

Event study case for the implications of sustainability events on a company's share value

Author: Nouredin Tawfik
University of Twente
P.O. Box 48, 7512AE Enschede
The Netherlands

ABSTRACT,

The fashion industry is the second biggest polluter in the world. Due to consumers' awareness of this situation, sustainability became a more pressing matter for textile and apparel companies. One way of improving themselves in this area is to become more environmentally friendly. Hence, these companies started environmental sustainability initiatives to enhance their manufacturing process and make it more sustainable.

This thesis picked five different fashion and apparel companies worldwide and empirically assessed the impacts of their environmental initiatives on the value of the company. The results of these assessments will help companies see the impact of sustainability events could have on their stock value. Moreover, the results will also show that these initiatives could help the companies cut costs, which could financially benefit them and the environment in the long run.

Graduation Committee members:

FIRST SUPERVISOR: DR.IR. W.J.A. VAN HEESWIJK

SECOND SUPERVISOR: DR. A. ABHISHTA

Keywords

Environmental sustainability, Textile and apparel industry, Sustainable fashion, Stock value

This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.



CC-BY-NC

1. INTRODUCTION

1.1 Textile and apparel industry

The textile and apparel industries can be classified among the fastest growing industries worldwide. The industry can be broken down into two main parts: the production of textiles and fabrics from raw materials and the transformation of these fabrics into clothing and other accessories. Textile industries involve designing, producing, and selling the finished goods to the customers (Singh & Khajuria, 2018).

Worldwide textile and apparel industries have an estimated consumption of more than 30 million tons of textile a year. The manufacturing units rely on toxic and harmful chemicals to process the textiles. This leads to an abundant amount of toxic waste, environmental pollution, and public concern (Singh & Khajuria, 2018). This problem creates a severe harmful environmental impact on our world (Chen & Burns, 2006). Throughout this century, there has been increasing concern from societies about environmental issues (Machado, 2018). There are various concepts of the term 'sustainability'; the United Nations defines sustainability as "meeting the needs of the present without compromising the ability of future generations to meet their own need" (United Nations Brundtland Commission, 1987, p.16). Chapy's (2009) 'perspective strategic research' and Hauff & Klien's (2009) paper 'sustainable development' dilate on the UN's definition and proceeds to distinguish three dimensions that are associated with the term 'sustainability.' Those three dimensions are environmental sustainability, economic sustainability, and social sustainability.

1.2 Environmental sustainability

The environmental dimension only will be explored in this thesis. The environmental sustainability dimension is about a company's ability to reduce the harmful impact it has on the environment. This includes the company's ability to use scarce resources in a responsible non-profligate way, reduction of their greenhouse gases emissions, controlled or reduced all kind of waste and plastic pollution (Hauff & Klien, 2009)

Based on the research Phil Kotler conducted in 2011, if businesses do not start changing the way they behave and work, they will no longer be profitable in the long run and eventually cease to exist. This is due to the degradation related impact they would have on the environment. Scarce natural resources will not be easy or cheap to obtain or to use in manufacturing. Additionally, the reputation of the company will be hindered due to the negative impact of being unsustainable on their public image, causing the company's customers to stop buying their products (Kotler, 2011).

This thesis will be focusing on the global fashion companies in the textile industry and their impact on the environment. The reason for this specific industry is that they are the second biggest environmental polluters on the planet (Cotton, 2018). The biggest environmental polluters on the planet is the energy and oil industry. However, this thesis focuses on the impact done by the second biggest polluters instead due to the lack of research done on the textile and apparel companies in this field. The impact of fashion companies on the environment will be elaborated on further in the thesis.

1.3 Research project motivation

This thesis explores efforts that are being done by firms in the textile and apparel industry to reduce harmful environmental impact and promote environmental sustainability. Then this thesis will address the topic of whether these events have an impact on a firm's market value.

