nike, 2006).

#### Education/Training/Organization Partnership

The second sub-theme that emerged in the data was the provision of education for employees and increasing awareness of social issues in the supply chain. Three of the four companies demonstrated this sub-theme in years 1-5. In year three, Nike developed an HR management system and educational training for workers in factories (Nike, 2006). In years three and four, Gap used “cause marketing” to emotionally engage and educate customers in social
responsibility. Their marketing campaign was called, (PRODUCT) RED (Gap, 2006). Adidas ran several Sharing Best Practices meetings to help apparel factories introduce management systems such as HSE policy, risk assessment, and record keeping in year four (Adidas, 2002).

Accountability for Hours/Overtime/Leave

The third sub-theme that emerged from the data in years 1-5 was issues relating to hours, overtime, and leave days. Two companies showed this sub-theme in years 1-5. Nike and H&M addressed the amount of hours worked per employee, maternity leave issues, and annual leave time in years 1-5 (Nike, 2004; H&M, 2003). H&M addressed the issue of homeworking. Typically there is no formal contract of employment and homeworking is not usually regulated, which is why H&M decided to address this issue (H&M, 2006) The company updated and standardized the tools for follow-up to create better conditions for people working at home (H&M, 2006).

Payment of Living Wages

The fourth sub-theme that emerged in the data was issues related to fair wages for all employees. Two companies showed this sub-theme in years 1-5. In year one, Nike began to monitor wages in factories and “required adjustments and back pay for those not meeting legally-mandated or Nike minimum [wages]” (Nike, 2001, p. 31). In year two, one of H&M’s main focuses was on making sure their employees were being paid fairly (H&M, 2003).

Avoidance of Forced/Child Labor/Abuse

The fifth sub-theme that emerged in the data was efforts to decrease and eliminate forced labor, child labor, and abuse. Two out of the four companies demonstrated this sub-theme in years 1-5. In year two, Nike addressed verbal, physical, and sexual abuse in their factories along
with issues pertaining to child labor (Nike, 2004). Also in year two, H&M acknowledged problems with forced and child labor in factories (H&M, 2003).

Acknowledgement of Workers’ Rights

The sixth sub-theme to emerge in years 1-5 was efforts to inform employees of their rights. Two companies observed this sub-theme in years 1-5. In year two, H&M focused on workers’ rights issues (H&M, 2003) and provided education to workers in Bangladesh about their rights in year three (H&M, 2004). Nike implemented the Freedom of Association Educational Program in 100% of factories (Nike, 2006).

Evolve: Years 6-10

During the evolve or the second five years of a company’s implementation of sustainability initiatives as evidenced from the sustainability reports, five sub-themes were observed: 1) improvement of health/safety/working conditions, 2) education/training/organization partnership, 3) accountability for working hours/overtime/leave, 4) avoidance of forced/child labor/abuse, and, 5) acknowledgment of workers’ rights. The only sub-theme that was not observed during these years was payment of living wages.

Improvement of Health/Safety/Working Conditions

The first sub-theme that emerged in years 6-10 was attention towards providing safe and healthy working conditions. Adidas, Gap, H&M, and Nike showed efforts to improve working conditions during years 6-10. For example, H&M put a full ban on sandblasting in production in year nine, which can be harmful to those conducting this practice in apparel manufacturing (H&M, 2010). Gap held multiple stakeholder meetings to discuss fire safety issues after the fire in Bangladesh (Gap, 2010).

Education/Training/Organization Partnership
The second sub-theme that emerged in years 6-10 was the provision of employee education and partnership with knowledgeable organizations on social issues. Three out of the four companies demonstrated this sub-theme in years 6-10. H&M became an accredited member of the Fair Labor Association in year eight (H&M, 2009). H&M also provided additional training in fire safety for more than 100,000 workers and middle managers in Bangladesh in year eleven (H&M, 2012). Gap partnered with the ILO/IFC Better Work program to improve working conditions in years seven and eight (Gap, 2010). In year ten, Adidas worked with Hong Kong’s labor and human rights community to discuss issues surrounding the 2008 Olympic Games in Beijing (Adidas, 2008).

Accountability for Hours/Overtime/Leave

The third sub-theme that emerged from the data in years 6-10 was issues relating to overtime hours. Three companies demonstrated this sub-theme. In year six, Nike made progress in evaluating overtime and addressing the causes of overtime (Nike, 2009). Gap and H&M regulated homeworking hours in year eight (Gap, 2010; H&M, 2009).

Avoidance of Forced/Child Labor/Abuse

The fourth sub-theme that emerged in years 6-10 was efforts to decrease and eliminate forced labor, child labor, and abuse. One company demonstrated this sub-theme. In year seven, Gap discussed steps to stop human trafficking and child labor in the apparel supply chain (Gap, 2009).

Acknowledgement of Workers’ Rights

The fifth sub-theme to emerge in years 6-10 was efforts to protect workers’ rights. Two companies showed this sub-theme in years 6-10. In years nine and ten, 83% of Nike’s contracted
factories had complaint grievance systems in place (Nike, 2013). H&M provided education on workers’ rights to all employed within their supply chain in year nine (H&M, 2010)

**Advance: Years 11-15**

During the advance, the third five years of a company’s implementation of sustainability initiatives as evidenced from the sustainability reports, four sub-themes were observed: 1) improvement of health/safety/working conditions, 2) education/training/organization partnership, 3) payment of living wages, and, 4) acknowledgment of workers’ rights. Two sub-themes were not observed during these years: 1) accountability for working hours/overtime/leave and, 2) avoidance of forced/child labor/abuse.

**Improvement of Health/Safety/Working Conditions**

The first sub-theme that emerged in years 11-15 was attention and efforts towards providing safe and healthy working conditions. Two companies demonstrated this sub-theme in years 11-15. Fire and building safety were key issues for Gap in year ten and the company worked with the broad coalition stakeholders through the Alliance for Bangladesh Worker Safety to improve safety of factory buildings (Gap, 2012). Adidas developed factory ratings to enforce the safe and healthy working conditions in year eleven (Adidas, 2009).

