**An analysis of how sustainability affects perceived value for young activewear companies in the U.S.**

### FMP

### Instructor

Ying Fan

### StudentFMP

Table of Contents

[Abstract 3](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407888)

[Outline of the research project 4](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407889)

1. Introduction [4](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407890)

1.1. Background [4](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407891)

1.2. Objectives of the research study6

1.3. Research questions [7](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407890)

[1.4. Limitations of the research project 7](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407892)

2. Literature review [7](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407888)

2.1. Sustainability [7](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407890)

2.1.1 Sustainability in context [8](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407890)

2.1.2 Sustainability in innovation [12](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407890)

2.1.3 Sustainability in supply chain management [14](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407890)

2.2. Perceived value [15](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407891)

2.2.1. The impact of sustainability on customer choice [16](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407891)

2.3. Limitation in implementing sustainability [17](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407891)

 2.4. Theories related to the research questions  [18](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407890)

2.5. Summary of literature [19](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407890)

3. Primary Research Methodology [20](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407890)

3.1. Framework definition [20](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407891)

[3.2. Survey design methodology 21](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407892)

[3.3. Comparison to company perspective 23](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407892)

4. Primary Research Analysis [24](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407890)

4.1. Descriptive statistics [24](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407891)

[4.2. Correlations 25](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407892)

[4.3. Perceived value 26](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407892)

5. Discussions, conclutions & contributions [27](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407890)

6. Limitations [29](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407891)

[7. Bibliography 30](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407892)

[8. Appendices 32](file:///C%3A%5CUsers%5Crjia%5CDocuments%5CGEM%5CFMP%5CLit%20Review%5CInto%2BReview%2BContext_Ru%20JIA_FT20.docx#_Toc57407892)

**Abstract**

This final management project analyzes the importance of sustainability for young activewear companies (less than 15 years on the market) in the U.S. and how their practices on going green affect perceived value from customers. So far there is a significant gap in fashion industry between companies in the U.S. and those in Europe regarding to taking sustainability into account in business practices especially in innovation and production. In the U.S., only a few companies actually weave their considerations for the environment into their material selection, manufacturing procedures and recycling. The effort is far less than their European peers. Therefore, this research will find out first, why the American companies are lack of motivation, second, what are the benefits of making sustainable products and last what are the major factors affecting the perceived value from customers. The research makes the special emphasis on activewear companies because the activewear is most American’s daily wear. It is not just for special occasion when people work out, it is a fashion, a day-to-day wear and many Americans even wear them as business casual. Therefore, many activewear companies in the US are trying to become more fashionable and multifunctional. In this trend, some companies go towards fast fashion lane, some stay focused on technical sportswear and some others switch to luxury athleisure. Different strategy affects company’s consideration of sustainability and will be further discussed in this research. The primary research was done by case study, in-depth interviews and questions with the help of all sorts of documents. The ultimate purpose is to see how customers would react to company’s practices on sustainability.

*Keywords:* Sport goods sector; Innovation; Sustainable good; Process of creating value

**1. Introduction**

To sum up, the purpose of this project is to make a profound research about the importance of sustainability for young activewear companies in the U.S. and to explore actions that can be taken in companies’ production with an emphasis on innovation and supply chain management so as to increase the organization’s overall value to customers.

The introduction chapter provides the background of the research topic and explains how the

topic of the thesis is developed from it. Accordingly, this chapter will start with a general discussion of sustainability then will be followed by specific research objectives, questions along with the significance of the research subject. In the end, the limitations of the study will be implied.

* 1. **Background**

The concept of Corporate Social Responsibility (CSR) was forged in 1953 by American economist

Howard Bowen in his publication ‘Social Responsibilities of the Businessman’ (Sikdar, Sengupta, & Mukherjee, 2017) when large corporations were emerging in the US.

Fashion industry in particular is the [second largest consumer](https://www.unenvironment.org/news-and-stories/story/putting-brakes-fast-fashion) of water – just after the oil industry – and is responsible for 8-10% of global carbon emissions – more than all international flights and maritime shipping combined, according to the United Nations Environment Program. Nidumolu et al. (2009) counted sustainability as the key driver of business innovation and proposed five stages for companies to reach sustainability, which will be used as a framework here.

Stage 1: viewing compliance as an opportunity to go beyond compliance.

Activewear industry in the U.S. offers a forever-moving environment thus is full of ambitious young companies who are all seeking for first-mover advantages by going beyond the existing rules. This is particularly beneficial for small or young companies because they are usually more focused than big companies, making them more flexible in terms of adjusting their business strategy to be more sustainability oriented.

Stage 2: making value chains sustainable.

A product is not counted as fully sustainable if the whole supply chain is not sustainable. Many companies claim their products as sustainable because they use organic or recycled fibers. However, the factories making the products might not practice sustainability on the same level. In order to be more proactive and make the whole chain green, activewear companies need to work with their suppliers and retailers to not only discover raw materials that are more eco-friendly while durable but also develop greener processing methods especially for dying process. Reducing and recycling material waste are included as well. The challenge here is the control over supply chain for young activewear companies considering that they have less negotiating power. However, small companies have the flexibility of partnering up with local material producer and manufacture in house. Conscious clothing for example is a small group of five people in Michigan handmaking sustainable female clothing and activewear.

Stage 3: designing sustainable products and services.

Young activewear companies can easily capture their customers’ needs and adjust their products accordingly. To reduce waste, lean manufacture, taking pre-orders and making customized activewear are quite possible and beneficial for them. Product innovation are usually more focusing on material and manufacture process. A debate on longevity over degradability is thus incurred in academic research. Some innovative production process such as laser cutting is also a subject. customization is another way to increase user satisfaction and reduce return rate.

Stage 4: developing new business models.

After having developed some sustainable products, the important question comes to customer value proposition and how to make the value sustainable. This part is the bridge that connects supply chain, the operation and the customers. The packaging and shipment are all parts of the sustainability chain, although this is not the focus of this study.

Stage 5: creating next-practice platforms.

This is the stage of innovating the next generation of product. Although it might be too risky to jump into the next generation, however, many start-ups actually start off with the newest practices so they will be the first one on the market to attract not only customers but also investors. These are usually the executives who are really questioning the status quo and asking bold questions such as can we make synthetic fibers bio-degradable? Can we possibly replace carbon disulfide-based viscose production with healthier method so that customers can enjoy the benefits of bamboo fabric?

To sum up, sustainability could really be the starting point of a start-up or for a young company when launching a new product. The key point is to weave sustainability into product and process innovation with close and constant measurement.

* 1. **Objectives of the research study**

Along with the positive point of putting sustainability into perspectives, it is worth mentioning that there is no clear rule or guideline for practicing sustainability, meaning that companies can be as creative as they can ever imagine. Meanwhile, the price of taking sustainability into account is usually quite high. We can see that from the price range among the top 50, only 4 of them have low-price products. So are customers always willing to pay more for the sake of sustainability? Do they have concerns for those products? If our final aim is to see how customers perceive the value of those business practices on sustainability, then we need to understand what sustainability mean to them and what might stop them from buying.

