SUSTAINABLE FASHION:
BREAKING THE MYTH

By

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ABSTRACT

Sustainable fashion is “clothing, shoes, and accessories that are manufactured, marketed and used in the most sustainable manner possible, taking into account both environmental and socio-economic aspects” (Green Strategy, 2017). Sustainable fashion has gained traction over the past 20 years amongst researchers, retailers, manufacturers, and especially consumers. For my thesis, I am investigating whether fashion retailers are truly reducing the environmental impacts of producing their apparel brands or if they are simply incorporating new consumer preferences into their business operations in an attempt to capture a new segment of consumers. I describe the current state of sustainable fashion, several retailers that have chosen to participate in the sustainable fashion movement, and how these retailers are currently serving their green customers. The retailers discussed throughout my thesis include both fast-fashion retailers and apparel brands that claim to sell sustainable fashion and market themselves as such to consumers. I will discuss their related supply chain operations, as well as the environmental and social impacts of those processes alongside attitudes and behaviors of green consumers. Based on my analysis, I offer conclusions as to whether sustainable fashion is, in fact, attainable.
INTRODUCTION

‘Sustainable fashion’ encompasses social and environmental impacts of fashion apparel design, sourcing, manufacturing, distributing, consuming, and disposal. Sustainable fashion is highly controversial because companies falsely claim to have sustainable supply chain operations without looking at the broader environmental and socio-economic impacts of their business, such as rapid resource depletion and fair labor practices. Additionally, there is debate about whether retailers are incorporating sustainable operations into their supply chains to truly reduce their environmental impacts or to simply respond to shifting consumer demands, market trends, and resource limitations. There is a new segment of retail consumers called the “Green Consumers,” who are mindful of the environmental and social impact of their material consumption and take proactive steps to reduce these negative impacts through their purchasing power and everyday actions. Additionally, they have a deep understanding and concern for how the retail industry affects the environment and those living in it and wish to reverse these negative effects. With this newly-created consumer segment comes new consumer demands, which retailers have been diligently working to meet by participating in green initiatives and practices. Examples include incorporating sustainably-made apparel within their brands, acquiring government certifications of sustainability, and joining programs like the Retail Industry Leaders Association’s (RILA) Retail Sustainability Initiative (RSI); the latter encourages retail leaders to share sustainable practices while communicating and developing new processes through partnerships, conferences, and benchmark studies (Retail Sustainability Management Report, 2015).

For my thesis, I am investigating whether fashion retailers are truly reducing the environmental impacts of producing their apparel brands or if they are simply incorporating new consumer
preferences into their business operations in an attempt to capture a new segment of consumers. I describe the current state of sustainable fashion, several retailers that have chosen to participate in the sustainable fashion movement, and how these retailers are currently serving their green customers. The retailers discussed throughout my thesis include both fast-fashion retailers and apparel brands that claim to sell sustainable fashion and market themselves as such to consumers. I will discuss their related supply chain operations, as well as the environmental and social impacts of those processes alongside attitudes and behaviors of green consumers. Based on my analysis, I offer conclusions as to whether sustainable fashion is, in fact, attainable.

**What Is Sustainable Fashion?**

According to the Ethical Fashion Forum, “sustainable” or “ethical” fashion can be defined as “an approach to the design, sourcing and manufacture of clothing which maximizes benefits to people and communities while minimizing impact on the environment” (Lejeune, 2015). Other sources define sustainable fashion as “clothing, shoes, and accessories that are manufactured, marketed and used in the most sustainable manner possible, taking into account both environmental and socio-economic aspects” (Green Strategy, 2017). While there is no agreed upon definition of sustainable fashion, all definitions imply a retailer’s complete and continuous effort to improve sustainability at all stages of the product lifecycle beginning with the design process extending to the allocation of raw materials, manufacturing, distribution, and post-consumption activities such as the reuse, repair, and recycling of the product. To claim to be a sustainable fashion retailer, a company should ideally aim to minimize undesirable effects on the environment throughout the product lifecycle such as using renewable resources and disposing of waste in a way that ensures the reduction or elimination of toxic waste runoff. Furthermore,
beyond the manufacturing aspects of the product lifecycle, companies should aim to maximize conscious consumption, which includes the reuse, repair, and recycling of garments plus promoting proper post-purchase consumer care, encouraging clothing donations, buying less, reducing consumption, etc. From a socio-economic standpoint, business goals should be designed to improve working conditions of factory workers and promote ethical operations that align with government-established standard practices and codes of conduct. The primary responsibility of retailing companies who claim to engage in sustainable fashion is, therefore, the complete transformation of their supply chain capabilities and promotion of conscious consumption behavior. But is it possible for retailers to achieve the above while they are simultaneously trying to boost sales and increase revenues? In order to answer this question, I will be analyzing how and why apparel retailers have incorporated sustainability into their operations while competing with globalization and e-commerce.

A HISTORIAL PERSPECTIVE ON SUSTAINABLE FASHION

What We Know About It

Globalization

Over the past 25 years, the apparel industry has experienced sizeable changes in garment production due to globalization. The shift in geographical distribution of production has impacted the retail industry by eliminating American jobs and simultaneously generating new work in Asia and other developing parts of the world. More specifically, the International Labor Organization (ILO) estimates that the percentage of change in employment within the textile, clothing, and footwear industry for the United States is down 30.1%, whereas countries such as Indonesia have experienced an increase of over 175% between the years 1980 and 1993 (ILO,
The loss of American jobs overseas has led to an increase in unsustainable and unethical business practices in manufacturing. These unethical practices stem from investor pressures to reduce production costs and lead times to market in an effort to increase corporate profitability while meeting consumer demands at an accelerated rate. Other pressures include materials costs, energy usage, regulatory restraints, and litigation costs. This shift has also had negative consequences on child labor, toxic emissions, wage levels, working conditions, and resource depletion in countries overseas. Globalization has transferred U.S. resource depletion, toxic waste runoff, and poor labor conditions overseas to working fathers, mothers, and children who rely on the retail industry to survive, which is fatefully harming and killing them.