**Education/Training/Organization Partnership**

The second sub-theme that emerged in years 11-15 was the partnership with knowledgeable organizations on social issues. Three companies showed this sub-theme in their CSR reports in years 11-15. H&M was the first brand to sign the Accord for Building and Fire Safety in Bangladesh in year twelve (H&M, 2013). H&M also entered a framework agreement with the ILO to work together to strengthen fair negotiations and working conditions in global garment production (H&M, 2014). In year eleven, Nike committed to sourcing only from
factories that demonstrated fair treatment to workers (Nike, 2014). In year twelve, the Karnataka government cooperated with Adidas to provide fair treatment to the employees working within their countries (Adidas, 2010).

Payment of Living Wages

The third sub-theme that emerged in the data was issues related to fair wages for all employees. One company exhibited this sub-theme in years 11-15. In year twelve, H&M provided a way for workers to be paid a higher wage (H&M, 2013) and in year thirteen, increased wages for employees in factories (H&M, 2014).

Acknowledgement of Workers’ Rights

The fourth sub-theme to emerge in years 11-15 was efforts to educate employees of their rights. Three companies demonstrated this sub-theme in years 11-15. By year eleven, H&M had educated 570,821 workers in Bangladesh on their rights (H&M, 2011). Nike continued developing the complaint grievance system in year eleven (Nike, 2014), followed by Adidas who developed a similar system in year fifteen through sixteen (Adidas, 2014).

RESULTS OVERVIEW

Corporate Social Responsibility (CSR) reports were analyzed of four financially successful multinational apparel companies, who were chosen for their recognition in sustainability efforts and financial success. Six areas of sustainability related initiatives from the 42 CSR reports were explored using content analysis, beginning with the first year for each company: reduction of energy use & consumption, development of technology & infrastructure, reduction of negative impact of chemicals on the environment, textile waste reduction, other efforts for conservation & use of alternatives, and social responsibility. Sub-themes emerged
within each area and the data were organized in five-year increments that identified patterns in efforts to improve sustainability, which will be discussed in Chapter 5.
CHAPTER V
DISCUSSION

Sustainability is a general term that covers issues and concepts relating to the environment and social responsibility (Montiel & Delgado-Ceballos, 2014). Interest in the value of sustainable practices is growing and companies are “becoming more aware of the need to be eco-friendly and socially conscious,” leading to greater exploration and implementation of sustainable actions (Shen, et al., 2012, p. 234). This is especially true in the apparel industry where environmental and social sustainability have gained attention among consumers, professionals, and scholars.

The purpose of this research was to explore the efforts of financially successful apparel companies to improve sustainability with the intention of developing a timeline of implementation. A timeline is important because it provides a manageable strategy to implement sustainable business practices in a step-by-step manner. This timeline displays the implementation of ethical and environmentally conscious behaviors that have been coupled with economic growth. This is the essence of the triple bottom line (TBL) framework (Elkington, 1994). The TBL illustrates relationships between the environment, society, and the economy in relation to sustainability (TCORP, 2012). It “is the management of supply chain operations, resources, information, and funds to maximize the supply chain profitability, at the same time minimizing environmental impacts and maximizing the social well-being of the supply chain” (Öztürk & Özçelik, 2014, p. 131).

According to Forbes (2015), Nike, H&M, Gap Inc., and Adidas are four apparel companies that provide evidence of success in all the three areas of the triple bottom line framework: implementation of social and environmental sustainability initiatives along with
substantial economic profits and an increase in financial equity. These companies have been highly ranked for their sustainability initiatives, market value, and profits (Ethisphere 2015, Interbrand 2015, Corporate Responsibility Magazine 2012, The Corporate Knights 2015, Forbes 2015). After establishing the appropriateness of selecting these four companies for investigation, data were collected from Corporate Social Responsibility (CSR) reports. These reports provided evidence of the various environmental and social sustainable practices to answer three research questions.

R1: How does a financially successful apparel company apply sustainable initiatives throughout the supply chain?

R2: Is there a timeline that financially successful apparel companies follow regarding their implementation of environmentally sustainable and socially responsible practices?

R3: Are there phases that a company goes through when applying sustainable initiatives?

The following summarizes and interprets the data collection and analysis to answer the research questions asked by this study.

APPLYING SUSTAINABLE INITIATIVES THROUGHOUT THE SUPPLY CHAIN

In answering R1, content analysis of the CSR reports revealed six major areas where financially successful apparel companies undertake sustainability initiatives: reduction of energy use & consumption, development of technology & infrastructure, reduction of negative impact of chemicals on the environment, textile waste reduction, other efforts for conservation & use of alternatives, and social responsibility. These areas align with the literature addressing sustainability in the apparel industry. The first part of the discussion will present major components of each theme and subtheme revealed through content analysis of CSR reports.

Reduction of Energy Use & Consumption
The apparel industry has been recognized for its continued use of materials and buildings that require energy-intensive procedures and various forms of transportation and shipping practices that release harmful emissions thus causing a negative impact on the environment (Ethical Fashion Forum, 2015; Subic et al., 2012). CSR reports indicated sustainable energy initiatives undertaken by these four companies can be grouped under six sub-themes: 1) improvement in lighting, 2) energy management and training, 3) efficiency in transportation/shipment, 4) retail/factory energy efficiency, 5) use of solar/renewable energy, and 6) Reduction of GHGs/CO2 emissions. This finding supports the literature, especially Fletcher who stated: “minimizing the number of processing steps; choosing ‘clean’ production techniques and reducing energy consumption” will reduce the negative impact of the apparel industry on the environment (Fletcher, 2014, p. 57). Subic, Shabani, & Hedayati stated: “synthetic materials, which are being used as the main apparel components, are derived from polymers that are primarily produced from petrochemicals, requiring energy-intensive procedures” (Subic et al., 2012, p. 2129). Energy-intensive procedures and energy expended for transportation cause a negative impact on the environment. Reducing these practices and materials can contribute to a more sustainable apparel industry.