Consequently while introducing sustainable products is supposed to benefit an activewear company for the long run, the understanding of consumers’ minds and the way to present its product are equally important. People should also recognize the limitations of sustainability-related activities especially from business perspective.

Based on this, the research problem addressed during this particular study will be concentrated on

Product innovation and supply chain management with questionnaires designed for understanding customers’ points of view for sustainable activewear.

* 1. **Research questions**

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| --- | --- |
| Research questions | Research objective |
| 1. How much attention do customers pay to sustainable sportswear?
 | To have an idea about customers’ attitude towards the sustainability of sportswear. |
| 1. What are the concerns that customers have towards sustainable sportswear?
 | To understand what may stop customers from buying sustainable sportswear. |
| 1. Which way is more likely to attract customers to learn more about sustainable sportswear?
 | To find the most effective way for sportswear to present itself to potential customers. |

* 1. **Limitations of the research project**

This study will not dig too deep into the technical aspects such as the pros and cons of each material and how to process them in sustainable methods including fiber extracting, dying, cutting and finishing process. However, these processes are actually essential for product innovation. Companies do need to explore with different materials and tools. This study serves more like a map for companies who want to go on the sustainable road. Another limitation lies in the marketing perspective. Customers’ reaction to sustainable products is the final result this study will test on. However, their reactions and behaviors are also heavily influenced by the digital tools, marketing strategy and sales channels that the companies are using, yet these will not be discussed in this study. However, considering that this study is focusing on young activewear companies in the U.S., their digitalization level and target audience usually do not have significant difference.

1. **Literature review**
	1. **Sustainability**

The literature review presents the theories and findings of past researchers concerning the topic of sustainability. The section explores the main concepts in sustainability that are relevant to the activewear companies and the fashion industry at large. The information for the literature review is derived from peer-reviewed and reliable journals, books, and other academic materials. Collecting information from multiple sources enhances the reliability and objectivity of the study. The information from different authors will be compared and contrasted to achieve a critical view of the theories surrounding sustainability. The main topics that will be covered in this section include sustainability in the activewear context, sustainability in innovation, sustainability in supply chains, perceived value, the impact of sustainability on the customer's choice, Limitations of implementing sustainability, and the theories relating to sustainability. The sustainability theories that will be discussed in this thesis include product/process innovation, consumer value proposition, sustainability-oriented model, and green supply chain management.

* + 1. **Sustainability in context**

Johnson, Christensen, and Kagermann (2008) defined sustainability as the concept for creating a long-term value by considering the implications of business practices to the social, ecological, and economic context. In the modern competitive business environment, sustainability is no longer an option as the consumers expect businesses to be sensitive to the social and ecological elements despite emphasizing economical achievement. Similarly, Boudreau and Lakhani (2013) defined sustainability as the concept of conducting business activities ethically and exploiting resources to meet the needs of the present consumers without compromising the availability of the resources for future generations. Thus, sustainability emphasizes preserving natural resources and upholding human rights practices (Melewar, Alwi & Chi, 2013). Furthermore, sustainability demands the business to exercise economic justice by avoiding practices such as bribery, corruption, and fraud and also respecting the culture of the society. The sustainability concept in the past included only three elements which are environmental, social, and economic. Nonetheless, the elements of sustainability have broadened to incorporate ethical, cultural, philanthropic, psychological, and equity elements.

Pisano (2015) established that 62% of the businesses in America believe that sustainability is key for achieving competitiveness while 22% believe sustainability is a future trend. The customers expect the business to be sustainable and transparent on how the practices impact the environment and the society at large. In the past, businesses gained competitiveness by offering professional services and positive communications to the customers (Johnson, Christensen, & Kagermann, 2008). However, that is not the case as the consumers’ demand to know how the business is conducting their various operations. Sustainability hence demands that businesses should balance between the competing demands of stakeholders and profitability as well as protecting the environment (Suarez & Lanzolla, 2005). Businesses have a responsibility to ensure that none of their activities negatively impacts the health of the consumers and the community.

The production of fashion products takes a long process from the design phase to the completion hence associated with adverse ecological footprints. Boudreau & Lakhani (2013) stated that the manufacturing of active-wear and other sporting products entails the utilization of a variety of chemicals that are harmful to the environment and hazardous to humans. The different chemicals in the manufacturing of active-wear aim to make the products more durable and enhance their performances. Therefore, most companies in the active-wear sector prioritize the performance and durability of the products over sustainability. Osterwalder and Pigneur (2010) noted that active-wear companies have attracted attention from environmental activists since they contribute to the over-exploitation of resources. That is, the fashion industry is the leading consumer of clean water for the dying of the fabrics and growing of raw materials. The growing of cotton demands the use of artificial fertilizers which contaminates the runoff waters (Ingram, 2019). The runoff water by entering the water bodies such as lakes, oceans, and rivers results in the negative implications of aquatic life. In countries with minimal regulations guiding waste disposal, the untreated toxic products from the textile manufacturers are dumped in the rivers (Johnson, Christensen, & Kagermann, 2008). Therefore, unsustainable business practices amongst the active-wear pose a threat to the availability of resources in the future. Nonetheless, Benson and Reczek (2016) stated that active-wear companies in the US are emphasizing sustainability practices in their business operations. As such, the companies adhere to the proper waste management practices such as recycling and treatment of waste before disposal.

Melewar, Alwi and Chi (2013) acknowledged the difficulties that the US-based activewear brands face in controlling the environmental implications of their products. The companies engage multiple manufacturers for producing different components of the activewear products. For instance, one sportswear product may have buttons, zips, fabrics, and interlinings from different suppliers. Thus, complexity arises in ensuring that the different components are produced ethically and responsibly. Ingram (2019) agreed with the above statements and added that the demand for performance-oriented activewear products demands fiber that is highly modified. The raw materials are customized to ensure the specialized performance of the garments for different indoor and outdoor sports activities. For example, the thermal properties of the garments should conform to the weather. Also, the garments need to be waterproof, strong, durable, and contain aerodynamic properties. The modification process is associated with negative environmental footprints. Consequently, Baier, Rausch and Wagner (2020) stated that the fibers used in the production of activewear are either synthetic or natural with the most common being polyester and cotton. The synthetic fibers utilized in the activewear are non-biodegradable and nonrenewable. The synthetic fibers are produced from polymers using chemicals in an energy-intensive process. Thus, the fact that the synthetic fibers are non-biodegradable reflects their negative implications to the environment.

On the contrary, Nam, Dong and Lee, (2017) had a positive opinion regarding the use of synthetic fibers in manufacturing activewear apparel. Synthetic fiber enhances the product's life cycle and durability. The durable and long-lasting products have a longer life cycle hence can be used by consumers for a long time. Consumers will not have to purchase the products more frequently or throw them away early (Dissanayake, 2019). Thus, the use of synthetic fibers promotes sustainability when consumers play a role in ethical purchasing and uphold proper waste management practices. The investment in the longevity of the products is a strategy for achieving environmental sustainability amongst the activewear companies (Shen & Li, 2015). Nonetheless, the investment in the longevity of the products implies that the demand for the manufactured products will reduce as the customers will use the products for a long time. Negative economic implications are a result of investing in longevity strategy for sustainability due to the reduced demand (Kim & Oh, 2020). As a result, the majority of activewear businesses prefer to invest in innovation and sustainable materials rather than product longevity.