To combat these negative effects of globalization, the Code of Federal Regulation (CFR) has at least 43 parts that impose 4,168 restrictions on US manufacturers for sourcing raw materials such as the Federal Trade commission (FTC) wool products and the Agricultural Marketing Service (AMS) country of origin labeling (COOL) (National Association of Manufacturers, n.d., p. 13). Unfortunately, manufacturers don’t realize the higher price that is passed down the supply chain from “upstream” regulation. For example, US manufacturers pay increased prices for electricity due to the EPA’s regulation of coal-fired power, which requires many electric utility companies to switch their fuel source from coal to a higher-priced natural gas source (National Association of Manufacturers, n.d., p. 14). Sustainable fashion encourages retailers and consumers to buy locally, less frequently, and ethically to effectively make changes in the right direction of the globalization of manufacturing in the apparel industry.
There has also been a variety of initiatives formed by individuals and groups of people passionate about working toward the reduction or elimination of the negative effects of globalization. The Sustainable Apparel Coalition (SAC) is the apparel, footwear, and home textile industry’s primary alliance for promoting and combatting sustainable production. It was established in April of 2010 by 12 initial board members who agreed to develop a sustainability index for the industry. “The Coalition’s focus is on building the Higg Index, a standardized supply chain measurement tool for all industry participants to understand the environmental, social, and labor impacts of making and selling their products and services” (Sustainable Apparel Coalition, n.d.). Similarly, Fashion Revolution is a three-year-old global movement that “pushes for greater transparency through investigative research, inspiring informative content, and creative events” (Knight, 2014).

One of the SAC’s main marketing strategies is their ‘Who Made My Clothes’ campaign was inspired by the April 2013 collapse of the Rana Plaza garment factory in Bangladesh that killed nearly 1,200 people. The collapse was due to cracks in the building’s infrastructure, which were pointed out by factory workers but overlooked and dismissed by management. The Rana Plaza disaster has gone down in history as the deadliest garment factory accident in history. Though over 40 individuals were charged for the murder of the numerous innocent workers in Bangladesh, it could have been averted through appropriate preventative steps. The purpose of the SAC’s campaign is to ignite a revolution to change the way retailers source, produce, and purchase raw materials and components so that people all over the world can wear and make clothing that has been made in a fair, safe, and clean way. Their intent is to take what happened
in April 2013 and use it as a catalyst to get apparel manufacturers and retailers to change their business practices.

The Ethical Fashion Forum (EFF) also “aims to develop a collaborative movement that will transform social and environmental standards in the fashion industry within a decade” (Lejeune, 2015). This movement supports and encourages sustainable practices and similarly raises awareness of the need for change within the retailing industry globally. They provide tools and resources to effectively reduce poverty and promote fair trade initiatives, further targeting the reduction of environmental harm while raising the bar for ethical fashion standards. Over 100 national and international fashion brands are a part of this collaborative community, which does not account for the additional designers, buyers, fair trade producers, and other general members (Lejeune, 2015).

Movements like these are only a handful that encourage and inspire fashion retailers to become more transparent with their overall operations, sustainability, and ethical procedures. Initiatives, forums, and non-profits are often ignited as fashion designers, retailers, and business people begin to collaborate and identify challenges and issues that they wish to see improved within the industry. These individuals and groups of business professionals see the need for change and act upon those constitutions to help improve the way the fashion industry operates. Although there are dozens of non-profits and initiatives that encourage more sustainable operations, recent technology and innovation now enable and encourage the quick consumption and disposal of apparel. This ‘fast fashion’ spurred by e-commerce, including mobile platforms and Internet marketing, has disrupted the retailing industry and its sustainability over the past decade.
E-Commerce

While e-commerce may enable companies to reduce their carbon footprint impacts by discouraging consumers from driving store-to-store in search of the best deal, online retailing brings a whole new problem to the table: packaging waste. According to the Environmental Protection Agency, containers and packaging from online purchases totaled 75.2 million tons of solid waste in the U.S. in the year 2012 (Nuwer, 2014). As online retailing continues to grow, so does our generated packaging waste. Stanford University estimates that individuals generate their own weight in waste every 30-40 days (Nuwer, 2014). Retailers are using components and partaking in production procedures that minimize raw material waste such as water, textiles, and dyes; however, the end life of products are ultimately trashed and its’ components never see new life. There are two ways in which retailers, specifically fast fashion retailers, promote this. First is planned product obsolescence, which refers to the designing and manufacturing of a product with the intention for it to be used up, or become obsolete, in a given time frame. Perceived product obsolescence, on the other hand, refers to the “desirability” of a product and means that even if a product is still functional, it is no longer perceived as stylish or in trend. As a result, apparel designed with obsolescence in mind should in no way, shape, or form be considered sustainable fashion.

Retailers promote environmentally-friendly products to create a favorable brand image and boost both the sales and consumption of these products. As a result, more waste is created and resources are blithely depleted at an accelerating rate. For retailers to truly get serious about their environmental and social impacts, they must consider and/or actively address arising sustainability issues in e-commerce and online sales such as associated packaging wastes and the
environmental impacts of transporting and delivering products purchased online. More specifically, to become and remain completely transparent with consumers and manufacturers with regards to e-commerce, it is crucial that retailers actively incorporate and promote sustainable practices through their design chain and during all stages of supply chain management while constantly informing and reminding consumers of these improvements. E-commerce has changed the way sustainable fashion competes in that it can encourage less car emissions from consumers and reduces the use of paper receipts, but it results in other careless waste habits from consumers and upstream operations. These careless habits may include consumers mindlessly ordering, returning, and reordering merchandise until they find the right size or desired product, the unaddressed transport-related carbon emissions from various distribution channels, and depletion of natural resources. As a result, retailers have seemingly created new environmental and socio-economic issues in an attempt to resolve others. Both fast fashion and apparel retailers have shifted their focus with regards to serving their customers as globalization and e-commerce have changed the game in the retail industry. Amongst other things, retailers must now compete heavily with competitors who have taken advantage of similar cost-saving opportunities and new channels to provide products and services to customers, regardless of business model.

**WHO ARE THE MAIN PLAYERS?**

In this thesis, I have chosen to study four main retailers with active participation and involvement in various forms of sustainable fashion processes. All four retailers are members of the Sustainable Apparel Coalition (SAC) that have developed at least one “sustainable” private-label line within their brand to further serve customers and engage in either sustainable raw
material allocation and/or promote environmentally friendly post-consumption practices within the company and amongst their consumers.