Over the period reviewed, all four of the financially successful apparel companies implemented sustainable practices in all six sub-themes: improvement in lighting, energy management and training, efficiency in transportation/shipment, retail/factory energy efficiency, use of solar/renewable energy, and, reduction of GHGs/CO2 emissions. All four of these financially successful apparel companies made efforts to reduce their energy use and consumption, seen as textual evidence in the CSR reports.

Development of Technology & Infrastructure
The apparel industry has been recognized for its water pollution through the dyeing process (Fletcher, 2014) and causing a shortage of water due to extensive irrigation procedures of fibers (Ethical Fashion Forum, 2015). CSR reports indicated sustainable development of technology & infrastructure initiatives undertaken by these four companies can be grouped under four sub-themes: 1) participation in and development of programs and partnerships, 2) development of code of conduct/guidelines, 2) improvement of water efficiency, and 4) development of wastewater treatment. This supports the literature, especially Fletcher who addressed the benefits of water filtration as well as the Ethical Fashion Forum (Ethical Fashion Forum, 2015; Fletcher, 2014). Increasing water efficiency and reducing wastewater can decrease the apparel industry’s negative impacts on the environment.

Over the period reviewed, all four of the financially successful apparel companies implemented sustainable practices in all four sub-themes: participation in and development of programs and partnerships, development of code of conduct/guidelines, improvement of water efficiency, and development of wastewater treatment. Adidas, Gap, H&M, and Nike made sustainable efforts to develop their technology and infrastructure to reduce water pollution and increase water efficiency.

**Reduction of Negative Impact of Chemicals on the Environment**

The apparel industry is recognized for its chemical footprint, including the use of pesticides in the growing, gathering, and dyeing of textiles that pollute the environment (Ethical Fashion Forum, 2015; Shen et al., 2012). CSR reports indicated sustainable chemical initiatives undertaken by these four companies can be grouped under four sub-themes: 1) alternate substances, 2) partnerships with organizations, 3) development of Restricted Substances List, and 4) chemical management. This supports the literature, especially the Ethical Fashion Forum who
addressed chemicals used in textile dyeing, fertilizers used in growing natural fibers like cotton (Ethical Fashion Forum, 2015; Shen et al., 2012). Apparel companies can dramatically reduce their chemical footprint by reducing the amount of harmful chemicals used in all stages of the apparel supply chain.

Over the period reviewed, all four of the financially successful apparel companies implemented sustainable practices in all four sub-themes: alternate substances, partnerships with organizations, development of Restricted Substances List, and, chemical management. All four of these financially successful apparel companies made efforts to reduce their negative chemical impact on the environment.

**Textile Waste Reduction**

The apparel industry is recognized for massive amounts of waste contributed to landfills (Mucella & Yucel, 2005). Concepts like zero-waste pattern cutting (Townsend & Mills, 2013) and textile recycling can reduce the amount of waste and protect the environment (Ethical Fashion Forum, 2015). CSR reports indicated sustainable textile waste reduction initiatives undertaken by these four companies can be grouped under four sub-themes: 1) recycled/alternate materials, 2) waste reduction partnerships, 3) waste elimination, and 4) textile recycling. This supports the literature, especially Waste Online (2006) who stated: “it is estimated that more than one million tones of textiles are thrown away every year” (p.1). This also supports Townsend and Mills (2013) who stated: “the objective of zero-waste is to design a pattern that eliminates fabric waste sent to landfills” (p. 104). There is potential to reduce waste at every stage in the apparel supply chain and companies can implement efforts to reduce waste in order to improve impacts on the environment.
Over the period reviewed, all four of the financially successful apparel companies implemented sustainable practices in all four sub-themes: recycled/alternate materials, waste reduction partnerships, waste elimination, and textile recycling. All four companies examined in this research made efforts to reduce their textile waste and improve their impact on the environment.

Other Efforts for Conservation & Use of Alternatives

Efforts towards conservation and using alternative materials make a positive impact on the environment. Using alternative sources to generate power like wind farms and solar power, as well as producing products locally are excellent examples for apparel companies to increase their efforts in this area (Fletcher, 2014; Civil Engineering, 2009). CSR reports indicated conservation and alternative initiatives undertaken by these four companies can be grouped under five sub-themes: 1) waste reduction and management, 2) programs and collaboration, 3) building efficiency, 4) development of product technology, and 5) alternate materials. This supports the literature, especially Fletcher who stated that encouraging local production and using local labor reduces energy consumption, leading to a reduction in transportation costs (Fletcher, 2014). This finding also supports the Ethical Fashion Forum (2015), who stated the benefits of choosing alternative materials to make organic garments. Increasing the use of alternative materials and conserving natural materials used in the supply chain increase the positive impacts of the apparel industry on the environment.

Over the period reviewed, all four of the financially successful apparel companies implemented sustainable practices in all five sub-themes: waste reduction and management, programs and collaboration, building efficiency, development of product technology, and,
alternate materials. All four financially successful apparel companies implemented efforts to increase conservation and use of alternatives along the supply chain.

**Social Responsibility**

The apparel industry has been recognized for the presence of forced labor, child labor, and unfair working conditions (Fletcher, 2014; Neu, et al., 2014). CSR reports indicated socially responsible initiatives undertaken by these four companies can be grouped under six sub-themes: 1) improvement of health/safety/working conditions, 2) education/training/organization partnership, 3) accountability for working hours/overtime/leave, 4) payment of living wages, 5) avoidance of forced/child labor/abuse, and 6) acknowledgment of workers’ rights. This supports the literature, especially Neu, Rahaman, and Everett (2014) who noted cost-cutting actions in apparel industry include sacrificing health and safety considerations, lowering wages, requiring longer hours, and the presence of verbal, physical, and/or sexual abuse. These findings also support standards of the United States Department of Labor (DOL), the Fair Labor Standards Act (FLSA), the Occupational Safety and Health Act (OSHA), and the Federal Employees’ Compensation Act (FECA) (United States Department of Labor, 2015). Results show that these four companies addressed and improved social issues while remaining competitive in the apparel market (McDonough & Braungart, 2002).