Ingram (2019) established that the product innovations in the production of activewear contribute positively to sustainability elements. Customer preferences and expectations are the key drivers for product innovation in the fashion industry. The use of composite to increase the performance of sportswear is an example of eco-friendly product innovation in the textile industry. The use of composites also increases the competitive advantage of activewear companies since it results in the production of high-quality apparel. However, composites are produced using polymers and fibers in a process that requires large quantities of non-renewable sources of energy. As such, Kim and Oh (2020) noted that the use of non-renewable sources of energy results in the depletion of natural resources such as oil. Furthermore, the production of composites demands the use of reagents and chemicals that are non-biodegradable. Shen and Li (2015) argued that the activewear business contributes to landfills since the products are non-biodegradable and difficult to be recycled. The durability of the sportswear products makes it difficult for them to decompose after disposal. Consequently, Park and Kim (2016) found that 80% of the waste management issues are determined in the design phase of the activewear products. The sportswear companies should adopt the use of renewable sources of energy and emphasis on organic fibers as an alternative to synthetic fibers to reduce the negative implications of the production process to the environment. Sustainability principles should be upheld from the extraction of raw materials to the end life of the product life cycle.

Shen and Li (2015) established that consumers have a significant role to play in achieving sustainable production of activewear products. The inappropriate use of the products and the unethical disposal behaviors have negative implications for the environment even when the products are ethically manufactured. Haanaes, Michael, Jurgens and Rangan (2013) noted that consumers are increasingly becoming aware of how their purchasing behaviors impact the environment and society at large. However, consumers are used to purchasing trendy and fashionable activewear and feels less guilty about their waste disposal habits. The fashion-driven purchasing behaviors has resulted in the generation of a huge amount of waste from the clothing sector. Consequently, Jung and Jin, (2016) found that 16.6 tonnes of clothing waste are collected annually in the US. From the 16.6 tons, only 15% of the waste is collected back for recycling by the textile industry. The trend shows that over 85% of the clothing waste contributes to landfills. Recycling raw materials result in the reduced cost of production for the manufacturers and prevent landfill waste.

* + 1. **Sustainability in innovation**

Park and Kim (2016) noted that the innovation of raw materials such as fibers for activewear companies is changing the fashion industry. The use of the materials such as Hemp fibers shows that the manufacturers are increasingly becoming sensitive to sustainability. The fibers are resilient, durable, and consume little amount of water when planted compared to cotton. Furthermore, the hemp fibers do not require artificial herbicides that contaminate runoff water. However, Clarke-Sather and Cobb (2019) noted that the majority of the countries are reluctant to adopt hemp as the main raw material for textile products. Hemp is produced from Cannabis Sativa which is an illegal drug in a majority of western countries. Cannabis sativa is a drug and contributes negatively to social sustainability (Kim & Hall, 2015). In China, hemp is the main source of fiber for textile companies since China does not prohibit the growing of cannabis Sativa. Stinging nettle is a preferred source of natural fibers by activewear manufacturers due to its versatility, durability, and ability to adapt to warm and cold weather. Also, the stinging nettle has no legal problem hence sustainable than hemp. Haanaes, Michael, Jurgens and Rangan (2013) also noted that the coffee ground is utilized in the manufacturing of sportswear products. The coffee ground is mixed with polymers to make durable yarn that can be utilized to produce activewear. The fibers made from the coffee materials dry quickly and have anti-odor qualities hence effective for sporting products.

Kim and Oh (2020) recognized the adoption of lean manufacturing methods amongst textile companies as sustainable innovation. Lean manufacturing involves boosting productivity while minimizing production time and eliminating waste. Thus, lower lead time and improved quality are achieved when lean manufacturing is adopted amongst the fashion manufacturers. Additionally, Clarke-Sather and Cobb (2019) noted that lean manufacturing helps to increase operational efficiency and improve the quality of the garments produced. The businesses that have adopted lean manufacturing innovation experienced a reduction in the production cost and increased output. The lean manufacturing innovation demands the management of waste in seven steps which are overproduction, motion, transport, inventory, defects, over-processing, and waiting time. The overproduction of the apparel that exceeds the demand results in inefficiencies in inventory. Jung and Jin, (2016) noted that the young activewear companies in the US are avoiding overproduction by the adoption of effective inventory systems. Overproduction results in the consumption of large volumes of raw materials. Therefore, overproduction contributes to landfill waste and greenhouse gas emissions.

Laser technology is a type of sustainable innovation in the textile and clothing industry that helps to reduce the cost of production. Muthu (2018) stated that laser technology is implemented in the textile industry to overcome human errors in measuring, modeling, and predicting the most suitable fabric for certain garments. Also, laser technology helps to perform simulation, scanning, mass production, 3D prototyping, among others (Bruun & Langkjær, 2016). The clothing manufacturers that apply laser technologies can predict the outcomes of the fabrics when utilized to make certain clothes. As such, the technology helps in meeting customer expectations and boosting operational efficiency. Claudio (2007) established that the 3D body scanning helps to resolve fitting issues and hence leads to the production of garments that match the preferences of the customers. The use of the laser also helps to avoid the time-consuming and energy-intensive process. The companies that have adopted laser technologies are effective in cutting fabrics, drawing, designing, and resolving the measurement issues.

Ahmad, Miskon, Alabdan and Tlili (2020) stated that laser technologies help to enhance production efficiency. The laser based optical technologies help to detect the faults in fabrics and ensure that the products meet the customer’s specification. As such, there is a significant reduction in landfill waste amongst the companies that utilize laser technologies in the production of garments. The earlier detection of the defects is key to improving the quality of the clothes produced. Additionally, Bruun and Langkjær (2016) recognized that fraying problems are solved by the adoption of laser cutters. The laser cutters ensure that the edges of the garments are well finished and meet consumer expectations. Sustainability is promoted by the use of laser cutting and other innovations to enhance operational efficiency (Dissanayake, 2019). The companies utilizing the laser technologies minimize the cost and hence effective use of resources.

Medini, Le Duigou, Da Cunha and Bernard, (2015) recognized that the fashion manufacturers are shifting from mass production to customized production of garments to match the personalized preferences. The customers have varying tastes and preferences hence the need to customize the production to match the unique expectations. The innovations such as laser technologies have enabled the mass customization of the products to match customer preferences. Dissanayake (2019) noted that mass customization is facilitated by the advancement of technology in manufacturing. Customization of activewear is considered a collaborative approach where the manufacturers link with the customers to ensure the products meet the personalized preferences. The purchasing behaviors of the customers are moving from the physical domain to the virtual domain due to technology improvement (Kim & Hall, 2015). Virtual prototyping, computer-aided designs, and 3D scanning enable mass customization. The mass production of garments in the past resulted in unsustainability issues such as landfill waste due to frequent disposal. The mass production resulted in the companies selling the activewear at a cheaper price hence motivating the customers to purchase more and dispose of more frequently. Furthermore, Muthu (2018) stated that mass production resulted in the massive wastage of energy, water, and increase hazardous wastes in the environment. Haanaes, Michael, Jurgens and Rangan (2013) stated that the fashion industry will contribute to a quarter of the carbon waste by the year 2050 if unsustainable practices such as mass manufacturing are upheld. As such, customized activewear is a sustainable innovation in the clothing and fashion industry that is eco-friendly.