Patagonia was one of the first adapters of the sustainability game and early defenders of environmental ethics in the apparel industry, whereas Levi’s has more recently began experimenting with sustainable lines, sourcing of environmentally responsible materials, and conservation of natural resources. Fast fashion retailer H&M is one of the biggest advocates of fashion sustainability through their various conscious lines, recycling programs and events, and ethical use of raw materials. Greenpeace USA has commended H&M for being the first fashion brand to eliminate perfluorinated chemicals (PFCs) from its products, which are used to make clothes waterproof and often to reduce friction, but can be hazardous to the environment and
people’s health (Greenpeace, 2016). Zara’s parent company Inditex, on the other hand, has run into issues with ethical sourcing and production of goods in the past, but has since actively worked to improve these supply chain processes and continues to incorporate new sustainable practices into their business model.

In the past 50 years, the way manufacturers produce and the way individuals consume fashion has drastically changed. Fast fashion began with the idea of increasing the speed of production and reducing lead times to market to a couple of weeks rather than a few months. Ultimately, the goal of fast fashion is to increase sales volume and reduce production costs while offering the newest, short-lived trends to consumers. With this disposable fashion consumption pattern comes great risks for both the retailing industry and the environment we live in. Fast fashion implies the quick consumption and disposal of fashion, which eventually results in the generation of mass amounts of textile waste. While some fast fashion retailers have chosen to develop sustainable and economically friendly collections, other retailers focus on creating durable, timeless products that are long lasting.

Using the lens of sustainable fashion, the objective is typically to improve environmental footprints and reduce socio-economic impacts. The EFF defines sustainable fashion as “an approach to fashion that maximizes benefits to people, and minimizes impact on the environment” (Lejeune, 2015). Fast fashion retailers have proven that virtually anyone can afford to wear the most up-to-date trends by making short-lived fashion pieces accessible to all. Now more than ever, fast fashion retailers are concerned with moving product quicker and quicker, which implies their efforts to maximize benefits to consumers, but doesn’t address their impact on the
environment. “The social and environmental aspects of sustainability are inherently linked; one does not come without the other,” according to the EFF (Lejeune, 2015). Retailers such as H&M, Zara, and ASOS aim to produce as much product as their manufacturing factories overseas have capacity for, while reducing prices as much as possible. These retailers take minor steps toward sustainable fashion and create initiatives such as H&M’s Sustainability Commitment and Zara’s “Right to Wear” initiative, but is this enough to make a real impact in the fashion industry? Fast fashion is a form of planned obsolescence, generating copious amounts of waste and depleting resources rapidly. These retailers have developed “sustainable” lines, but what about their other production processes and consumption patterns? If these retailers are to claim sustainability in their operations, they theoretically should be encouraging more sustainable consumption patterns from a consumer perspective and reinventing their supply chain to incorporate more sustainable practices such as integrated and highly visible design chain mapping, environmental product design, eco-friendly logistics, environmentally responsible raw material allocation, etc. Furthermore, consumption patterns can include, but are not limited to; ecological caring and washing practices, overall attitude change toward fast fashion, and ample reduction of consumption patterns.

**Fast Fashion**

**H&M**

Through their sustainable initiatives, H&M has made it a priority that all their clothes are made with care for the environment and the people working across their value chain. Their goal is to “make sustainable fashion choices available, attractive, and affordable to as many people as possible” (H&M Group, n.d.). H&M has made statements encouraging better clothing care
procedures and have implemented programs that allow consumers to recycle their clothing rather than leaving them to end up in landfills. In addition, they have developed a line called the H&M’s *Green Conscious Choice* hangtag, which is one of their conscious collections highlighting the use of more sustainable raw materials. Furthermore, once a year H&M launches the *H&M Conscious Exclusive Collection*, which is a fashionable higher-end collection made from more sustainable materials to be worn for special events and occasions and for everyday dress up (H&M Group, n.d.). H&M is the world’s biggest user of Better Cotton and is known to be one of the industry’s leading sustainable fast fashion brands amongst competitors. In recent years, H&M has raised the bar for competing retailers and brands that similarly aim to achieve partial or complete operational sustainability. Zara, being one of their main competitors, is in the beginning and developmental stages of the sustainable fashion process whereas H&M has been actively working toward sustainability for many years. And the company has made great progression; by the year 2020, H&M projects to use 100% sustainable cotton in production and collect around 25,000 tons a year of recycled garments through their in-store donation program (H&M Group Sustainability Report, 2017).

**ZARA**

Zara has lead the fast fashion industry since 2011 and is notoriously known for their incredibly fast design, manufacturing processes, and quick lead times to market. Zara is owned and operated by Inditex alongside 8 other brands that similarly claim sustainable operational measures. Inditex’s *Global Sustainability Strategy* aims to reduce water use, energy and greenhouse gas emissions, and protect biodiversity. Their *Right to Wear* initiative’s purpose is to guarantee the quality of their products, engage in activities that are safe and ethical, and make
clothing in ways that respect society and the environment (Grupo Inditex, n.d.). But how safe are these products for consumers? To put it into perspective, the use of polyester, which is a highly common manufactured fiber made from petroleum, has nearly doubled in the last 15 years (Claudio, 2007). Not only does this man-made fiber as well as other synthetically-produced fibers involve high-energy processes involving crude oils, but they also emit compounds and acidic gasses like hydrogen chloride that are linked to respiratory disease (Claudio, 2007). Sound scary? That’s because it is. Fast fashion retailers often fail to address the toxic emissions related to the mass production of their products that are harming both consumers and those assembling the garments in factories. Zara may have a long way to go with their sustainable supply chain operations and activities, but they are slowly gaining traction in small ways that will eventually yield positive results in their socio-economic and environmental impacts.