Over the period reviewed, all four of the financially successful apparel companies implemented sustainable practices in all six sub-themes: improvement of health/safety/working conditions, education/training/organization partnership, accountability for working hours/overtime/leave, payment of living wages, avoidance of forced/child labor/abuse, and acknowledgment of workers’ rights. Adidas, Gap, H&M, and Nike made efforts to improve their social responsibility initiatives.
TIMELINE OF IMPLEMENTATION OF ENVIRONMENTALLY SUSTAINABLE AND
SOCIALLY RESPONSIBLE PRACTICES

This research is founded on the concept that a sustainable transformation in a company
“can only be achieved by committing resources over a continued period of time” (Carrigan, et. al, 2013, p. 1299). One of the most significant sources of resistance to implementation of
sustainable practices in the apparel industry is a perceived negative impact on profits
(McDonough & Braungart, 2002). This can lead to companies not knowing where to start in their
efforts towards sustainable business practices, and therefore, not starting at all. However, “the
more awareness there is in environmental and social issues, the more opportunities there will be
– both inside and outside of the market – to foster change in this area” (Fletcher, 2014, p. 78).

In answering R2, the major areas and sub-themes identified in four financially successful
companies CSR reports were organized in five-year increments (1-5, 6-10, 11-15, 16+) to gain
an overall timeline of sustainability implementation. For each company, increments began with
the first year that sustainability initiatives were taken and ended with the most recent report,
which for all companies is 2014. Specifically Adidas year one is 1998, Nike’s year one is 2001,
H&M’s is 2002, and Gap’s is 2003.

According to the Ethical Fashion Forum (2015) and findings of the content analysis of
CSR reports, the major areas of sustainability in the apparel industry are: reduction of energy use
& consumption, development of technology & infrastructure, reduction of negative impact of
chemicals on the environment, textile waste reduction, other efforts for conservation & use of
alternatives, and social responsibility. In the following section, discussion will center on
sustainability initiatives by time increments to provide evidence of patterns of improving
sustainability in those areas.
Years One Through Five

Results show that the four financially successful apparel companies took small, but important steps in the first five years.

Reduction of Energy Use & Consumption

In the first five years of CSR reports, all four companies implemented retail/factory energy efficiency initiatives and the majority took actions in the area of transportation/shipment and GHGs/CO2 emissions. One half of the companies implemented sustainable practices in improvement in lighting, energy management and training, and the use of solar/renewable energy. These results indicate that apparel companies seeking to become more sustainable while remaining financially successful can begin by enhancing energy efficiency in both facilities and transportation. Companies can dramatically reduce the complexity of their global energy footprint by increasing efforts in providing education to their employees, installing occupancy sensors, using natural light and temperature controls, and resetting thermostats.

Development of Technology & Infrastructure

In terms of the implementation of sustainable initiatives in this area, three of the four companies took steps in water efficiency and wastewater treatment within the first five years of CSR reporting. This indicates that these companies are aware of the growing concern of a water shortage inside and outside the apparel industry and are making efforts to reduce the amount of wastewater and eliminate water in the production of textiles (Nike, 2013). One-half of the four financially successful apparel companies used programs to develop and improve initiatives to increase water efficiency and partnered with outside sources such as BSR’s AWQWG to develop practices to reduce wastewater (H&M, 2005). Although, only one-half of the companies established a set of guidelines to track water use and set wastewater standards, this initiative
should be adopted by all companies in the first five years to establish a foundation for improving impacts in this area.

Reduction of Negative Impact of Chemicals on the Environment

In the first five years of CSR reports, all four companies developed a Restricted Substances List and worked on chemical management through tracking chemical composition and hazardous waste. A large percentage of the companies also began using alternative substances to harmful chemicals like water-based and/or low-toxic substances as well as partnered with organizations like the Dow Jones Sustainability Group to improve the chemical footprint on the environment. Addressing the use of chemicals is a very important step in becoming more sustainable. The issue of chemicals will be amplified given a predicted 20% per capita increase in global fiber consumption (Deloitte 2013). Developing a Restricted Substances List is a great start to improving efforts of chemical sustainability.

Textile Waste Reduction

In terms of the implementation of textile waste reduction initiatives in years one through five, the majority of companies focused on waste elimination, which is an effort greatly supported by the literature that reports the apparel industry’s contribution of massive amounts of waste to landfills every year (Waste Online, 2006). Recording the amount of waste in the supply chain and developing zero-waste designs were the most common ways to improve environmental impacts in this area during years one through five. Only one company started using recycled or alternative materials during the first five years; Nike began using recycled polyester in year two (Nike, 2004). Efforts in waste reduction and management were more commonly seen in years six through ten.

Other Efforts for Conservation & Use of Alternatives
In the first five years of CSR reports, all four companies presented conservation and alternatives and over half of the companies developed programs and collaborated with organizations to improve their efforts in this area. Focusing on non-textile waste reduction is an excellent example of how a company can save money and improve their environmental impacts. In year one alone, Nike saved $40,000 by replacing printed catalogs with the Nike China business-to-retailer web site and saved 130,000 pages of paper per year (Nike, 2001). Half of the companies started using organic cotton as an alternative material in the first five years. On the other hand, less than half of the companies worked to improve their impacts in shipment methods, building efficiencies, and the development of product technology, however, these sub-themes emerged with more popularity in later years. Recycling and reducing non-textile waste are the top two areas that companies should focus on in the first five years of increasing efforts in sustainable business practices.

Social Responsibility

In terms of the implementation of social responsibility initiatives in years one through five, over half of the companies provided workers rights education to their employees and introduced management systems in factories in order to keep factories accountable for company policies. Half of the companies made efforts to increase safe and healthy working environments for their employees, regulated hours, overtime, and wages, and refused to work with factories where forced and/or child labor was present. Less than half of the companies focused on workers’ rights during the first five years, but this sub-theme gained more attention in later years. Companies should set up guidelines in the form of a Code of Conduct in the first five years to establish standards in all of the above-mentioned areas of social responsibility.