* + 1. **Sustainability in supply chain management**

Ahmad, Miskon, Alabdan and Tlili (2020) defined supply chain management as an integrative model that entails planning and controlling the flow of resources to and from the company. Supply chain management involves suppliers, distributors, producers, and customers. The supply chain management practices purpose to enhance the financial performance of the company. Supply chain management also aims to improve the activities and processes to achieve operational efficiency. Dissanayake (2019) added that the inclusion of environmental aspects in supply chain management constitutes the green supply chain management practices. The young activewear and clothing companies adopt green supply chain practices to enhance operational efficiency and reduce the cost of production (Dissanayake, 2019). The green supply chain management practices include the reduction of the negative ecological consequences of the business processes. The green supply chain practices are incorporated in the product design, material selection, sourcing of the input, manufacturing process, and the distribution of the finished products to the consumers. Muthu (2018) added that green supply chain practices also include waste management practices such as recycling and reuse. However, Ingram (2019) commented that the green supply chain management may be expensive to a business at the initial stages of implementation. The adoption of green supply chain management requires the business to overhaul the production processes. Sustainability is expensive and hampers the young activewear brands from adopting green supply chain management practices.

Olsen-Nauen and Rossebø (2019) stated that most manufacturers of active-wear consumed in the US are based in Asian countries. Manufacturing from the Asian countries is attributed to the availability of cheap labor, raw products, and the skills for mass production. As such, it becomes difficult for the activewear companies in the US to ensure that their suppliers adhere to sustainability practices. Consequently, Baier, Rausch and Wagner (2020) noted that the local manufacturers in the Asian region adhere to their local rules of manufacturing which sometimes contradicts the regulations in the US. The local laws such as the working hours, minimum wages, environmental consideration, in the Asia regions conflicts with those in the US. Thus, the US-based activewear brands that source their products from overseas suppliers have created their code of conduct to guide sustainability practices with their suppliers (Nam, Dong & Lee, 2017). The lack of a universal standardized regulation with regards to sustainability forces brands to create their codes of conduct with suppliers that respect the local laws and uphold human rights demands. The contract is terminated when the suppliers do not adhere to the code of conduct concerning sustainability elements. However, Melewar, Alwi and Chi (2013) argued that termination of the contract is the least alternative considered due to the negative implications to the business. As such, the suppliers and the activewear companies in the US collaborate to enhance the positive brand images by upholding the human rights demands and environmental conservation practices. The scandals and protests surrounding the production of fashion goods forced the US activewear brands to unite to ensure that their suppliers uphold sustainability.

Bonini and Swartz (2014) revealed that only 3% of the fashion products consumed in the USA are domestically sourced. Thus, many fashion organization sources products from other countries. Transportation during the sourcing of products contributes to greenhouse gas emissions. The young activewear brands in the US should hence strategize to source their products from the local manufacturers to minimize the cost of transportation and reduce greenhouse gas emissions. Consequently, De Angelis, Adıgüzel and Amatulli (2017) stated that fashion businesses contribute to 10% of the greenhouse gas emissions. As such, businesses should adopt lean manufacturing approaches to minimize transportation costs. Sourcing of the products from other countries also increases the waiting and the lead time. The longer waiting time contributes to the inventory costs and the consumption of labor and energy through lighting the storage facilities.

* 1. **Perceived value**

Perceive value is defined by the ability of products and services to meet the consumers’ expectations. The marketers emphasize influencing the consumers’ perceived value by demonstrating the positive attributes of the products. Sustainability influences the perceived value of consumers by facilitating a positive brand image and name. Bruun and Langkjær (2016) found a positive association between the perceived value and consumer’s preference for a certain product or brand. The perceived value also influences the purchasing behavior of the customers. The perceived value is a source of competitive advantage and determines the success of an organization (Gardetti & Torres (2017). The customers form a subjective opinion about the products or a brand based on the marketing strategy. The subjective opinion also depends on the actions of a company to the society and the value derived from the products. Muthu (2018) added that the perceived value integrates the cognitive and affective factors that build the brand image. As such, sustainable brands tend to attract positive customer opinions and competitive advantage. Sustainable practices such as recycling waste or using bio-degradable materials in manufacturing tend to attract a positive brand image (Kim & Oh, 2020). Modern consumers are also sensitive to how the companies contribute to philanthropic activities such as involving in charity. Dissanayake (2019) recognized that the companies that adopt eco-friendly processes and contribute to charity organizations experience positive financial performances. The value is not defined by the prices and the quality of the products but the emotional, ethical, environmental, and social components.

* + 1. **The impact of sustainability on customer choice**

Bruun and Langkjær (2016) stated that green purchasing intentions make the customers sensitive on how sustainability is upheld by an organization. The green practices entail the preference for eco-friendly products that are biodegradable and do not contribute to landfills. Consumers are more willing to purchase activewear products from companies that uphold environmental and social sustainability. Additionally, Baier, Rausch and Wagner (2020) stated that the modern era of technology advancement allows the consumers to access sustainability information about the different brands which shapes their opinion regarding the fashion brands. Thus, the companies that manufacture the products ethically attracts a positive reputation and brand image. The marketers utilize the sustainability principles that are practiced in the organization to attract consumers. Haanaes, Michael, Jurgens and Rangan (2013) noted that green purchasing behaviors are a form of the ethical decision-making process that upholds social responsibility. The modern customers take into consideration how their consumption behaviors impact the public at large. The green productions meet the needs and expectations of the customers without compromising the environment or the availability of the resources in the future. Abernathy, Volpe and Weil, (2006) stated that activewear consumers are less sensitive about the materials utilized in the manufacturing of the products. The activewear companies have a role to ensure that their manufacturers adopt green manufacturing practices such as the use of organic fibers instead of synthetic ones.

Baier, Rausch and Wagner (2020) established that the consumers’ perceived benefits of sustainable brands influence their choices of the brands. The customers derive the functional value amongst the sustainable brands which impact positively the purchasing choices and the decision-making process. The functional value is defined as the capacity of a company’s products to meet the performance expectation of the clients. The products must also be utilitarian and beneficial to society at large. Thus, Ingram (2019) stated that activewear companies that provide eco-friendly quality products affect positively consumer choices. The companies that utilize composite to enhance the durability of the sportswear rather than using synthetic fibers have a positive value and attract customers. The marketers emphasize using organic and natural fibers to create a positive perception and attract consumers. However, Rescher, (2017) stated that consumers have a mixed opinion regarding the quality of sustainable products offered by the companies. That is, some customers view that there is no difference between sustainable products and those made from the conventional process. The majority of fashion consumers are performance oriented and hence prefer an active-wear that performs better without considering the environmental implications. Consumers also feel that sustainable activewear offers value for money than those produced through the conventional manner. Kim & Oh (2020) noted that customers are more willing to pay for premium prices on sustainable products since it offers values. Therefore, the role of pricing is diminished when consumers are making decisions regarding sustainable products. The ethical values, philanthropic virtues, and social and environmental concerns are the key drivers that determine the customers’ preference for sustainable products (Chi, Gerard, Dephillips, Liu & Sun, 2019). Therefore, the brands that practice sustainability experience positive economic performance since the customers are willing to pay a premium.