The companies that will be analysed will be from the stock exchange market since it will be easier to get financial information on them; moreover, their reports are accessible by the public. The companies will be from the top profiting firms worldwide, which is based on the 'global fashion index' from McKinsey & Company (Hanbury, 2018). These companies are Nike, Adidas, H&M, LVMH and Inditex Zara. These companies have been promoting environmental sustainability practices more than most of the big companies in recent years. In addition to this, companies were chosen from several countries to see if the impact is the same or different around the world.

Furthermore, this study will show literature and background review of theories that explains how companies can become more sustainable and increase in value simultaneously.

1.4 Research Relevance

1.4.1 Academic relevance

This thesis aims to justify why businesses become sustainable and if becoming sustainable truly benefits them or not. Furthermore, it aims to indicate how difficult it is to see if a company is becoming more profitable just because it is becoming more sustainable. This will show if it is financially justifiable for companies to pursue environmental initiatives or not.

1.4.2 Practical Relevance

The research conducted aims to provide statistical data on companies during the time they introduced their sustainable events. This data will show if their stock value and/or their profits were affected negatively or positively within the given time. This research intends to help researchers discover more of the effects of a sustainable event on a company. The outcome will help companies see the benefits or the disadvantages of becoming environmentally friendly.

2. ENVIRONMENTAL SUSTAINABILITY PROBLEMS AND DEVELOPMENTS IN THE TEXTILE INDUSTRY

Environmental issues such as climate change, plastic pollution, and waste pollution have been dominating headlines in the newspapers for the past decade. As previously mentioned, fashion industries are the second-largest polluter in the world (Cotton, 2018), The problems in this industry vary from producing wasteful plastic bags to wasteful consumption of natural resources, e.g., carbon gas footprint and water usage. The supply chain for some of the companies in this industry is not sustainable. Microplastics produced from the textile industries pose a great threat to marine organisms as they are found as a major source of containment in the oceans (Mathalon & Hill, 2014; Remy et al., 2015). The article 'putting a price on global environmental damage' claimed that the top 300 public companies in the world are responsible for almost 2.2 trillion dollars in environmental damage (Wainwright, 2010). The same article argues that the damages will rise to 28 trillion dollars by 2050 if the companies keep operating in the same way they are. These damages are linked to greenhouse gas emissions, water use, air pollution and excessive usage of unsustainable resources. This shows the amount of negative impact the textile industry already has on the environment (Wainwright, 2010).

Nevertheless, many companies already started initiating a sustainability approach towards providing their products (Tan et al., 2016). Design companies such as Nike and H&M are becoming sustainable in many ways – recycling materials, lowering gas emissions from factories, fair trade, etc. For example, H&M, though is becoming more sustainable in its way of producing clothes, the majority of the materials their suppliers are using are not eco-friendly. Even though H&M received a top score on the supplier code of conduct report in 2018, this code

only applies to a small part in their supply chain (Robertson, 2020). Companies such as Nike and Adidas have been promoting their companies to the public as a more sustainable company. They used various ads and marketing campaigns to show the world that they are becoming more eco-friendly (Craato, et al. 2020). For example, Nike's "Move to zero" campaign, which was announced in September 2019, aims to power facilities with 100% renewable energy as a way of tackling climate change issues.

In order to explore this research further, a research question and its sub-questions will be introduced.

3. RESEARCH QUESTIONS

The main aim of this paper is to see the impact of sustainability events listed in section 6 on the share value of the five companies listed in section 1. The reason behind this choice is to identify the benefits behind sustainability initiatives can have on a company and encourage companies to become more sustainable. If there is more research done about this topic to prove the correlation between being sustainable and being more profitable, more companies will be inclined to become more environmentally sustainable. Which brings this paper to the following research question:

How does the implementation of environmental sustainability events by fashion textile companies affect their share value?