Years Six Through Ten
After years one through five, all four apparel companies showed developments in sustainability initiatives in all areas: reduction of energy use & consumption, development of technology & infrastructure, reduction of negative impact of chemicals on the environment, textile waste reduction, other efforts for conservation & use of alternatives, and social responsibility. Results from CSR reports show that the four financially successful companies took greater steps in the second yearly increment, as discussed below.

**Reduction of Energy Use & Consumption**

In years six through ten, the most common sub-theme was energy management and training. All four companies took a leadership role in this area by meeting environmental and fuel efficiency targets, joining the European Retail Round Table to reduce energy consumption, or hiring LEED accredited designers. Half of the companies made improvements in lighting during these years, as well as improved processes in transportation, shipment, and building energy efficiency. Adidas worked with environmental consultants during years six through ten to reduce energy consumption, launching the Clean Shipping Project, which ultimately reduced harmful emissions. Nike made efforts to reduce GHGs and CO2 emissions. In years six through ten, companies went from beginners in their sustainable energy efforts to leaders in the apparel industry. Following Nike and H&M, companies should increase focus on energy use and consumption in the second yearly increment of sustainability implementation.

**Development of Technology & Infrastructure**

In terms of the implementation of the development of technology & infrastructure initiatives in years six through ten, over half of the companies focused on wastewater treatment and developed programs and partnerships. A great step is signing a CEO Water Mandate, a voluntary initiative to improve transparency in water efficiency and the quality of wastewater.
Developing water quality programs and water risk management systems are other ways that companies excelled in this area during the second yearly increment. Half of the companies developed water quality guidelines or a Code of Conduct during these years, yet less than half specifically focused on water efficiency. Companies should continue to develop programs, partnerships, guidelines, and water efficiency efforts like installing low-flow sinks and toilets during years six through ten.

Reduction of Negative Impact of Chemicals on the Environment

In the second yearly increment, over half of the companies used alternate substances, continued to develop their restricted substances lists, and entered partnerships with organizations. Through all four sub-themes, all of the financially successful apparel companies improved their efforts in chemical management. Key objectives in this area during years six through ten were increasing environmentally preferred materials, reducing the amount of pesticides and VOCs, and partnering with organizations like the Zero Discharge of Hazardous Chemicals (ZDHC) and the Nike Green Chemistry Program. Thirteen companies joined the ZDHC and 373 Nike affiliates committed to the Nike Green Chemistry Program. Not only did Nike become a leader in efforts to reduce their chemical footprint in this yearly increment, but also provided a way for other companies to join their established movement to improve the industry’s impacts on the environment. In order to increase sustainability in the area of chemicals, apparel companies should develop a restricted substances list and partner with other organizations to aid in the reduction of negative impact of chemicals on the environment.

Textile Waste Reduction

In years six through ten, all four companies made efforts to address waste in their supply chain by creating strategies to eliminate textile waste in landfills. Over half of the companies
sought waste reduction partnerships. By partnering with Cotton Inc. Gap launched a campaign for customers to recycle their old garments, for example. Less than half of the companies started using alternate materials and recycled textiles. However, H&M was very successful in their strategy of using recycled materials and garments to create new lines of clothing in year ten. To reduce textile waste in the second yearly increment companies should adopt recycling programs and the use of alternate materials.

Other Efforts for Conservation & Use of Alternatives

In years six through ten, all four companies continued to apply programs and collaborate with industry leaders. They developed alternative waste management strategies, most notably recycling store waste and using recyclable material. Over half of the companies reduced their negative environmental impacts in packaging and shipping. Redesigning packaging and using space-efficient containers proved to use less material, saved resources, and reduced costs. H&M saw savings improve by over 60% solely by redesigning the packaging for boxer shorts. Conversely, less than half of the companies worked on building efficiency, the development of product technology, and cotton initiatives. The focus for this area during years six through ten was on recycling non-textile waste and redesigning to eliminate waste, ultimately saving the company money and reducing harmful impacts on the environment. Companies should develop alternate waste management strategies to take full advantage of conservation and sustainable alternatives in the second yearly increment.

Social Responsibility

In terms of the implementation of social responsibility initiatives in years six through ten, all four companies made efforts to improve the working conditions for their employees. Many companies put a focus on fire safety in buildings and making sure that their employees were in
safe and healthy working conditions. Over half of the companies continued to provide workers with education and training on their rights and made sure that hours were being regulated by company standards. Half of the companies made concentrated efforts to protect workers rights. Analysis of CSR reports during these years showed that less than half of the companies mentioned wages, forced labor, and freedom of association. This may be due to establishment of Codes of Conduct in years one through five which encouraged and enforced social responsibility initiatives. In the second yearly increment, these financially successful apparel companies focused on improving practices already established in the first five years.

LATER YEARS OF IMPLEMENTATION OF ENVIRONMENTALLY SUSTAINABLE AND SOCIALLY RESPONSIBLE PRACTICES

Information from all CSR reports was recorded through 2014, but the number of years recorded for each company varied from twelve to sixteen years. Subsequently, data from all four companies are present for year increments 1-5 and 6-10, but a fewer number of companies are included for years 11-15. Only one company, Adidas, had CSR reports that dated far back enough to have a presence in the 16+ year increment. Therefore, years 11-16 were grouped together for the following discussion.

Years Eleven Through Sixteen

By the end of the tenth year, all four companies had implemented sustainability initiatives in all six areas: reduction of energy use & consumption, development of technology & infrastructure, reduction of negative chemical impacts on the environment, textile waste reduction, other efforts for conservation & use of alternatives, and social responsibility. A pattern seen in these later years was growth and development of previous initiatives established in the first ten years. The most prominent new development in these later years was the introduction of
new technology and methods that increased the positive environmental and social impacts on the apparel industry. This finding indicates that apparel companies seeking to increase sustainability should hold off investing in technology until after they have successfully implemented other available initiatives. After about ten years of implementing sustainability practices, companies can focus on developing those practices even further and sharing their success with other companies seeking to become more sustainable.