Nam, Dong and Lee (2017) stated that consumers gain social benefits when they purchase from sustainable brands. The customers prefer the brands that satisfy their needs and approved by society at large. The sustainable products define oneself to the community and hence are preferred by the customers (Ahmad, Miskon, Alabdan & Tlili, 2020). The sustainable consumption behavior makes the consumer to be viewed as a responsible human who cares about their actions to the community and the ecosystem. Therefore, marketers tend to emphasize how the products are not only beneficial to an individual but the society at large. On the contrary, Rescher, (2017) stated that the culture of the target consumers determines whether the marketers should focus on the social benefits of the products. The collectivist consumers emphasize how the product is beneficial to the community at large. However, individualistic consumers are less concerned about the social implications of their consumption behaviors and only care about their benefits (Bonini & Swartz, 2014). As such, US consumers may be less likely to be concerned with the social implications of a product due to their individualistic culture (Yuchi, 2020). The marketers in the US therefore emphasize how the product is beneficial to an individual and the environment. In a collectivist culture like China, the marketers emphasize how the activewear products impact an individual and the society at large. Therefore, the degree of sensitivity to the social and environmental aspects of sustainability depends on the culture of the consumers.

* 1. **Limitation in implementing sustainability**

Taticchi and Demartini, (2020) stated that activewear companies fail to achieve corporate sustainability due to the lack of metrics to evaluate the environmental implications of certain practices. The young activewear brands lack a method to evaluate the costs of environmental aspects such as climate change to business operations. Thus, the organizations do not factor in the costs associated with climate change in the major decisions of the business. Most companies tend to overlook how certain internal processes contribute to environmental degradation. Sikdar, Sengupta and Mukherjee (2017) added that young activewear businesses do not realize the financial risks of their investment with time. The issues such as water scarcity and environmental changes need to be addressed in the long-term strategies for the company. The young activewear companies hence miss opportunities to improve the economic performances by foreseeing the scarcity of resources in the future (Kim & Oh, 2020). However, Orsato (2009) recognizes that the companies that prepare for the environmental changes experience performance improvements. The majority of successful activewear brands integrate the changes in the environmental aspects in their business strategies. That is, the companies prepare for resource scarcity by innovating and implementing organic fibers that do not require large quantities of water to grow.

Medini, Le Duigou, Da Cunha & Bernard, (2015) also revealed that the conflicting opinions of the stakeholders in the organization limit an organization from achieving sustainability. The interests of the financial team and the environmental conservation teams in the organization may not be aligned hence hampering sustainability. The financial teams emphasize the strategies that result in economic sustainability and sometimes overlook the social and environmental sustainability elements. Consequently, Yuchi, (2020) noted that sustainability is expensive for young organizations since it requires heavy financial investment. Therefore, most of the young activewear in the US is reluctant to achieving sustainability due to financial constraints. The finances in the young activewear companies are allocated for growth and expansion rather than involving in sustainability factors (De Angelis, Adıgüzel & Amatulli, 2017). The internal capital allocations decisions majorly emphasize the economic outcomes and less focus on the environment. Similarly, Sylvain, (2017) established that the limited understanding of the impact of sustainability in financial performance is a key impediment to achieving sustainability. The decision-makers in a company may not be able to forecast the advantages of upholding sustainability in the short-term (Clarke-Sather & Cobb, 2019). Many stakeholders focus on achieving the short-term goals hence ignoring the sustainability elements.

* 1. **Theories related to the research questions**

The product process innovation cycle entails different stages which are problem identification, generation of ideas, collection of proposals, project implementations, evaluation of the outcomes, and incorporating the lessons in the next innovations (Rescher, 2017). The problems as a result of unsustainable business practices that demand innovation include the high cost of production and inefficiency. The generation of ideas entails filtering the possible solutions and considering the best alternative to solving the problem (Chi, Gerard, Dephillips, Liu & Sun, 2019). For instance, a textile manufacturer can either decide to recycle the waste or purchase the input from the suppliers. The recycling of waste is more sustainable and contributes to a lower cost of production. The most appropriate decisions are implemented and evaluated to identify their strengths and limitations. The ideas that do not result in positive implications are reconsidered and provide the path for further innovation (Orsato, 2009). Innovation is a continuous process and involves improving the production processes and products.

Consumer value propositioning is a theory for targeting potential clients by providing value in the products and services. The marketing messages determine the customer value proposition and the success of the marketing strategy. Sikdar, Sengupta and Mukherjee (2017) stated that the value proposition in marketing is defined by the core strategies and an emphasis on how the services are provided. The suppliers have a role to develop positive value propositions by enhancing sustainable practices (Yuchi, 2020). For example, the manufacturers can create a sustainable value proposition to the customers by using organic materials to enhance the performance and durability of the products rather than synthetic fibers. The sustainability value proposition differentiates a brand from the competitors hence a competitive advantage. The majority of the activewear brands are engaging in sustainability activities to create value for the clients (Möllering, 2007). Some of the strategies used by the company to achieve sustainability include the elimination of energy-intensive processes and adopting effective sustainable supply chain practices. The young activewear companies create value for the customers by conducting research on customer preferences and customizing the products to meet unique customer expectations.

Sustainability oriented business model is adopted by the textile and clothing brands to achieve competitiveness and promote the customer value proposition. The sustainability-oriented business models emphasize meeting the social and environmental aspects to facilitate economic performances (Medini, Le Duigou, Da Cunha & Bernard, 2015). In the past, business utilized the conventional business models which emphasized the benefiting from economies of scale and production efficiency. Nonetheless, the conventional models were counterproductive in reducing the cost of production. The conventional models are associated with the additional cost of inventory for storing excess stock (Möllering, 2007). Thus, the failure to adhere to the social and environmental aspects results in declining profits and high cost of production. The adoption of lean manufacturing is an example of a sustainable oriented business model that reduces the environmental impact of business activities and improves economic performances. The sustainable business models enable a business to innovate on the eco-friendly practices that result in sustainable products. The sustainable oriented business models emphasize operational maximization, organization changes, and system building. Operational optimization involves a reduction in manufacturing time and adopting the most energy-efficient practices (Sylvain, 2017). The organization should transform to accommodate the sustainability of business models and innovations. Furthermore, sustainable business models should be embedded in deep organizational culture. All the stakeholders in the company should support sustainability innovations to achieve operational efficiency.