Though these initiatives and steps toward a more sustainable future are great on their own, are they enough to make groundbreaking changes in the fashion industry? H&M has done a great job of providing their customers with information regarding specific products’ added sustainability value, but the retailer as a whole stands for something completely different; quick consumption and even quicker disposal of their clothing. So, what happens to the clothing that gets thrown out? The U.S. government offers tax breaks for individuals who donate clothing and other household goods to charities such as Goodwill or Salvation Army, but still, what happens to the overflow? “Only about one-fifth of the clothing donated to charities is directly used or sold in their thrift shops,” Environmental Health Perspectives suggests (Claudio, 2007). The rise in popularity of exporting used clothing to developing countries has increased in recent years and is projected to only grow due to escalating consumption in the United States. The U.S.
Environmental Protection Agency (EPA) estimates that Americans dispose of about 12.8 million tons of textiles annually, amounting to about 80 pounds per person per year (Wicker, 2016). The EPA also states that diverting all of those often-toxic trashed textiles into a recycling program would be the environmental equivalent of taking 7.3 million cars and their carbon dioxide emissions off the road (Wicker, 2016). H&M and Zara have made substantive steps toward reducing their toxic emissions and amount of clothing ending up in landfills, but the irony of their operations remain. Zara produces nearly 450 million garments a year for its 1,770 stores across 86 countries, which suggests that these waste problems are created internally (Berfield, 2013). It simply does not make sense ethically nor socially to promote fast fashion and sustainable fashion at the same time. Fast fashion suggests that trends come in and go out in a matter of weeks or days, implying that “old” styles are deemed irrelevant and therefore wasted. Product quality and trends imply that these “fast fashion” items are not made to last, which is contradictory of sustainable fashion. Furthermore, the rate at which garments are produced and consumed versus the rate in which they are recycled are nowhere near comparable and both sides of the matter must be addressed if retailers like Zara and H&M wish to remain completely transparent with consumers and viewed as sustainable brands. Ultimately, it is important to step back and ask if fast fashion retailers are truly reducing their environmental impacts or if they are simply incorporating new consumer preferences as a marketing strategy to capture newly created market share.
Patagonia, a well-known outdoor sports apparel retailer, has a strong mission to defy climate change and become a responsible company with regards to their social and environmental impacts. Their Worn Wear lines are made of high-quality materials that are intended to last for years; quite the opposite of fast fashion retailer’s products. Patagonia produces garments that are long lasting and that can be repaired with the intent that consumers will buy less over time. Beyond that, they have a recycling program that allows consumers to give their garments new life once it is beyond repair. About 40,000 garments are repaired each year at their Reno, Nevada service center (Patagonia, 2016). Additionally, Patagonia remains highly transparent with their materials, technologies, and use of e-fibers such as hemp, organic cotton, recycled nylon, down, polyester, and other raw materials (Patagonia, 2016). So, what’s the issue at hand? Retailers are experiencing an increase in sales and revenues. In fact, about 63% of companies acknowledge that sustainability may be an opportunity for revenue growth whereas an astounding 71% see reputation or brand image as an area of opportunity for growth (Ernst & Young, 2008). As a result, Patagonia has increased their negative environmental impacts, allocating more resources, and generating more waste due to an increase in consumption. Sustainable fashion refers to the ability to meet current needs without hindering the ability to meet the needs of future generations in terms of economic, environmental, and social challenges (Ernst & Young, 2008). If Patagonia were to achieve total sustainability, they would further promote and encourage consumers to buy less and consider a minimalist mindset when it comes to purchasing behavior. On the contrary, Patagonia is a brand that is perceived by many as a strong, sustainable industry leader that has structured their operations in a way to reflect overall sustainability regardless of function. Their
supply chain model is highly integrated with regards to sustainable activities and, similar to H&M, has raised the standard for sustainable fashion.

_Levi’s_

Other retailers within the fashion industry are making similar, but slower, steps toward reducing their wastes and developing lines that are both socially and economically responsible. Levi’s, one of the most well-known denim companies more recently developed their _Water<Less_ and _Waste<Less_ lines which target sustainable initiatives. The _Water<Less_ process was launched in 2011 and estimates the conservation of more than 1 billion liters of water in the manufacturing of Levi Strauss products along with saving 30 million liters of fresh water through reuse and recycling (Levi Strauss, 2014). But how much water is used in the manufacturing of a typical pair of denim jeans? Levi’s conducted a comprehensive lifecycle assessment in 2015 with focus on a single pair of their popular 501 jeans. The result? They found that a single pair of denim uses 3,781 liters of water in its full lifecycle. This lifecycle includes the growing of the cotton, manufacturing of the garment, and the post-purchase consumer care of the denim (Levi Strauss, 2014). To combat this disturbing statistic, Levi’s has partnered with the _Better Cotton Initiative (BCI)_ to decrease the environmental impact of using cotton through improving labor standards and decreasing irrigation and runoff of toxins on farmlands. Levi’s nearly doubled their BCI sourced cotton from 7 percent in 2012 to 12 percent in 2014, and their goal is to eventually have 100 percent of its cotton sourced through sustainable cotton initiatives or recycled cotton. Levi’s _Waste<Less_ collection uses 20 percent post-consumer waste which comes primarily from recycled plastic bottles, yet another great step toward a more sustainable future (Levi Strauss, 2014). The problem, however, goes beyond one company and their operations. Consumers must
decide to make substantive changes in the way they care for their denim in order to complete the sustainable fashion cycle. The issue, however, is that they are not. Chip Bergh, President and CEO of Levi Strauss suggests hand or spot washing your jeans only when they are visibly dirty and once revealed to Fortune that he hasn’t washed his jeans in over a year (Lutz, 2014). To claim total sustainable fashion and to achieve it are two very different concepts and it is a retailer’s corporate social responsibility to address and provide consumers with the appropriate tools and information to get there. Levi’s has chosen to target the reduction of water use and waste in the production of denim products, but there are other stages within their operations that must be restructured for the company to truly be considered a sustainable brand.

To compare the four main retailers that I have discussed, I created the above graph above that categorizes them based on my rating of their operational sustainability and new product manufacturing; the graph represents where I believe each retailer falls on the spectrum of total sustainability. This side-by-side comparison is provided to increase awareness of the sustainable
activities performed by each retailer. As you can see, both H&M and Zara peak as fast fashion retailers, but H&M is much more advanced with sustainable alternatives and initiatives. Patagonia and Levi’s, on the other hand, and similar in their respective ratings, however, Levi’s is more active in reducing their production-related wastes than Zara is. Additionally, Levi’s is somewhat higher on the product manufacturing scale than Patagonia, and Patagonia still has room for improvement to achieve total sustainability.