Additionally, the next three sub-questions will be answered in the Theoretical Background (section 4), Results and Discussion (section 8) and the conclusion (section 10)

- Sq1: *What kind of theories and practices exists that can explain the connection between being sustainable and the share value of a firm?*
- Sq2: *In what ways do sustainable practices affect the company, the share value, and the environment?*
- Sq3: *Does the stock price of a firm increase or decrease after a sustainability event is introduced? What could that entail?*

4. THEORETICAL BACKGROUND

Some research has already been done about the connection between sustainability and profit. In 2013, Golicic & Smith researched the link between environmentally sustainable supply chain management practices and a firm's overall performance. A study by Gunasekaran & Alain in 2012 discussed the importance of sustainable business developments in manufacturing and services. Keeping a balance between social, economic, and environmental concerns is vital to safeguard the environment. They explained how using methods such as reverse logistics (practices related to the reuse of products and materials) is imperative to safeguarding natural resources. A study by Harvard business review (Haanaes, et al. 2013), proved that organic methods in farming dropped farm's costs, improved average yields by almost 30%, and produced cotton that was more elastic than it was usually grown beforehand. This implies that being sustainable could be financially rewarding. The next five theories are used to explain different ways a company can become sustainable and can measure their sustainability KPIs.

4.1 Resource-based view (RBV):

The resource-based view model suggests that a firm's ability to manage resources is the key to achieving competitive advantage and superior overall performance over its competitors (Russo, 1997). By focusing on a firm's assets, the firms begin to develop

and combine their resources, allowing them to utilize their resources correctly leading to an advantage over their competitors (Joseph, Rajendran, 1992). An example would be if a conglomerate has two different companies in one area. These two companies need delivery of products. Instead of having different schedules and transportation methods for both companies, the conglomerate should try and combine the delivery method of both companies to save costs. This also includes how supply chain optimization can impact the company and the environment positively. This view was developed in order to gain an advantage through careful consideration of the internal resources.

The RBV helps the company realize their dynamic capabilities. This is defined as the "firm's ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments" (Teece, et al.,1997, p.516). In other words, it allows the company to adapt its resources to the fast-changing environment.

To be able to achieve environmental sustainability, firms need to find a way to consume renewable resources instead of scarce resources and to find a sustainable way to use the finite resources. This theory emphasizes the significant value of identifying and using resources in a proper way which will eventually automatically make the company more sustainable and more profitable in most cases, see section 7.7 for examples (Ghera, 2010).

4.2 Corporate Social Responsibility as a long-term success factor (CSR)

This theory highlights the social responsibility of a company and identifies the long-term benefits for a company that is trying to achieve CSR (Brusseau, 2012).

CSR has 4 dimensions:

Table 1: CSR Dimensions

The Economic Responsibilities	The obligation for a business to generate money
The Legal Responsibilities	The accountability of a firm to follow the rules, regulations, and laws
The Ethical Responsibilities	The responsibility of a company to do the 'right' thing even though it is not a legal requirement
The philanthropic Responsibilities	The firm's actions towards independent projects in the society. This is when a firm tries to do good for the community it lives in.

The theory implies that before going on to the next dimension, a firm needs to satisfy the previous dimensions; for example, a company that is suffering economically should not be trying to fulfill the ethical responsibility it has.

Green/environmental CSR can reduce business risk, improve reputation and provide opportunities for cost savings. Green CSR aims to reduce and effects that are harmful to the environment through the business process of a firm. This is a wide range of actions that businesses may take, such as waste management, energy usage, recycling, etc. the implementation of any of these actions could be the cause for cost savings, which in return means more profit (Baumgartner, 2014).

4.3 Sustainability performance management (SPM)

SPM is a method that addresses the KPI's of the social, economic, and environmental aspects of the business (Epstein and Roy, 2003). Measurement of these aspects could help identify components where the business fails to implement sustainability measures and also identifies which components are rewarding the company because of it being sustainable. For example, a study done by Bragdon and Marlin in 1972 showed that reduced pollution from a business is linked to an increase in profit. Furthermore, SPM enables the company to teach their employees about the importance of becoming sustainable and allows the employees to develop their own connection with the objective. This could be very helpful as it empowers all divisions of the company to become more sustainable (Gadenne, et al., 2012).