* 1. **Summary of the literature**

The literature review has established that activewear companies that uphold social and environmental sustainability automatically attract positive economic performances. The young activewear brands and the fashion industry at large constitute a significant portion of landfill waste and greenhouse gas emissions. The customers are becoming more sensitive and cautious about their purchasing behaviors that contribute to unsustainability. As such, the majority of the young activewear companies are adopting collaborative approaches to meeting the social and environmental aspects of sustainability. The eco-friendly manufacturing processes such as lean production are adopted to minimize the social and environmental impacts of the various business operations. Furthermore, innovation and embracing technology also help activewear companies to achieve sustainability. The innovations such as green supply chain management practices, customized production of activewear, and laser technologies help to achieve sustainability in the clothing industry.

1. **Primary Research Methodology**
	1. **Framework definition**

This research is aiming at evaluating the perceived value of sustainability for young activewear companies in the U.S., and the following principles should be applied: (1) research survey is designed to add new values to existing researches, (2) it should be systematic, simple and logical, (3) it should be empirical and can truly inspire actual young activewear companies. This means that this research is supposed to be focusing on one very specific target and the research questions should be circling tightly around the aim. Based on the research purpose, a quantitative approach is preferable, considering that the research audiences are mass customers. Here we can refer to the process proposed by A. Field (Field 2013:3):



Source: A. Field, Discovering statistics using IBM SPSS statistics, (2013:3)

In order to get as close as possible to American customer’s perceived value of sustainable sportswear, this research will use online tool to get both primary data and secondary data. The key point here is to identify the main factors that affect customers’ choice from which we can evaluate how much of a role that sustainability plays in customers’ mind. Due to budget limit, here we are able to collect 250 results from general population, which is not perfect but is good enough to represent a large amount of audiences. Meanwhile, this research will also use some secondary data as reference and comparison to the survey result. Afterall, the study audience is all the potential customers on sportswear mass market. Table 1 shows the whole survey:

***Table 1. Online Survey***

**Survey Questions**

Q1: What is your gender?

1. Male B. Female

Q2: How old are you?

1. < 18
2. 18 - 29
3. 30 - 44
4. 45 - 60
5. > 60

Q3: How much do you spend on sportswear for yourself on a typical year?

1. Less than $150
2. $150 to $349
3. $350 to $600
4. More than $600

Q4: When buying sportswear, how much do you care about the environmental impact of the product?

1. Don’t care at all
2. Not important enough to change my choice on product/brand
3. Would compare and may switch to greener product/brand
4. Intentionally search for and buy sustainable activewear

Q5: What might stop you from choosing sustainable sportswear? (multiple choices)

1. Price
2. Limited style / color
3. Concern about quality
4. Lack of information exposure
5. Other (please specify)

Q6: In which situation you are more likely to know more about sustainable sportswear?

1. If my favorite brands encourage it
2. If I personally see the production process
3. If I see it on social media or other online ads
4. If my family / friends / colleagues recommend
5. If it's introduced on non-advertising media (classes, books, news, documentary film)

Below is Table 2 that demonstrates the three major perspectives of the research methodology: research question design, related theory and hypothesis, and variable designation.

***Table 2. Research Process of the Study***

**Purpose**:

To understand customers’ attitude, concerns and perceived image of sustainable sportswear.

**Related Research Questions:**

RQ1: how much do customers care about the environmental impact of sportswear?

RQ2: What are the biggest concerns that customers have towards sustainable sportswear?

RQ3: Which way triggers more curiosity from customers to learn about sustainable sportswear?

**Dependent Variables:**

Perceived value and image of sustainable sportswear, expressed in the attitude, concerns and impression of customers.

**Independent Variables:**

Gender, age, money spent on yearly basis

**Hypothesis:**

H1: People currently do not trust sustainable sportswear and they have actual concerns.

H2: Current information and introduction of sustainable sportswear is not enough to convince the audiences.

* 1. **Survey design methodology**

Three most important things when conducting a survey are:

**Existing surveys and their conclusions:**

Nosto ran a survey through online survey company Maru/Usurv4 in April 2019. The responses from 2000 respondents who live in either the U.S. or UK showed that the top two consumer demands for fashion industry are sustainable practices and fair wages.

Despite of this positive attitude towards sustainability, only 29% of consumers would like to pay for the HIGHER markup due to sustainable production. 62% consumers even expect discounts on sustainable clothes, which means that consumers might have perceived less value towards those products than what is presented by the company. This as a result requires further research.

Ideally there should be a comparison between customers’ perspective and companies’ perspective especially regarding to price. Of course, presenting the real value effectively to customers is very important and this can be done by all kinds of advertisement, in-store sales people and third party certificate and educational document. However, most companies do not reveal the real cost of their products because they do not want to expose how much markup they are charging. Nevertheless, some young fashion companies are trying to break through such taboos. For example, the rising young fashion company Christy Dawn focusing on ethical production, is embracing the reality that the margin is getting smaller due to sustainable practices. They revealed that their average cost per item is $80, so a 3X markup can shoot their retail price easily up to $220 range. This is much smaller compared to many other fashion retailers who can possibly sell at 8X prices. This is not much different from sportswear retail price which is on average four to eight times the FOB price.

**The relationship between my survey and my research purpose:**

The first two questions are asking about gender and age. Although this research is not targeting at a certain gender or a specific age group, these two factors might cause different tendency in their responses. In this way, we can discover if there is a significant difference related to gender and age regarding to their attitudes towards sustainability.

The third question is asking the yearly expense on activewear for oneself, because we want to know how much money people spend for themselves regardless their income. The reason not asking for income and emphasizing on “oneself” is that someone might be spending someone else’ card for clothes.

Question 4 is meant to examine respondents’ current attitude towards sustainable sportswear without discussing the actual concern so as to avoid overlapping with question 5. “Not care at all” means that sustainability is irrelevant when buying sportswear. “Not important enough to change my choice on product/brand” means that if the customers have a strong preference towards certain products/brands, it does not matter to them anymore if the products are not ethically produced. In another word, for people choosing this option, it means that they would put “going green” into consideration only when choosing among similar products or among brands they like almost equally. Choice C “would compare and may switch to greener product/brand” means that sustainability is a fairly important consideration. Choice D “intentionally search for and buy sustainable activewear” means that sustainability is the main drive when choosing sportswear.

Question 5 allows the respondent to choose all the concerns he/she has towards sustainable sportswear with the possibility of adding something else not on the list. Here it does not ask the consumers to rank because the concerns listed might be interrelated. For example, a customer might think that a pair of leggings is overcharging because the quality is not up to the expectation, not really because he/she cannot afford it. As a result, this question does not let respondents rank the choices.

Question 6 wants to figure out if customers’ attitude could be changed if they get their information about sustainable sportswear differently. This question can also reflect customers’ attitude and concerns. For example, if a respondent selects D “if it's introduced on non-advertising media (classes, books, news, documentary film)”, it could mean that this respondent do not really trust advertisements and probably would doubt the sincerity of companies selling sustainable sportswear. If so, the companies probably need to make their advertisements based on scientific fact or even advocate educational videos from professionals.