RETAIL OPERATIONS AND IMPACTS

Supply Chain Management (SCM)

A complete sustainable supply chain refers to the incorporation and continuous work to improve and align retail operations to be economically and socio-economically responsible across all functions. From a retail operations perspective, this process begins at the product design stage and works with vendors and suppliers to procure raw materials to be used in the manufacturing process. After this, retailers collaborate and choose the most efficient fulfillment processes including transportation methods and packaging options, which serve as a means of distribution to physical stores and warehouses. Once the merchandise has arrived in-store, management is responsible for planning inventory appropriately to prompt fast, easy consumption for customers. Supply chain management does not stop at the consumption stage, but rather, goes beyond to the allocation and management of post-consumption merchandise activities such as the reuse, repair, and recycling of products.

Retail Supply Chain Management Operations
The retail operations encompassed in SCM can be made “sustainable” in a variety of ways. Sustainable product design is planned with the end user in mind, being mindful of environmental impacts of short product life cycle. By designing products intended for longevity, retailers are able to reduce their wasteful effects far before the consumer comes in contact with the product. Raw material acquisition has been made more sustainable through the selection of renewable resources and energy such as wind and sunlight over nonrenewable resources such as fossil fuels and oil extraction. “Public awareness of the potential and actual risks regarding raw material extraction has increased, due to investor interest, campaigns by nongovernmental organizations (NGOs), media coverage and greater access to information. In addition, there have been growing calls for transparency in raw material supply chains, in order to inform investors’ evaluations of risk and to help governments and NGOs monitor and address key issues” (Ford Sustainability Report, 2014). As such, the manufacturing process of apparel has improved through transparency of operations and due to government regulations and related coalitions. These regulations and coalitions encourage greater sustainability by standardizing processes and collaborating with partners to streamline information to improve functions across all stages of supply chains.

The fulfillment process starts at the customer need recognition and purchase step and moves on to the warehouse, inventory planning, delivery, and finally to the end consumer, or consumption stage. Within these stages, sustainable functions have been incorporated over time to reduce packaging and transportation wastes. Amazon, an e-commerce leader across many segments, offers a minimizing packaging option for customers where they can choose to consolidate items into the least number of boxes for shipment. By offering consumers this alternative at no
additional charge, consumers are encouraged to reduce their environmental impacts within the order fulfillment process. Finally, post-product consumption activities can and have been made more sustainable by the encouragement of retailers and brands to create new life out of old garments, recycling unwanted items, and repairing and reusing damaged clothing.

To measure the effectiveness and significance of these changes within retail operations, we must first define the metrics used. Metrics are universally critical to accomplishing any goal in that they ultimately define system boundaries, traits involved, and the definition of improvement. Retail operations within sustainable fashion involve both environmental and socio-economic impacts that can be measured in a variety of ways. The IPAT Equation (Impact = Population x Affluence x Technology), developed by Paul R. Ehrlich in the 1970’s, measures the environmental impacts of relative consumption rates (Ehrlich, 1971). Environmental Impact (I) represents the various forms of resource depletion or waste accumulation, Population (P) refers
to the size of the human population, Affluence (A) represents the level of consumption by P, and Technology (T) refers to the processes involved in resource allocation. Another metric used in the measurement of environmental aspects of sustainability is the “master equation”, Eq. 1, developed in 1995, where total consumption is composed of population and per capita consumption (GDP/person) and impacts per unit of consumption are explained using Resource Use/Unit GDP (Ehrlich, 1971). The purpose of these metrics is to enable retailers to track effectiveness of sustainable operational changes.

\[ EI = \text{Population} \times \frac{\text{GDP}}{\text{Person}} \times \frac{\text{Resource Use}}{\text{Unit GDP}} \]

Retailers’ responsibilities are to ensure efficient and careful use and disposal of resources and products through the allocation of raw materials and consumption stages, among other things. One common model known as Triple Bottom Line (TBL) or the “3Ps” goes beyond the customary measures of profit, returns, investment, and shareholder value to include these environmental and social scopes. The 3Ps stand for profits, people, and planet, which refer to social, environmental, and financial aspects respectively. TBL is defined by the Indiana Business Review as an accounting framework that incorporates these three dimensions of performance that “captures the essence of sustainability by measuring the impact of an organization’s activities on the world… including both its profitability and shareholder values and its social, human, and environmental capital” (Slaper, n.d.). But are retailers who claim this framework and other metrics really achieving TBL and improving all stages of product life cycle both up and downstream? This encompasses any of the following factors: greenhouse gas emissions, use of fossil fuels, trends in recycling and reuse, energy and water consumption, packaging wastes, fair trade initiatives, safe and healthy working environments for factory workers, managing
unemployment rates, job creation, and others. Measuring, monitoring, and communicating the environmental, social, and economic aspects of sustainable fashion operations within a company is critical for retailers and brands who engage in sustainability activities. Many retailers choose to publish annual sustainability reports of their previous fiscal year’s findings. H&M’s 2016 Sustainability Report outlines their total share of recycled or other sustainably sourced materials for the last few years. They have set their goal of 100% use of classified-conscious materials such as certified organic or recycled fabrics, as well as Better Cotton (BCI) by 2030.

![H&M Total Share of Recycled or Other Sustainably Sourced Materials](chart)

For a business to address these challenges in leveraging sustainable operations, it is necessary to tackle each aspect of operations individually from supply chain to outputs. The challenges of sustainable fashion, however, go beyond the surface of creating programs that encourage customers to recycle their unwanted clothing or using 100% recycled materials. The actions retailers take in minimizing their operational impacts on the environment, society, and economy are great on their own, but in order to make a real impact in sustainable fashion and the retail
industry, companies need to be making substantial changes in all impactful operational decisions such as labor relations and providing timely and accurate information to consumers. Companies often focus their efforts on one or two sustainable activities when they should consider and include all types of operational impacts when making decisions. Working toward the goals listed above requires transparent, complex communication and strong supplier and stakeholder relationships. In fact, cooperation and collaboration with stakeholders is one of the most important factors regarding the implementation and success of sustainable supply chain strategies.