Reduction of Energy Use & Consumption

The most prominent sub-themes during years eleven through sixteen were retail/factory energy efficiency and GHGs/CO2 emissions with over half of the companies addressing these topics. In this year increment, half of the companies made efforts to improve their transportation and shipping procedures and increased their energy management and training. Energy saving measures and programs further developed the practices already set in motion during the first ten years. Findings showed that all six energy sub-themes had been addressed by all four companies in the CSR reports. This suggests a heavy focus on reduction of energy use & consumption during the implementation of sustainable practices in the beginning. In years eleven through sixteen, companies should continue improving data accuracy and energy audits, which aid in reducing the negative energy impacts on the environment.

Development of Technology & Infrastructure

By years eleven through sixteen, all of the sub-themes in this area were addressed and only two sub-themes remained to be improved upon: programs and partnerships and water efficiency. Half of the companies continued to make advancements in water efficiency through new technology like Adidas DryDye, continued to grow in programs to report water efficiency, and/or made new partnerships to set new industry standards in this area. The lack of discussion
around the Code of Conduct or any form of guidelines in these later years is most likely because the standards were already established in the first ten years. This finding indicates that in years eleven through sixteen, companies should focus on developing new technology and procedures to increase water efficiency and reduce harmful effects of wastewater.

Reduction of Negative Chemical Impacts on the Environment

In years eleven through sixteen, all four sub-themes relating to chemicals were addressed. Increased use of alternate materials and commitments to the ZDHC were presented in these later CSR reports. Toxic chemicals were constantly added to the list of restricted substances with a strong focus on eliminating PFCs evident in years eleven through sixteen. DryDye, mentioned because of its contribution to eliminating water in the dyeing process, was also shown to use 50% fewer chemicals, thus reducing the number of harmful chemicals in the environment. Analysis of the sustainable initiatives of these financially successful apparel companies in year eleven forward suggests further development of restricted substances lists and continued commitment to organizations like the ZDHC.

Textile Waste Reduction

CSR reports did not indicate a clear pattern of efforts in this area during years eleven through sixteen. Half of the companies focused on recycled/alternate materials and waste elimination and less than half focused on waste reduction partnerships and textile recycling. Only half of the companies made strong efforts to increase their sustainability initiatives in this area, which indicates opportunity for initiative growth during these later stages, especially as efforts to become sustainable become more established. This finding indicates a need for educating companies and exploring new opportunities in further practices to reduce textile waste after year ten.
Other Efforts for Conservation and Use of Alternatives

Only half of the company CSR reports made mention of four sub-themes in this area: waste reduction and management, programs and collaboration, development of product technology, and cotton initiatives. With the exception of the last sub-theme, use of alternate materials, all of sub-themes were identified by Adidas in year sixteen as well. A common practice during these later years was the improvement of leather processing in factories based on audit protocol recognized by the Leather Working Group (LWG). Better Cotton continued to be a driving factor in initiatives to increase the use of organic/recycled cotton and new technology like Flyknit, Colordry, and DyeCoo proved effective practices that eliminated waste and water, thereby improving the environmental impacts of the apparel supply chain. CSR reports of these financially successful apparel companies suggest that the expansion of new technology can increase positive impact on multiple areas of the environment.

Social Responsibility

All four sub-themes were addressed by years eleven through sixteen. Continued attention was given in the later years to fire and building safety with the help of the Alliance for Bangladesh Worker Safety and the Accord for Building and Fire Safety. The Fair Wage Method was used to provide higher wages for employees and even larger efforts were made to educate employees on their rights in years eleven through sixteen. Codes of Conduct that all four companies established in the first five years continued to guide, regulate, and enforce social responsibility initiatives throughout all sixteen years of CSR reports. This finding reinforces the importance of developing and supporting Codes of Conduct in apparel companies’ sustainability initiatives.

TIMELINE OF IMPLEMENTATION
After analyzing the data from CSR reports, it can be concluded that financially successful apparel companies have adopted environmentally sustainable and socially responsible initiatives and do follow a timeline for applying sustainable practices. To address research question three, the five year increments of sustainability implementation have been labeled as four phases: Launch, Evolve, Advance, and Progress, hereby referred to as the L.E.A.P. process as seen in Table 11. Each phase has recommendations for specific initiatives under each of the six areas of sustainable implementation based on textual evidence of the Corporate Social Responsibility (CSR) reports of four financially successful apparel companies analyzed. As these findings refer to specific initiatives, the L.E.A.P. phases include all four of the year increments utilized in data collection (Launch: 1-5, Evolve: 6-10, Advance: 11-15, Progress: 16+). Other companies can utilize these findings to suggest a general timeline of practices to implement in an effort to improve their environmental and social impact while experiencing financial success.

<table>
<thead>
<tr>
<th>Years of Sustainability Initiatives</th>
<th>Sustainability Phase</th>
<th>Increment Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>Launch</td>
<td>Reduction of Energy Use &amp; Consumption • Utilize natural light • Occupancy sensors • Energy-saving lamps • Computer-activated lamps • Energy management programs • Training employees • Increasing sea freight • Increasing train transportation • Employee shuttle service • Transportation restrictions • Responsible commuting • Biodiesel • Outcartons for transportation • Resetting thermostats • Automatic controls for conveyor systems • Under-floor ventilation system</td>
</tr>
<tr>
<td>Development of Technology &amp; Infrastructure</td>
<td>Nike Water Program – reporting system</td>
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<td>BSR AWQWG partnership</td>
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<td></td>
<td>Educating fabric suppliers</td>
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<td></td>
<td>Global Water Quality guidelines</td>
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<td>Analyzed water consumption</td>
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<td>Closed-loop project</td>
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<td>Denim Laundry Wastewater Project</td>
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<td></td>
<td>Install wastewater treatment facilities</td>
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<td></td>
<td>Recorded wastewater quality</td>
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<tr>
<td></td>
<td>SEMS project</td>
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</tbody>
</table>

