



## **U.S. Fashion Brands Endeavors toward Sustainability from the Kaizen Perspective: A Data-mining Based Lexical Analysis**

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According to Seuring and Muller (2008) and Pagell and Gobeli (2009, p.279) “Sustainable Supply Chain Management (SCM) indicates to a company’s mission and vision that incorporate environmental and social issues into SCM to enhance the company’s environmental and social performance including its suppliers and customers without hampering its overall economic performance”. From this definition, one can say that companies take up initiatives to enhance the environmental and social impacts of their internal processes, such as manufacturing processes in their sites, and implement other programs for their suppliers and customers so that their processes can also be improved. Despite this, past research has been focused on specific aspects of sustainability from the individualistic view (Carter & Jennings, 2002), and a need for conducting further research focusing on sustainability at the organizational level, in terms of how an organization could have a truly sustainable performance, was pointed out by Pagell and Gobeli (2009). In the case of practicing sustainability, the top management’s inclination and actual practice made at the organizational level are often mismatched (Wheeler et al. 2002).

To help solve this problem, the theoretical perspective of Kaizen philosophy has been reviewed in this paper. Literal translation of Kaizen is “change for the better” (Emiliani, 2006) and the Western interpretation of Kaizen is continuous improvement and refers to “a systematic effort to seek out and apply new ways of doing work, i.e. actively and repeatedly making process improvements” (Anand et al. 2009, p.444). Kaizen could be divided into two major plans: action and philosophy. A Kaizen action plan is about organizing events that are aimed at improving particular operations inside of the organization. These events are consisting of employee teams in all categories. However, they especially put much importance on involving root level employees. On the other hand, Kaizen philosophy is about establishing a culture where all employees are greatly involved in suggesting improvements and implementing them to the company. The continuous cycle of Kaizen activity is consisting of seven stages: “(1) identification of an opportunity, (2) analyzing the process, (3) optimal solution development, (4) implementation of the solution, (5) discussing the results, (6) standardizing the solution, (7) planning for the future” (Choudhury, 2013). Kaizen philosophy has been typically applied in manufacturing company contexts and has yet to be applied and tested for its applicability toward the company’s sustainability goals. That is, is it possible for a company to establish and achieve sustainability goals and structures by implementing Kaizen which is continuous improvement in the workplace?

To answer this question, 44 of publically available sustainability/corporate social responsibility reports from 11 of the top U.S. fashion brands were reviewed. The publishing years of these reports are dated from 2006 to 2018. To investigate whether Kaizen principles are present in these company's reports or not, a computer program, Lexical analysis (Yang et al., 2002) was used to convert a sequence of character (in this case the text data of the reports) into a sequence of tokens (in this case the assigned Kaizen related keywords). A Kaizen vocabulary list of 200 words was prepared that includes words related to Kaizen principles such as "standardization", "streamlining", "optimization", "common causes", "statistical quality control" etc. (Kaizen, 2018). These keywords were then plugged into the python algorithm and the computer program scanned through each report to look for the presence of these words. Each time one of these words were found in a report, the program automatically extracted the sentence where the Kaizen related words were present as an output and provided the total frequency of the Kaizen related words.

**Table 1.** Kaizen related word frequencies across fashion brands published reports

Fashion Brands	Report Publishing Year											
	2006	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Gap	137	170		203		226		161		178	91	
Nike	285		380				290		374		137	
American Eagle				121				50		69		
PVH				78	84	71	57	62	56		70	
Tiffany & Co.					117		159	156	138	145	148	
Levi Strauss					218	19				152	131	
Coach							60	62	65	70		
Ralph Lauren							53		58	79	116	
VF Corp.										89	160	
Kate Spade											43	
Under Armor												85

*Note.* The empty cells indicate the lack of publicly published sustainability/CSR reports

From the results shown in Table 1, it can be easily seen that almost all of the fashion brands seem to have practiced the Kaizen philosophy in their businesses to achieve their sustainability mission and/or goals. First, Gap and Nike used Kaizen principle to describe their sustainability efforts by since 2006. The trends of that have increased until 2017 when there was a sudden drop. Second, American Eagle, PVH, Tiffany & Co., and Levi Strauss have used Kaizen principles fairly consistently since 2010 and 2011. Kaizen principles appear in 2013 reports of Coach and Ralph Lauren, while VF, Kate Spade and Under Armor mention Kaizen principles in 2016, 2017, and 2018 sustainability reports.

Figure 1 shows the word cloud of how these Kaizen principles were used in Nike' 2016 sustainability report. It shows that Kaizen could be a key principle for their innovations, sustainability, processes, teams, management, and improvement. Recycling, water, labor, codes, and footprint are also seen, suggesting Kaizen principles could also help address challenges regarding these topics.



Figure 1. Kaizen related words in Nike reports

This is the first research that shows that sustainability can be enhanced through Kaizen principles. Kaizen principles could be beneficial to the companies to keep pushing their business activities and process toward sustainability throughout the global supply chain. From the results, it is visible that all of these brands are practicing continuous improvement, or Kaizen, inherently, even though the term Kaizen might not be explicitly stated in their sustainability practices. Future research is recommended to see how Kaizen principles could yield improvement in various corporate sustainability goals and structures across different fashion brands worldwide.

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