While many business managers recognize the potential for sustainable practices to improve operational productivity and revenue flows, most are relatively uncertain on how to approach and implement strategies. Ernst & Young (2008) estimates that a mere 12% of companies have plans to implement a sustainable strategy. According to the International Institute for Sustainable Development (IISD), developing a vision and action plan for becoming and remaining transparent with ‘green’ marketing efforts is a key to environmental management (IISD, 2013). Moreover, it is extremely important to educate consumers about environmental impacts and ensure that internal operations align with company values and missions. Furthermore, the design process for products must take into consideration environmental responsibilities while also remaining cost-conscious for consumers to remain loyal. Constantly improving products environmentally and examining market substitutes help retailers maintain their core competencies while creating new ones. The challenges at hand are large in scope and often times intimidating for many retailers and management. As a result, it is common to see companies
being selective with their sustainable operations while continuing to claim total sustainable fashion.

**Labor Relations**

Within retail operations and SCM, there are a variety of labor relations that are relevant when discussing sustainable fashion. As such, they are outlined by the National Labor Relations Board (NLRB) through the National Labor Relations Act (NLRA) as the protection of rights of employees and employers within labor and management practices such as fair payment of work, proper worker treatment, safe and ethical working conditions, and monitoring of toxic factory emissions (NLRA, 1935). To combat these labor issues, many companies choose to become Fair Trade certified through their product offerings. Fair Trade USA is the leading third-party nonprofit organization that “audits and certifies transactions between U.S. companies and their international suppliers to guarantee that the farmers and workers producing Fair Trade Certified goods are paid fair prices and wages, work in safe conditions, protect the environment and receive community development funds to empower and uplift their communities” (Fair Trade USA, 2017). Companies choose to become Fair Trade certified as part of their corporate social responsibility (CSR) to their communities, employees, and customers. The guidelines used in setting international labor standards work to improve labor administration, labor inspection, social security administration, and employment services, according to the International Labor Organization (ILO, n.d.). Patagonia became Fair Trade Certified in 2014, selling 10 Fair Trade clothing items. Now, in 2017, they are selling 287 styles made in ten factories worldwide. As of February 2017, factory workers who make Patagonia clothing have earned an additional $833,000 beginning fall 2014 though participation in their program, where the extra money paid
for each item by Patagonia goes directly to their workers. These workers decide how and when to spend it, whether it be to open a free daycare in Sri Lanka or buy vouchers for food, medicine, or other personal items. As of May 2016, over 7,000 workers have benefited from Patagonia’s Fair Trade program, and the company only expects the numbers to grow (Patagonia, 2016).

The International Labor Organization (ILO) has been working to set labor standards and policies while implementing programs that require safe and fair working conditions of all men and women globally since 1919. One specific policy outlines regulations regarding occupational safety and health (OSH) instruments related to promotional framework, construction, mines, and agriculture. Convention No. 155 outlines the general duties and responsibilities of employers with respect to OSH, and national legislation explicitly states, “the employer is fully responsible for the safety and health of workers and is required to take all the necessary and preventative protection measures to achieve this goal” (ILO, n.d.). In 2011, a lawsuit against Zara’s parent company Inditex arose regarding the mistreatment and “slave-like” treatment of workers in Brazil factories (Antunes, 2011). Among the problems identified, 84 accidents or cases of illness at work and 22 cases of “excessive work” – working more than 16 hours a day or not receiving a day off in a week – were reported (Butler, 2015). Since the incident, Zara representatives have released statements of intent to regularize the situation with the workers involved immediately and have taken to complying with their agreement with the labor inspection department in Brazil in the future (Butler, 2015).

The same emphasis should be placed on the health safety of factory workers due to environmental impacts of factory emissions. There are hazardous wastes and air emission
regulations in effect such as the Oil Pollution Prevention Act that requires facilities to prevent oil spills from reaching navigable waters of the United States and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or “Superfund” that responds to threatening releases of hazardous substances that could potentially endanger public health, welfare, or the environment (EPA, n.d.). Other policies such as the Emergency Planning and Community Right-to-Know Act are designed to provide information to communities regarding potential chemical hazards and react through emergency response plans (EPA, n.d.). However, the issue at hand is that workers and families of workers overseas are the ones who are ultimately affected by these toxic wastes. In fact, in 2012, toxic chemicals used in the production and tanning of leather in India resulted in the death of several factory workers (Bengsten, 2012). Tanning is one of the most toxic industries in the world due to the chemicals involved, which ultimately lead to the poisoning and suffocation of these workers. While India has started tackling environmental issues, there is still controversy over the health and safety of their workers. Similarly, toxic runoff in places like Indonesia is the result of careless industrial facilities pumping out various hazardous substances into local waterways. Greenpeace USA, a campaign aimed toward protecting bodies of water, living toxic free, fighting global warming, and many other movements, collected samples of wastewater discharged from factories in Indonesia in 2016 (Greenpeace, 2016). The result was astounding. “Wastewater discharged from one of the two smaller outfalls was highly alkaline (pH 14), which is highly caustic, will burn human skin coming into direct contact with the stream, and will have severe impact (most likely fatal) on the aquatic life in the immediate vicinity of the discharge area” (Greenpeace, 2016). Although new laws and regulations have been passed ensuring the health and safety of workers, chemicals and work-related accidents are still harming and killing workers as well as the
environment around them. With the fashion industry rapidly growing, retailers are increasingly taking advantage of factories in developing countries, completely disregarding these issues that are much bigger than meeting consumer demands.

**“GREEN” CONSUMERS**

*Attitudes and Behaviors*

Green consumers are individuals who experience a growing commitment to greener lifestyles, who are sincere with their intentions, and do not necessarily expect companies to be entirely sustainable, but recognize when they take substantive steps and commitments to more economically friendly operations (IISD, 2013). According to the International Institute of Sustainable Development, the most responsive age group is young adults who are often influenced by their children and women who tend to make purchasing decisions on behalf of men. (IISD, 2013) This is not to say, however, that men are not a key target for greener products as well. In addition, the generalization of green consumers is that they typically have a higher level of education and intellectual orientation to appreciate value and can make educated assumptions and decisions in support of environmental claims. It is common to see green consumers distrusting companies’ environmental claims unless they have been independently verified. Within the United States, millennials and children are generally more self-informed and concerned about the environment and green alternatives, but are restricted due to monetary and resource constraints. Adults over the age of 30, on the other hand, have the education, information, income, purchasing power, and access to greener products that millennials do not, making them ideal targets for green products. Furthermore, there are several market segmentations of green consumers, as examined by the Natural Marketing Institute (NMI), the
GfK Survey of the American Consumer, and other third-party researchers. As such, green consumers can generally be broken into three main categories; light, medium, and heavy (Chan, 2000).

