

**Improving Sustainability in the Apparel
Industry through Enhanced Facility-Level
Performance Measurements:**
*A Study on Redesigning the Higg Index
Facility Module*

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ABSTRACT

Following a long, dark history of irresponsible environmental and social practices, the apparel industry has finally begun to acknowledge the need to develop a new standard for doing business more sustainably. The emergence of the Sustainable Apparel Coalition (SAC) has demonstrated the growing interest in this topic among some of the largest apparel brands in the world. The Higg Index developed by the SAC provides a means for apparel companies to self-assess their sustainability performance through a scoring methodology based on uniform metrics. It is comprised of three modules: Brands, Products, and Facilities. The second iteration (2.0) of the Index has begun to introduce quantitative metrics to what was previously only qualitative assessments. However, this revision focused primarily on the Products Module, leaving much room for improvement for the Brand and Facility Modules. Because the facilities in the apparel supply chain can have substantial environmental impacts and a reputation for unjust working conditions, the Facility Module is the logical next area for adapting the Higg Index to make it more robust.

This research thesis attempts to address this need through the development of a new Facility Module that enhances the set of quantitative metrics and calculates more meaningful performance-based scores. The design of this new module will use the current Facility Module as the backbone and will be heavily influenced by existing, highly reputable sustainability frameworks: Global Reporting Initiative (GRI), Carbon Disclosure Project (CDP), and UN Global Compact. These frameworks will be mapped against the existing Facility Module to refine the list of indicators to those that are most relevant and inclusive of quantitative metrics. In particular, each indicator will be assessed to determine if more quantifiable metrics may be

applied and if the associated scoring in place is appropriate with respect to the potential environmental and social impacts.

A survey will then be used to validate these initial assessments. Participants will be asked to provide their opinions on which type of indicators are of greatest importance. Based on these results, the scoring methodology of the Facility Module will be revised accordingly to reflect the most common feedback. The resulting revised Facility Module will then be used to run a comparative analysis to test how well the new version captures and weights relevant performance indicators. Data supplied by the SAC for approximately 5 facilities will be used for to run the assessments through each of the Higg Index versions.

This will hopefully demonstrate that by better quantifying the metrics related to environmental and social performance at the facility level, apparel companies acquire a more complete understanding of the impacts throughout their supply chain. Especially when normalized, the resulting data will help inform decisions for making improvements and can be used for benchmarking against industry peers.

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INTRODUCTION

Research Significance & Objectives

The Sustainable Apparel Coalition's most current version of the Higg Index (2.0) serves as a standard, value chain index that apparel companies can use to self-assess their sustainable performance in the areas of products, brands, and facilities (Chouinard, Ellison, & Ridgeway, 2011). However, the Facilities Module of this Index does not currently capture robust quantitative metrics and the associated scoring methodology does not appear to capture a true representation of the relative importance of indicators, making it difficult to truly understand performance relative to environmental and social best practices. Given the significant size of the industry, there is great potential to reduce environmental impacts and make social improvements at the facility level, which may in turn influence positive changes throughout the supply chain.

The primary objectives of the research discussed in this paper are to design a framework of quantitative metrics that may be integrated with the existing Facility Module of the Higg Index, and to recommend best practices that facilities in the apparel industry may adopt to have the greatest impact.

Background

The apparel industry plays a significant role in the global economy, existing at the core of the developed world's consumer behavior, while playing a pivotal role in the economies of developing countries. According to research published by Euromonitor International, a global market research company, the apparel and footwear industry saw a 5% growth from 2012 to 2013 and the growth in this industry is expected to only increase further with a projection of reaching global sales of \$2 trillion by 2018 (Euromonitor International, 2014). Yet, for an

industry that has a dominant presence in society, it has an unfortunate history of causing widespread environmental harm and inhumane treatment of workers.

Irresponsible Practices in the Apparel Industry

One of the more noteworthy examples of a company that was forced to confront the status-quo due to brand-damaging public relations around misconduct in their supply chain was the public release of the unfair, and dangerous working conditions in Nike's supply chain in the 1990's (Googins, Mirvis, & Rochlin, 2007). As covered by Spar in a Harvard Business School Case Study (Spar & Burns, 2002) a key component to the company's business success was linked to the high profit margin made possible by outsourcing all manufacturing to low-wage regions. However without any oversight from the corporate level of working conditions, Nike's supply chain was subjected to unchecked mistreatment of workers. The result was unjust labor conditions including compensation lower than the minimum wage and unsafe work conditions. When this issue was brought to the attention of the public, Nike was forced to respond.