**How effective are the responses I receive:**

This survey is conducted through Survey Monkey which is the most accessibly tool on the U.S. market for individual researcher like me. The target audience would include both women and men for all adults in the U.S.. The estimated margin of error is 6%.

***Exhibit 1. Survey audience profile***



***Exhibit 2. Survey targeting options***



***Exhibit 3. Expected responses quantity***



* 1. **Comparison with company perspective**

It is very important for this research to compare customers’ concerns towards sustainable sportswear with companies’ concerns or interests. Only in this way we can prove that there is truly indeed a mismatch between customers’ expectation and companies’ aspiration. With this knowledge, the companies can decide if they need to update technology, improve supply chain management or simply change their advertisement.

In the survey, question 5 asks respondents to select all their major concerns that might stop them from buying sustainable sportswear. If we want to compare customers’ concerns with actual environmental and economic effect on manufacturing sustainable sportswear, we can exclude choice D “lack of information exposure”. The reason is that this choice has nothing to do with product itself.

The open answer for choice E will be reviewed individually. We assume that there will not be many of them.

Considering that the environmental impact of clothes is mostly embedded in the stage of design and production, here we would focus on choice A, B and C, namely price, design and quality to compare.

Design, quality and price are often internally linked. For example, producing fibers by polymer extrusion or agriculture makes the largest contribution to the carbon footprint of clothing*[[1]](#footnote-1)*. This type of fiber such as polyester is however one of the most commonly used fiber for sportswear especially due to the fact that it is extremely durable and inexpensive. Since durability is one essential element for being sustainable, polyester is worth considering. From customers’ perspective however, it might be seen as a cheap fiber, not sustainable and not as comfortable as natural materials such as cotton. While talking about cotton, people generally do not believe that it is a good material for sportswear because of its limited ability in absorbing sweat and it loses shape easily. However, with controlled cotton production, better weaving technic and careful dying process, cotton can be used to make premium sportswear with a largely extended longevity. Not to mention that cotton by nature is more sustainable than synthetic sportswear. It is true that growing cotton consumes a lot of water yet a polyester shirt has more than double the carbon footprint of a cotton shirt. For this problem the best solution is using organic cotton. This however will certainly lead to a higher price. The dilemma here is that it is probably harder to convince customers to pay for the premium because they might be worried about the durability of cotton made sportswear. So companies need to carefully evaluate all the choices they have and they also need to work on their explanation of their choices to reduce customers’ concern.

1. **Primary Research Analysis**

**4.1. Descriptive statistics**

**4.2. Correlations**

**4.3. Perceived value**

**5. Discussions, conclusions & contributions**

**6. Limitations**

By studying U.S. general market’ attitude, concerns and perceptions of sustainable activewear, young companies or those who are considering entering this market can refer to when they develop their products and marketing strategy. The sustainability of activewear is mostly determined at the design stage, followed by production. A comprehensive understanding of customers’ perceived image of sustainable activewear can serve as a powerful reference when designing the product because ultimately every company wants their products to be seen as worthy. However, this research is not a technical study of different materials, technologies or machines, meaning that it is up to the company to choose the tools and resources that serve the best for their design and production. Meanwhile, this research is also not a discussion on marketing strategy, meaning that it is up to the company to decide what sales channels and advertisement to use. However, by reading this research, companies should have a clearer mind about customers’ feelings and worries for sustainable activewear so that they can adjust their design, supply chain and sales accordingly.

Another limitation is that even with an open answer in the questionnaire, we might still not be able to discover all possible concerns that customers have especially those they do not even realize. Also even if a company achieve everything in their product that gives customers no reason to worry, it still does not guarantee a success on making profit as expected. In short, this research is not the ultimate guide to customers’ mind.

Last but not the least, the responses we collect, although all from the U.S., might not represent all the whole market, especially considering that the U.S. is extremely vast and diversified. So each subsidiary market might respond differently. If a company is targeting at a specific geographic area or a specific ethic group, then further research is definitely needed targeting at that region/group.

**7. Bibliography**

Sikdar, S. K., Mukherjee, R., & Sengupta, D. (2017). *Measuring Progress Towards Sustainability A Treatise for Engineers*. Cham: Springer International Publishing.

Nidumolu R, Prahalad CK, Rangaswami MR (2009). *Why sustainability is now the key driver of innovation* (September). Harvard Business Review, Watertown, MA.

Textile School (2018, March 18). *Quality Control in Garment Manufacturing*. (2020, https://www.textileschool.com/488/quality-control-in-garment-manufacturing/).

McLoughlin, J., & Sabir, T. (2018). *High-performance apparel: Materials, development, and applications*. Duxford, United Kingdom: Woodhead Publishing is an imprint of Elsevier.

Liu, R., Fung, E., & Abida, Y. (2020). Evaluation of perceived comfort and functional performance of activewear. *Latest Material and Technological Developments for Activewear,* 89-118. doi:10.1016/b978-0-12-819492-8.00005-3.

Ellen MacArthur Foundation, *A new textiles economy: Redesigning fashion’s future,* (2017, http://www.ellenmacarthurfoundation.org/publications).

Abernathy, F., Volpe, A., & Weil, D. (2006). The future of the apparel and textile industries: prospects and choices for public and private actors, *38*.

Ahmad, S., Miskon, S., Alabdan, R., & Tlili, I. (2020). Towards Sustainable Textile and Apparel Industry: Exploring the Role of Business Intelligence Systems in the Era of Industry 4.0. *Sustainability*, *12*(7), 2632.

Baier, D., Rausch, T. M., & Wagner, T. F. (2020). The Drivers of Sustainable Apparel and Sportswear Consumption: A Segmented Kano Perspective. *Sustainability*, *12*(7), 2788.

Baier, D., Rausch, T. M., & Wagner, T. F. (2020). The Drivers of Sustainable Apparel and Sportswear Consumption: A Segmented Kano Perspective. *Sustainability*, *12*(7), 2788.

Benson, L. M., & Reczek, K. (2016). *A guide to the United States apparel and household textiles compliance requirements*. US Department of Commerce, National Institute of Standards and Technology.

Bonini, S., & Swartz, S. (2014). Profits with purpose: How organizing for sustainability can benefit the bottom line. *McKinsey on Sustainability & Resource Productivity*, *2*, 1-15.

Boudreau, K. J., & Lakhani, K. R. (2013). Using the crowd as an innovation partner. *Harvard business review*, *91*(4), 60-9.

Bruun M.B., & Langkjær A.M., (2016). Sportswear: Between Fashion, Innovation, and Sustainability, Fashion Practice, 8:2, 181-188, DOI:10.1080/17569370.2016.1221931

Chi, T., Gerard, J., Dephillips, A., Liu, H., & Sun, J. (2019). Why US consumers buy sustainable cotton made collegiate apparel? A study of the key determinants. *Sustainability*, *11*(11), 3126.

Clarke-Sather, A., & Cobb, K. (2019). Onshoring fashion: Worker sustainability impacts of global and local apparel production. *Journal of Cleaner Production*, *208*, 1206-1218.

Claudio, L. (2007). Waste Couture: Environmental Impact of the Clothing Industry. *Environews*, *115*.