<table>
<thead>
<tr>
<th>Light</th>
<th>Medium</th>
<th>Heavy</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Find green products difficult to access</td>
<td>• Green products have less choice</td>
<td>• Like buying green products</td>
</tr>
<tr>
<td>• View green products as more expensive</td>
<td>• Medium income and education</td>
<td>• Perceive green products good for health</td>
</tr>
<tr>
<td>• No added quality factor</td>
<td>• Largest number of female consumers</td>
<td>and global resources</td>
</tr>
<tr>
<td>• Green products have less choice</td>
<td>versus light and heavy</td>
<td>• Identify as concerned with environmental</td>
</tr>
<tr>
<td>• Lower income and education</td>
<td></td>
<td>issues</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Green products have less choice</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Higher income and education</td>
</tr>
</tbody>
</table>

Chan, 2000

Green consumers are often referred to as LOHAS, as defined by the Natural Marketing Institute (NMI) as Lifestyle of Health and Sustainability (Povey, 2012). The NMI is a consulting research company that specializes in health and wellness, sustainability, and healthy aging. NMI defines LOHAS as the early adopters of sustainable consumption and 70% attempt to influence friends and family to incorporate environmentally-friendly products into their daily lifestyles. These consumers are continually looking for greener versions of existing products (Povey, 2012). Baby Boomers have historically been the strongest green consumers, indexing 21% versus about 15% for younger generations (Povey, 2012). Therefore, heavy green consumers are typically older demographics with higher income and education. One study (Butler & Francis, 1997) about the effects of environmental attitudes on apparel purchasing behavior reported on the environmental attitudes of 402 women both generally and related to clothing (see below tables). The attitudes and behaviors expressed by respondents overwhelmingly convey a concern for overall...
environmental impacts of apparel consumption and shows that consumers’ expectations of
government and manufacturers are increasingly high.

<table>
<thead>
<tr>
<th>Table 2. General Environmental Attitudes: Means and Factor Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Attitude</td>
</tr>
<tr>
<td>Factor 1: Pro Environmental Information/Regulation</td>
</tr>
<tr>
<td>The government should provide each citizen with a list of</td>
</tr>
<tr>
<td>agencies and organizations to which citizens could report</td>
</tr>
<tr>
<td>grievances concerning pollution.</td>
</tr>
<tr>
<td>Commercial advertising should be forced to mention the</td>
</tr>
<tr>
<td>ecological disadvantages of products.</td>
</tr>
<tr>
<td>Manufacturers should be forced to use recycled materials in</td>
</tr>
<tr>
<td>their manufacturing and processing operations.</td>
</tr>
<tr>
<td>I become angry when I think about the harm being done to</td>
</tr>
<tr>
<td>plant and animal life by pollution.</td>
</tr>
<tr>
<td>I would be willing to pay a 5 percent increase in my taxes</td>
</tr>
<tr>
<td>to support greater government control of pollution.</td>
</tr>
<tr>
<td>I think that a person should urge his or her friends not to</td>
</tr>
<tr>
<td>use products that pollute or harm the environment.</td>
</tr>
<tr>
<td>I would be willing to pay one dollar more each month for</td>
</tr>
<tr>
<td>electricity if it means cleaner air.</td>
</tr>
<tr>
<td>Factor 2: Water/Air Pollution Control Not Justified</td>
</tr>
<tr>
<td>Trying to control water pollution is more trouble than it's</td>
</tr>
<tr>
<td>worth.</td>
</tr>
<tr>
<td>Much more fuss is being made about air and water pollution</td>
</tr>
<tr>
<td>than is really justified.</td>
</tr>
<tr>
<td>Factor 3: Pro-Consumption Limitation</td>
</tr>
<tr>
<td>Most consumers buy more than they need.</td>
</tr>
<tr>
<td>People should urge their friends to limit their use of</td>
</tr>
<tr>
<td>products made from scarce resources.</td>
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</table>

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<thead>
<tr>
<th>Table 3. Clothing Environmental Attitudes: Means and Factor Analysis</th>
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</thead>
<tbody>
<tr>
<td>Clothing Attitude</td>
</tr>
<tr>
<td>Factor 1: Non-Clothing Conservationist</td>
</tr>
<tr>
<td>It doesn't matter if people buy more clothing than they need</td>
</tr>
<tr>
<td>because eventually it will be passed on to others.</td>
</tr>
<tr>
<td>People should not be asked to conserve in clothing consumption</td>
</tr>
<tr>
<td>because they are already expected to conserve in so many other</td>
</tr>
<tr>
<td>ways.</td>
</tr>
<tr>
<td>There isn't much of a relationship between conservation of</td>
</tr>
<tr>
<td>resources and clothing consumption.</td>
</tr>
<tr>
<td>Clothing is a resource that is often wasted.</td>
</tr>
<tr>
<td>Factor 2: Clothing Conservationist</td>
</tr>
<tr>
<td>I try to purchase clothing from manufacturers who I know are</td>
</tr>
<tr>
<td>concerned about the environment.</td>
</tr>
<tr>
<td>People should consider resource conservation when they buy</td>
</tr>
<tr>
<td>clothes.</td>
</tr>
</tbody>
</table>

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More often, we are seeing a shift in consumer attitudes toward green products. GfK, the fourth largest market research organization in the world, finds that at a time when U.S. environmental policy is under immense inspection, 56% of consumers still indicate they are willing to pay more for environmentally-friendly or green products (Stanton, 2017). This is an increase of 3% from 53% back in 2010 and is drawn from GfK’s Survey of the American Consumer of around 25,000 in-person interviews. Additionally, half of adults agreed that they are willing to give up convenience in return for a product that is environmentally safe, which is up 3% from 2010 (Stanton, 2017). GfK outlines the evolution of buying behaviors and attitudes of consumers with regards to green products over the years and highlights the gradual increase in awareness and concern for overall socio-economic and environmental impacts of consumption. More than ever, consumers are showing an increase in concern for the environment and are making consumption decisions that reflect their desire to protect the environment. Consequently, retailers and brands have embraced the green marketing concept to capture this new ‘green’ market share. Research shows that those with more money to spend are the best ‘green’ consumers, which results in more promising ‘green’ products at the upper end of the market. Once converted, green consumers are loyal and are willing to pay a little extra if it means their products are eco-friendly. But are these consumers truly seeking total fashion sustainability or are they simply taking advantage of a trend that they deem to be hip? Studies show that buying behavior is heavily influenced by the current state of the economy. In economics, the marginal propensity to consume increases as an individual’s disposable income simultaneously increases. So, what happens when the economy is in recession? Economically speaking, green consumers of all levels and those who typically purchase more green products tend to strictly limit or eliminate spending on these products, solidifying the idea that the consumer demand curve is heavily
reliant on the state of the economy. As such, retailers evolve with consumers as consumer preferences and demands move up and down with the economy.