Nike is not alone as a company which had to address irresponsible supply chain management and this issue persists today as evidenced in more recent events such as the collapse of the Rana Plaza building in Bangladesh in 2013. Killing more than 1,100 garment workers, this incident underscores how safety and labor rights remain insufficiently controlled in the apparel industry (CLINE, 2013).

From an environmental perspective, there are also many practices in the apparel industry that pose direct harm to the environment. For example, the methods used for preparing materials for clothing can be a resource intensive process. The traditional method of textile dyeing can be up to 50% less efficient in terms of energy and water use than newer, more sustainable processes like spin-dyeing (Terinte, Manda, Taylor, Schuster, & Patel, 2014).

The extent of environmental impacts from apparel facilities has even warranted an extended analysis of these factors by the internationally recognized non-profit organization, the Natural Resources Defense Council (NRDC). In 2010, NRDC released a “Clean by Design” (The Natural Resources Defense Council (NRDC), 2010) report in which they explored the various environmental and health threats posed by common practices in the apparel industry. Together with the Council of Fashion Designers of America, the organizations published the report, “Revolutionizing the Global Textile Industry” in which they highlight the various sources of inefficiencies and polluting agents in the apparel industry. These downfalls of the industry are far reaching and include significant waste generated from fabric dyeing in which the first attempt doesn’t match the buyer’s specifications, release of hot water into waste streams that could otherwise be reused in the facility, and the pollutants released into the environment.

Transitioning to More Sustainable Practices

Despite the innumerable examples of how the apparel industry has failed to exhibit responsible corporate operations, more recently, there has been a clear shift among some of the largest players. What spurred this desire to improve environmental and social practices in apparel supply chains has likely been the result of multiple external pressures ranging from consumer demands, to regulatory requirements, to seeking competitive advantage.

Investors have even recognized the industry shift and the many business risks that are diverted as a result. For instance, Oliver Niedermaier founded the private-equity firm, Tau Investment Management with the objective of investing in making supply chains more efficient. The apparel supply chain was of course a logical choice to focus his efforts. Reiterated in an article featured in the Financial Post, Niedermaier commented on his investments as a means of

transforming capitalism in a way that relies on “ethical, sustainable, and efficient businesses that pay decent wages and respect the environment” (Francis, 2014). Tau has demonstrated not only the necessity to rethinking the operations of the apparel industry from the perspective of environmental and social drivers, but also with respect to the bottom line.

Collective Commitment

The establishment of the Sustainable Apparel Coalition (SAC) demonstrates the marked transition in industry acknowledgment of the need to adopt more environmentally and socially responsible practices (Ceres, 2014).

Starting with over 30 top member apparel companies in 2011, the SAC originally used the Outdoor Industry Association’s (OIA) Eco Index and Nike’s environmental design tool to form the basis of a new value chain index covering environmental and social elements of the industry (Ceres, 2014). Known as the Higg Index, there are three main modules with which this tool is comprised: 1) Brand, 2) Products, and 3) Facilities. Within each of these modules, there are sets of indicators categorized under “environment” and “social” aspects. The users of these modules then review all the indicators, providing information where applicable, and tool automatically calculates a score based on pre-assigned possible points for each indicator.

In the words of Yvon Chouinard, the founder and chairman of Patagonia (which, together with Wal-Mart, spearheaded the early stages of the SAC), “[The Higg Index only needed to be] good enough” (Chouinard et al., 2011). The reason there was not a major emphasis on introducing a fine-tuned Index from the onset of the Coalition was because at the time, the main objective was to engage industry peers and spark interest in the subject. As a result, the process of adapting the Higg Index to function as a meaningful tool for measuring performance depends on an iterative process.

Since the pilot of the Higg Index in 2011, the newer 2.0 version was introduced in 2014. This version was the next step in integrating more quantitative metrics into what was previously a qualitative assessment. However, the major updates in quantifying metrics were primarily reflected in the Product Module and not the other two modules.

In considering subsequent revisions of the Index, the argument can be made that concentrating on improving the Facility Module would be the logical next step. Taking into consideration the number of facilities within a given apparel company's supply chain, along with the typically resource intensive processes and unfair labor practices, the cumulative environmental and social impacts across facilities can be profound.