| Reduction of Negative Impact of Chemicals on the Environment | Non-coated shoeboxes, print colors that do not have heavy metals |
|                                                             | Water-based adhesives |
|                                                             | Water-based cementing and printing |
|                                                             | Low-toxic paints, carpets, tile adhesives |
|                                                             | Formaldehyde-free particleboard in new buildings |
|                                                             | Benign cushioning gas in shoes |
|                                                             | Organic solvents |
|                                                             | Increase EPM’s |
|                                                             | Join DJSGI |
|                                                             | Transparency efforts |
|                                                             | ESH Program |
|                                                             | Restricted Substances List |
|                                                             | Phasing out and reducing use of PVC and VOC |
|                                                             | Factory audits |
|                                                             | Chemical composition tracking |
|                                                             | Hazardous waste tracking |
|                                                             | Chemical handling and storage |
|                                                             | Polymer waste separation |

| Textile Waste Reduction | Reuse rubber scraps |
|                        | Recycled polyester |
|                        | Record waste |
|                        | Separate used and polluted rags in factories |
|                        | Post-consumer recycled material |
|                        | Zero-waste in footwear manufacturing |
Other Efforts for Conservation & Use of Alternatives

- Recycled paper: shoeboxes, envelopes, cartons
- Recycled packaging materials
- Recycled printer cartridges
- Default on copy machines to make two-sided copies
- Interior wood made from certified forests
- Recycled post-consumer waste pulp used in price tags
- Redesign hangers
- Donate used holiday decorations
- Work with other retailers and developers to recycle store waste
- Replace printed catalogs with websites
- Single polymer textiles, sustainable rubber, biomass-based synthetics – biodegradable and compostable
- 100% FSC-certified paper bags, FSC-certified printers, soy-based inks
- Composting program
- Better Cotton partnership
- Reduce transport volume and weight – shoebox design
- Grass roof and fly ash
- Wind turbines
- Reducing long-distance shipping
- Alternative to pressurized cushioning
- Organic cotton

Social Responsibility

- Standards of Engagement
- Code of Vendor Conduct
- Code of Business Conduct
- Audit factories
- HR management system
- Educational training for factory workers
- ‘cause marketing’
- Sharing Best Practices meetings
- HSE policy, risk assessment
- Address homeworking
- Freedom of Association Educational Program
| 6-10 Advance Reduction of Energy Use & Consumption | • Timers for lighting  
• Lighting sensor controls  
• Light dimmers  
• LED lighting  
• LEED accredited designers  
• BICEP, ERRT partnership  
• SmartWay certification  
• Reduce number of shipments  
• Reduce CO2 emissions |
| --- | --- |
| Development of Technology & Infrastructure | • CEO Water Mandate  
• Conservation International partnership  
• Water Risk Management System  
• Water Quality Program  
• Code of Conduct  
• Water-use baseline  
• Green technology – leak detection and elimination  
• Low-flow/ low-consumption toilets  
• Low-flow taps in hand basins and kitchen sinks  
• Low-consumption  
• Shower armatures w/ automatic stop function  
• Potable water minimized  
• Rainwater used for non-drinking water: toilets, external irrigation  
• Factory audits |
| Reduction of Negative Impact of Chemicals on the Environment | • Increase use of EPM’s – environmentally preferred rubber  
• Reduce solvent consumption  
• Water-based adhesives  
• Nike Green Chemistry Program  
• ZDHC, bluesign, Sustainable Apparel Coalition partnership  
• Hazardous waste disposal training  
• Reduce VOCs  
• Reduce pesticides used in production of fibers |
| Textile Waste Reduction | • Recycled polyester  
• Apparel Consideration Index, Cotton Inc. partnership |
### Other Efforts for Conservation & Use of Alternatives

- Recyclable plastic gift cards, hangers, consumer bags
- Recycled rubber, organic cotton, recycled polyester
- Recycling store waste
- Recycled cardboard
- Better Cotton, NRDC’s Responsible Sourcing Initiative partnership
- Cleaner Production Program
- Clean Shipping Project
- EU Flower label
- Biodiesel
- Reduce transport labeling, packaging
- Reusable transport boxes, space-efficient containers

### Social Responsibility

- Organic and recycled cotton
- Ban on sandblasting
- Member of Fair Labor Association
- Training in fire safety
- ILO/IFC Better Work Program partnership
- Discussions with governments
- Complaint grievance systems

### Evolve Reduction of Energy Use & Consumption

- LED lighting
- Environmental consultants
- Energy audit programs
- Emissions-tracking system
- Energy-efficient workshops
- Making servers virtual
- Solar energy
- Renewable energy
- Reduce carbon emissions

### Development

- H2O Insight Tool
<table>
<thead>
<tr>
<th>Category</th>
<th>Efforts</th>
</tr>
</thead>
</table>
| **of Technology & Infrastructure** | • Adidas DryDye  
• WWF partnership |
| **Reduction of Negative Impact of Chemicals on the Environment** | • Non-solvent based synthetics  
• Water-based adhesives  
• ZDHC partnership  
• Ban PFCs  
• ISO 14001 management system  
• DryDye – 50% fewer chemicals |
| **Textile Waste Reduction** | • Recyclable parts in shoes  
• Maximize recycled materials  
• Recycled polyester  
• Retail garment collecting program  
• Textile-to-textile recycling  
• Pre-mold blockers that produce zero-waste in shoe production  
• Low-waste designs  
• Warehouse waste |
| **Other Efforts for Conservation & Use of Alternatives** | • Improve leather processing  
• Certified leather tanneries  
• Greenpeace, BLC, and Better Cotton partnership  
• Consolidate hangtags  
• Single-walled cartons  
• Green building practices  
• Full traceability of sustainable materials  
• Flyknit technology  
• Colordry, DyeCoo technology  
• Digital prototype  
• Sustainable cotton |
| **Social Responsibility** | • Sign the Accord for Building and Fire Safety  
• ILO partnership |
| **16+ Progress** | **Reduction of Energy Use & Consumption** | • Energy reduction/saving projects  
• Carbon neutral printing |
| | **Other Efforts for Conservation** | • Improve leather practices  
• Reduce paper consumption  
• Reduce color-material combinations |
This research explored sustainable practices by four financially successful apparel companies and developed a timeline for implementation of ethical and environmentally conscious behavior. Analysis of CSR reports produced by Adidas, Gap, H&M, and Nike revealed six major areas of sustainability initiatives: reduction of energy use & consumption, development of technology & infrastructure, reduction of negative chemical impacts on the environment, textile waste reduction, other efforts for conservation & use of alternatives, and social responsibility with each area divided into themes that further described the sustainable practices adopted. Data were organized in five-year increments to gain an overall timeline of sustainability implementation labeled as four phases: Launch, Evolve, Advance, and Progress (L.E.A.P).