With any consumer in the retailing industry, it can be generalized that there is great demand placed on overall added value, customer experience, price, quality, and convenience. Retailer’s jobs are to minimize risk associated with the purchasing and usage of green products in order to effectively capture green consumers. By being transparent in marketing efforts regarding the manufacturing process, waste allocation in the form of solid waste of water pollution, and fair trade programs, consumers are more apt to buy and continue buying. This can be done through extensive competitor research, persuasive and comprehensive information about green products specifically, and following governmental guidelines during marketing. There are a variety of policies regulating the use of specific words or tagging on certified green products. For example, the US Federal Trade Commission issued guidelines in 1992 on the use of ‘green claim’ words such as ‘compostable,’ ‘recyclable,’ ‘refillable,’ ‘degradable,’ and others. In addition, the Green Seal is a nonprofit environmental labelling organization based in the United States that develops standards for green consumer products and government agencies, among other things (IISD, 2013).

In 2002, Cargill, the world’s largest producer of corn, released a new fleece material made from corn sugar, claiming sustainable “green” textiles and procedures (Knufken, 2015). The issue was that Cargill was using its own frankenfood crops to produce this new fleece, which was manufactured from genetically modified corn. The company chose to disclose information and did not remain transparent with its customers. Other retailers are known to selectively choose
sustainable options, too. In 2009, Banana Republic’s “It’s Easy Being Green” promotion encouraging the use of their reusable bag didn’t take into consideration that their bags were made from cotton that uses toxic pesticides during production (Knufken, 2015). This process of using ‘green claim’ words without data to verify them is commonly known as greenwashing. The Oxford English Dictionary defines greenwashing as the “Disinformation disseminated by an organization so as to present an environmentally responsible public image.” Those who partake in greenwashing are not being overall more sustainable; they’re simply trying to capture a new consumer and build a positive brand image. For example, hotels promote and encourage guests to re-use towels as to reduce the amount of water used in the washing process. While this is a great option available to those who wish to reduce their environmental impacts, this change is minor when comparing it to other practices. Hotel companies are not changing other practices such as switching to environmentally friendly cleaning supplies or reducing overall water consumption in groundskeeping. The point is, these companies may not truly be after minimizing their impact on the environment, but rather creating a favorable image that will result in monetary benefits and improve customer awareness. Retailers must be cautious when making environmental claims that are not backed up by facts as to not dissuade consumers of their efforts and to comply with government regulations and standards. Additionally, as consumer preferences and behaviors change, retailers must ensure correct usage of marketing words and phrases to accurately inform customers of product offerings. From a consumer’s perspective, it is important to know the distinguishing qualities of greenwashing and make educated purchasing decisions regarding retailers who claim sustainable fashion versus those who are merely using key words as marketing strategies in an evolving, sustainable era.
CONCLUSIONS

Though there have been major steps within the past decade toward achieving sustainable fashion within the retailing industry, retailers and manufacturers have, in fact, not achieved total fashion sustainability. Companies have become more aware of the prominent negative effects of retailing – the second largest industry in the world – and have taken proactive steps toward reducing these impacts. But the reality of it is that complete sustainable fashion is currently only an aspirational goal and will likely take decades, if eternity, to accomplish. Consumers are more educated and passionate about the retail industry’s environmental impact and have a surplus of retailers who offer “sustainable” options, however, the retail industry still faces challenges achieving total sustainable fashion through operational activities. The challenges retailers and brands face include, but are not limited to; corporate social responsibility, competition, cost to produce, technological advancements, resource constraints, slow lead times due to sustainable production processes, and government regulations.

While some retailers like Patagonia are truly working toward complete sustainable operations, others are merely using sustainable initiatives to generate brand awareness and increase revenues. Many fast fashion retailers do not view complete sustainable fashion as a strategic opportunity due to the nature of their companies, and outweigh the pros with negative returns. Instead, these retailers use sustainability as a marketing strategy and do not encourage sustainable consumption patterns or ethical post-purchase care. Therefore, it can be said that some retailers in fact do use sustainable fashion as a way to incorporate new consumer preferences into their business strategies rather than trying to reduce their environmental and socio-environmental impacts. So, what would happen if the retail industry did successfully achieve this level of sustainability?
While it cannot be said for sure, there is a great possibility that many retailers would experience negative profits, increased cost of goods sold, and greater overhead costs, which would likely result in business closures.

Certain companies participate in sustainable initiatives and abide by government regulations, which are crucial steps toward a more sustainable retail industry, but it is not enough. Although total sustainable fashion is unlikely, there are still steps manufacturers and retailers can take to reduce their negative impacts and begin to create a more sustainable fashion industry and environment for future generations. By integrating sustainability and investment goals and objectives into business strategies, we can begin to build an integrated industry that is more ethical and less thoughtless when it comes to consumption. Seems simple, right? But there’s a catch: It is ultimately in the hands of manufacturers, retailers, and consumers to collectively make the decision to change for the greater good of the environment and those who live in it. Although supply chain practices are being made more sustainable, the retail industry faces great challenges moving forward with sustainable fashion. It is easy for retailers and brands to claim total sustainable fashion while engaging in activities that do not reflect that claim. Apparel brands such as Patagonia have set the bar for aspiring retailers who wish to become more sustainable, but it can be concluded that fast fashion brands are controversial when discussing them alongside sustainable fashion. There is much room for improvement within the industry for manufacturers, retailers, and consumers to address the sustainable fashion debate and while there have been great leaps toward a more environmentally and socio-economically friendly industry, sustainable fashion remains far beyond reach.
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