Importance of Improving Data Quality Captured for Apparel Facilities

Currently, the Higg Index Facility Module requests user input in three main categories: 1) Facility Profile, which covers basic information including the facility type, processes, and scale of production; 2) Environmental aspects covering a variety of relevant indicators like energy usage, water consumption and waste management, and 3) Social aspects featuring labor information and external engagement impacts.

For the second and third categories (environment and social), scores are granted for answers submitted but there is currently no checks and balance to ensure the responses are sensible. Therefore, a user can respond to questions with any content and be awarded points regardless of the validity or impact of that response. Moreover, the social category does not include any quantitative metrics and the environmental category has room for improvement in terms of quantifying certain metrics, especially in terms of chemical inventories and discharges.

Without the right quantitative data, companies interested in tracking progress over time and identifying the best areas to focus their efforts are at a loss. This is especially detrimental when

considering the facility module as these tend to be the culprit for many of the most significant environmental and social issues throughout the apparel supply chain.

Dr. Marc Epstein, one of the more prominent sustainability thought leaders stated in his book, *Making Sustainability Work: Best Practices in Managing and Measuring Corporate Social, Environmental, and Economic Impacts*, “Performance measurement and evaluation is an important tool in the implementation of a sustainability strategy and aids in the alignment of strategy, structure, and other systems to achieve success. It is critical to set objectives and targets and measure success against them (Epstein & Buhovac, 2014).”

By enhancing the Facility Module of the Higg Index, there is great potential to capture more meaningful data and weight it according to importance such that apparel companies are equipped with the necessary information for improving sustainability in their supply chains.

Hypothesis and Specific Aims

My research is based on the general hypothesis that: refining the Higg Index Facility Module to include more robust quantitative metrics and meaningful scoring mechanisms will provide apparel companies with valuable data that may be used to make informed decisions for improving the environmental and social performance of their supply chain. This will be tested using sample data from facilities and comparing results produced from the existing framework versus the revised version. The true success of the revised Index, however, may only be understood when the sustainability performance of companies is evaluated more widely under the revised version my research will hopefully help develop.

The primary aims of this research are to assess the existing Higg Index Facility Module to identify performance indicators that are missing or could be presented differently to capture

quantitative metrics and to develop an enhanced version of the Facility Module that offers a more realistic view of the overall environmental and social performance of a facility such that apparel companies may utilize this data for strategic decision making.

METHODS

Reconfigure the Facility Module Excel File

In attempting to develop a Higg Index Facility Module that enhances usability and comparability, the first step will be to critique the existing framework. To do this, I will begin with the complete Facilities Module excel file made available to the public from the SAC website (<http://www.apparelcoalition.org/>). For ease of managing the file and to improve readability, I will reformat the two tabs required for the analysis: “Facility Module – Env” and “Facility Module – SL”. As part of this reformatting, in each tab, I will reserve the first two unused columns to the right for capturing categorical information about each indicator and an assessment of the scoring methodology (described below).

Initial Assessment of Indicators

The first of the newly added columns will be used to signify whether each indicator is currently addressing quantitative vs, qualitative information. The second column will be used to provide an initial rating of how appropriate the possible points that could be earned are for each indicator. A scale from 0-3 will be applied as follows:

0 – Not applicable (it is not possible to receive a point for the indicator)

1 – The possible points earned for the indicator are far from representative of the relative importance, (or, extent of potential impact) of that indicator

2 – The possible points earned for the indicator are somewhat representative of the relative importance but may need to be reconsidered

3 – The possible points earned for the indicator appear to be reasonably representative of the relative importance

Indicator Mapping and Gap Analysis

Following the initial assessment of the current indicators in each tab, I will map other indicators against them to identify potential gaps where important information that should be collected may not yet be included in the Module. The additional indicators will come from three of the most reputable and widely used sustainability reporting frameworks (Roper & Borello, 2013): Global Reporting Initiative (GRI) – including the apparel industry sector supplement, Carbon Disclosure Project (CDP), and UN Global Compact Principles. The reason to source these frameworks for potentially relevant sustainability indicators is because they clearly outline the fundamental metrics that a reporting company should consider. Additionally, because I am looking to understand how more quantified metrics may be incorporated in the Facility Module, these frameworks will serve as a helpful tool in that they often include detailed guidance on how to calculate metrics using standard, expert-accepted methods.