De Angelis, M., Adıgüzel, F., & Amatulli, C. (2017). The role of design similarity in consumers' evaluation of new green products: An investigation of luxury fashion brands. *Journal of Cleaner Production*, *141*, 1515-1527.

Dissanayake, D. G. K. (2019). Does Mass Customization Enable Sustainability in the Fashion Industry?. In *Fashion Industry-An Itinerary Between Feelings and Technology*. IntechOpen.

Ellen MacArthur Foundation, *A new textiles economy: Redesigning fashion’s future,* (2017, http://www.ellenmacarthurfoundation.org/publications).

Gardetti, M. A., & Torres, A. L. (Eds.). (2017). *Sustainability in fashion and textiles: values, design, production, and consumption*. Routledge.

Haanaes, K., Michael, D., Jurgens, J., & Rangan, S. (2013). Making Sustainability Profitable. *Harvard Business Review*.

Haanaes, K., Michael, D., Jurgens, J., & Rangan, S. (2013). Making sustainability profitable. *Harvard business review*, *91*(3), 110-115.

Ingram, J. S. (2019). Innovating the apparel industry in the United States: Designers and small brands purchasing sustainable textiles.

Ingram, J. S. (2019). Innovating the apparel industry in the United States: Designers and small brands purchasing sustainable textiles.

Johnson, M. W., Christensen, C. M., & Kagermann, H. (2008). Reinventing your business model. *Harvard business review*, *86*(12), 57-68.

Jung, S., & Jin, B. (2016). From quantity to quality: Understanding slow fashion consumers for sustainability and consumer education. *International journal of consumer studies*, *40*(4), 410-421.

Kim, H. S., & Hall, M. L. (2015). Green brand strategies in the fashion industry: Leveraging connections of the consumer, brand, and environmental sustainability. In *Sustainable Fashion Supply Chain Management* (pp. 31-45). Springer, Cham.

Kim, Y., & Oh, K. W. (2020). Effects of Perceived Sustainability Level of Sportswear Product on Purchase Intention: Exploring the Roles of Perceived Skepticism and Perceived Brand Reputation. *Sustainability*, *12*(20), 8650.

Kim, Y., & Oh, K. W. (2020). Effects of Perceived Sustainability Level of Sportswear Product on Purchase Intention: Exploring the Roles of Perceived Skepticism and Perceived Brand Reputation. *Sustainability*, *12*(20), 8650.

Liu, R., Fung, E., & Abida, Y. (2020). Evaluation of perceived comfort and functional performance of activewear. *Latest Material and Technological Developments for Activewear,* 89-118. doi:10.1016/b978-0-12-819492-8.00005-3.

McLoughlin, J., & Sabir, T. (2018). *High-performance apparel: Materials, development, and applications*. Duxford, United Kingdom: Woodhead Publishing is an imprint of Elsevier.

Medini, K., Le Duigou, J., Da Cunha, C., & Bernard, A. (2015). Investigating mass customization and sustainability compatibilities. *International Journal of Engineering, Science and Technology*, *7*(1), 11-20.

Melewar, T. C., Alwi, S., & Chi, T. (2013). The effects of contingency factors on perceived values of casual sportswear. *Asia Pacific Journal of Marketing and Logistics*.

Möllering, K. (2007). Basic Concepts of Inventory Management. In *Inventory Rationing* (pp. 9-20). Springer Gabler, Wiesbaden.

Muthu, S. S. (Ed.). (2018). *Sustainable Innovations in Apparel Production*. Springer.

Nam, C., Dong, H., & Lee, Y. A. (2017). Factors influencing consumers’ purchase intention of green sportswear. *Fashion and Textiles*, *4*(1), 2.

Nam, C., Dong, H., & Lee, Y. A. (2017). Factors influencing consumers' purchase intention of green sportswear. *Fashion and Textiles*, *4*(1), 2.

Nidumolu R, Prahalad CK, Rangaswami MR (2009). *Why sustainability is now the key driver of innovation* (September). Harvard Business Review, Watertown, MA.

Olsen-Nauen, K., & Rossebø, S. S. (2019). *Sharing is caring: collaborative consumption in the fashion industry: an explorative study of the consumer acceptance for fashion-sharing business models in the outdoor and activewear market* (Master's thesis).

Orsato, R. J. (2009). Sustainability Strategies: When Does it Pay to be Green? (INSEAD Business Press).

Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: a handbook for visionaries, game-changers, and challengers*. John Wiley & Sons.

Park, H., & Kim, Y. K. (2016). An empirical test of the triple bottom line of customer-centric sustainability: The case of fast fashion. *Fashion and Textiles*, *3*(1), 25.

Pisano, G. P. (2015). You need an innovation strategy. *Harvard Business Review*, *93*(6), 44-54.

Rescher, N. (2017). Rational Choice and Value Complementarity. In *Value Reasoning* (pp. 25-34). Palgrave Macmillan, Cham.

Shen, B., & Li, Q. (2015). Impacts of returning unsold products in retail outsourcing fashion supply chain: A sustainability analysis. *Sustainability*, *7*(2), 1172-1185.

Sikdar, S. K., Mukherjee, R., & Sengupta, D. (2017). *Measuring Progress Towards Sustainability A Treatise for Engineers*. Cham: Springer International Publishing.

Sikdar, S. K., Sengupta, D., & Mukherjee, R. (2017). Sustainability and Innovation. In *Measuring Progress Towards Sustainability* (pp. 23-44). Springer, Cham.

Suarez, F., & Lanzolla, G. (2005). The half-truth of first-mover advantage. *Harvard business review*.

Sylvain, G. (2017). A study on the Quality side of Lean Manufacturing as a complement of an existing Quality Management System. *Master's Dissertation*.

Taticchi •, P., & Demartini, M. (2020). *Corporate Sustainability in Practice: A Guide for Strategy Development and Implementation*. London: Springer.

Textile School (2018, March 18). *Quality Control in Garment Manufacturing*. (2020, https://www.textileschool.com/488/quality-control-in-garment-manufacturing/

Yuchi J. (2020). What Are Major Driving Forces to the US Manufacturing, Financial, and Internet Industries?. In: Value Proposition. Springer, Singapore. https://doi.org/10.1007/978-981-15-5025-6\_5

Moore, K. (2019, June 05). Report shows customers want responsible fashion, but don't want to pay for it. what should brands do? Retrieved February 22, 2021, from https://www.forbes.com/sites/kaleighmoore/2019/06/05/report-shows-customers-want-responsible-fashion-but-dont-want-to-pay-for-it/?sh=56a1f3511782

Tilstra, F., & Beatrice, G. (2021, February 16). Entering the European market for fashion sportswear. Retrieved February 22, 2021, from https://www.cbi.eu/market-information/apparel/sportswear/market-entry#what-are-the-prices-for-sportswear-on-the-european-market

**8. Appendices**

1. Environmental Audit Committee. (2019, February 19). Fixing fashion: Clothing consumption and sustainability. Retrieved February 22, 2021, from https://publications.parliament.uk/pa/cm201719/cmselect/cmenvaud/1952/full-report.html [↑](#footnote-ref-1)