These insights can be employed to address and encourage greater corporate sustainability and sustainability in the apparel supply chain. By documenting initiatives of financially successful companies, this study offers a concrete plan to aid companies towards future success in the apparel industry. As McDonough and Braungart (2002), stated “it is going to be next to impossible for a business to be competitive without also being ‘eco-efficient’ – adding more value to a good or service while using fewer resources” (p.52). Due to the significant recognition that Adidas, Gap, H&M, and Nike receive in terms of financial success and sustainability, these findings can be influential in encouraging other businesses to follow their lead towards sustainable development. Providing evidence of the specific areas of environmentally sustainable
and socially responsible practices that financially successful companies have adopted serves as a model for other companies and can reduce resistance toward sustainability, especially based on financial concerns.

The results provided by this research are tried and true practices that financially successful apparel companies have implemented. Policy makers may use this research to encourage the adoption of sustainability to improve an industry that is well-known for its’ negative environmental and social impacts (Fletcher, 2014). Examining financially successful companies who support sustainable practices can encourage governments to formulate policies aimed towards sustainable development. Becoming aware of sustainable practices utilized by successful apparel companies provides governments and policy makers with useful information to motivate business and country leaders to promote sustainability initiatives. Through understanding sustainability initiatives in the production and supply process of the apparel industry, this study aims to create hope for providing sustainable development to create a healthier, happier future for generations to come. A goal of this research is to aid those working to improve the sustainability of the apparel supply chain, and encourage companies to take ownership of their impacts and adopt sustainable business practices.

In an effort to aid those working to improve the apparel supply chain, this research essentially provides the foundation for a sustainability consulting business. The L.E.A.P. process is a tool for consultants that want to guide companies in sustainable business practices. Table 11 gives many specific examples for every sub-theme in every area that this research has covered. The organization of a timeline creates a strategy for implementation, making sustainability understandable and achievable. Background, justification, data, and the organization of a
timeline are provided by this research that could propel a consulting business in apparel sustainability.

Academia could also benefit from this research. For an industry that needs more education on sustainability, there are very few classes that educate young professionals on the importance of sustainable business practices. This research could develop curriculum and educate aspiring designers and merchandisers, creating mindful business leaders on the benefits of environmental sustainability and social responsibility. This research could also inspire other academics to explore sustainable business practices in the apparel industry, spawning an influx of new research and tools to increase the knowledge and implementation of sustainability.

This research provides evidence of sustainable practices that financially successful companies have implemented. The results provide a framework for other apparel companies, policy makers, consultants, and academics to follow to encourage different practices based on a timeline established by Adidas, Gap, H&M, and Nike combined. The themes divide each area into manageable practices where companies can focus and provides examples of what these four companies have done to increase their sustainable efforts.

LIMITATIONS

The first year of CSR reports may not be the same as the first year of sustainability initiatives undertaken by the company; the timeline suggested is based on reporting, which might not coincide with the adoption of sustainability initiatives and therefore, is a limitation of this study. Another limitation of this research is the lack of direct contact with the business and business leaders themselves. The basis of this study was content analysis of company websites and CSR reports to determine the presence of sustainability. A more in-depth and thorough study could be done if first-hand accounts were recorded of business goals, awareness of sustainable
practices, and the opinions and perceptions of sustainability among employees. Even further research could be done on the presence or lack of sustainability in companies that are not well-known for their efforts in sustainability. A comparison of both groups of companies could be analyzed to further understand reasons for resistance towards sustainability and develop measures to increase motivations for the application of sustainability in the fashion industry.

RECOMMENDATIONS FOR FUTURE RESEARCH

For future research, direct contact with business leaders and employees could be made for first-hand accounts of sustainable practices within the company. It would also be beneficial to investigate how companies react after exposure to this research. Additional research could be done to examine sustainable practices with other companies and industries, adding to knowledge and understanding of the concept of sustainability as a whole. Further insights can be gained by replication of this study with additional years of CSR reports. This could be done with companies that have a longer history in sustainability implementation or with these four companies in the future.

CONCLUSIONS

In conclusion, the L.E.A.P. process of sustainable efforts and providing examples of sustainable practices shows companies that the risks of sustainability such as financial cost of implementing these practices, can be far outweighed by the long-term benefits, including supply chain efficiency, savings to the environment, and protection of people within the supply chain. Evidence provided should alleviate some of the resistance to sustainability and allow apparel companies to achieve the triple bottom line framework. Due to the high recognition and respect that Adidas, Gap, H&M, and Nike receive, these findings are likely to be influential in encouraging other apparel companies to adopt sustainable practices.
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## Development of Technology & Infrastructure

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<tr>
<th>Company</th>
<th>Leap</th>
<th>Evolve</th>
<th>Advance</th>
<th>Progress</th>
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<tr>
<td></td>
<td>Year1</td>
<td>Year2</td>
<td>Year3</td>
<td>Year4</td>
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<tr>
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<td>Nike</td>
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