This indicator mapping process will involve adding three additional columns, one for each of the frameworks, to the two tabs under review. In reviewing the three frameworks individually, I will attempt to assign each relevant indicator of these frameworks to the indicators of the Facility Module that most closely correspond to that indicator. It is expected that in some cases, an indicator from one of the frameworks may map to more than one indicator in the Facility Module. These cases will be noted through a color coding system and a “comments” field set up in an additional column. Should it be identified that an indicator from one or more of the frameworks which could reasonably be considered of high importance is not represented in the Facility Module, this too would be noted through color coding and a corresponding comment.

Refining the Indicator List

Once the mapping exercise is complete, I expect a reliable, complete set of indicators will be established. The next task will then be to condense this list into high-level categories. I will first use the overarching categories already referenced in the Facility Module but then introduce sub categories to put more structure around the hundreds of indicators catalogued. Those indicators that were represented across more than one framework and the Facility Module list will have highest priority in ensuring they are covered in the new categories.

Surveying to Validate Indicator Importance

To validate the initial rating assessment of the indicator scoring weights as previously described, a survey will be used to poll the opinions of individuals with familiarity in sustainability performance metrics. Using the web-based platform, [surveymonkey.com](https://www.surveymonkey.com), this survey will be designed according to overarching categories of indicators which are defined from the earlier mapping exercise. For instance, likely categories for environment would include “energy consumption”, “water use and discharge”, and “waste management”. For the social indicators, categories could include “labor rights”, “community engagement”, and “employee engagement”. Within the overarching categories, the associated indicators will be listed. Participants of the survey will then be asked to rank the relative importance of indicators within each category.

The pool of individuals who will be asked to participate in this survey will be based on the single criteria that either due to academic background and/or professional expertise, a proficient understanding of principle sustainability concepts could be expected. Sourcing this audience will come mainly from relevant classes in the Harvard Extension School SEM Program

offered during the spring term, 2015. Specifically, requests will be made for students enrolled in the following classes to participate in this survey:

- E-153: Social Responsibility in Product Supply Chains
- E-170: Environmental Impact Assessment for Sustainable Programs

Additionally, through coordination with the Sustainability and Environmental Management Academic Advisor for Harvard Extension School, a request will be made for email addresses of students who have completed relevant coursework over the last 2 years to extend the requests for participation of this pool as well.

Participants will be given up to two weeks to complete this survey and results will be compiled by taking the average ranking of each indicator.

Redesigning the Facility Module

Using the results of the survey, the Facility Module will be redesigned to enhance the indicators covered such that the most meaningful data is collected and points available for each indicator reasonably represent the associated level of importance. Wherever sensible, indicators will be revised to capture more quantitative information and qualitative indicators that provide insubstantial information may be instead noted as optional comment fields.

Testing the New Facility Module

The enhanced Facility Module will be tested by applying sample facility data to the existing (2.0) version and comparing the results for the same data entered in the new Index. The data for a target sample of five facilities will be collected through the Sustainable Apparel Coalition. If this is not possible, companies will be contacted directly to request offering sample data for the purpose of this research. To maintain comparability, similar types of facilities will be prioritized for this selection.

Expected Results

It is expected that after comparing the results of facility data in the existing Facility Module versus the enhanced facility module, the results would be more sensible for the latter due to the improved granularity of the data. It is also likely that the existing version would show consistently higher scores than the new version as points are awarded regardless of data availability in many cases.

I would also expect that by testing the new version of the Facility Module and comparing these results against the 2.0 version, it may become clear that there are certain indicators that appear to heavily influence scores. These “hot spot” indicators could then help form the basis of a set of recommended best practices.

Limitations

One of the main limitations of this research design is selecting the correct sample of individuals for the survey who may intelligently contribute input to the rankings of indicator importance. It may be that some students participating in the survey are new to the program and have a limited understanding of how performance indicators are used. Related, it may also be the case that survey participants misunderstand elements of the survey and select rankings based on a misperception thereby impairing the quality of the survey results.

TIMELINE

Milestones	Target Dates (2015)
Contact prospective thesis director	Feb 17
Appointment of thesis director	Mar 1
Starting research	Mar 1
Intent to Graduate	Jun 1
First draft of Thesis (Submitted to Thesis Director)	July 1
Final editing	Aug 1 – Sep 1
Final Draft Submitted to Thesis Director and Research Advisor	Sept 1
Binding of the Thesis	Oct 15

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