Using this method, it is easy to measure what steps and actions the company did to reduce the pollution they generate. SPM allows the company to assess and manage its sustainability KPI's making it easier to identify which KPI needs improvement. As soon as a company identifies this KPI, it can begin to improve on it.

4.4 Stakeholder theory

Based on the stakeholder theory, a business should satisfy their stakeholders and not just pursue the highest profit. A stakeholder is by definition "any individual or group of individuals that can influence or are influenced by the achievement of the organization's objectives" (Freeman, 1984). The company needs to comply to different stakeholder demands not just shareholder demands (Freeman, 2010). External stakeholders are customers, suppliers, members of a community, etc. Internal stakeholders are the employees and shareholders. The external and internal stakeholders started to worry about the environment and care more about companies who project a sustainable way of conducting business rather than companies who are solely focused on profit. External and internal stakeholders are putting pressure on businesses to become more sustainable. Business who do not try to be more environmentally friendly suffer from loss of customers (Vithessonthi, 2009). One of the studies done in 2017 states that firms who do adopt sustainability practices have increased financial performance. This shows that some companies benefited from implementing sustainability initiatives (Lassala-Navarré, et al., 2017).

4.5 Linking of theories

These theories discuss the importance of reviewing how business is conducted in the company and trying to utilize the process in a way that makes it more sustainable and less costly. These theories also talk about the importance of considering consumers' views as it may affect the image and profitability of a company. Its previously mentioned how harmful a company could be towards the environment as a result of not paying attention to the location and the methods used to get their materials and the way some of their suppliers dispose of waste. These theories suggest ways to identify these harmful actions and introduce methods on how to overcome them. This will be elaborated on throughout sections 6,8, and 9.

5. RESEARCH METHODOLOGY: EVENT STUDY & METHOD OF DATA COLLECTION

Each companies stock price during the sustainability event years will be analyzed to see the effects of the sustainability event on its company's stock value. This thesis is based on an event study method. Event studies are regularly used for firm-specific and economy-wide events. The event study's objective is to measure

the extra movement in a stock's price (called the abnormal return). This extra movement occurs because of unforeseen information that has the potential to influence the company's future earnings potential. (Zoogah, 2014). According to Mackinlay, the impact of an event on a firm's financial performance or its stock value can be captured by the abnormal returns from the study event. An event study conducted on any company will show all changes in its stock price. An Event study allows the researcher to discover trends or patterns in the stock prices. When the same type of event study model is used to analyze different events of the same type, a trend or a pattern could be revealed, which would help companies assess the effects of these events (Mackinlay, 1997).

A study event is better to use in this scenario than a regular qualitative analysis since it allows the researcher to focus on one specific time frame and one event. Then it allows the researcher to analyze the stock prices in the given time frame, which can show the effects of the event on the company at that time.

To test the sustainability events, quantitative data will be collected then a p-value assessment will be conducted in order to analyze those data. The assessments of the events will then indicate if the hypothesis introduced in section 7 is to be rejected or not. Then a qualitative data about the profits of each company will be collected through their annual financial reports and used as an extra assessment. The outcomes of both assessments will be discussed for each company and a conclusion will be drawn about the effects of sustainability events on a firm's market value.

5.1 Event Study: Gathering of Statistical data

The data that is collected consists of stock values before and after a sustainability initiative conducted by the companies. The procedure of an event study data collection could differ from one study to another. There is no unique one structure for a researcher to follow, rather a general flow of steps (Mackinlay, 1997).

1. **Definition of event and identification of period:** The event must be defined and the period on which the prices of the firm's stock will be examined (event window) should be identified. The events in these cases will be promotional campaigns and/or sustainability initiatives done by the companies
2. **Determine selection criteria for firms:** The criteria could have restrictions that are imposed on the data's availability such as undiscovered data. Hence, the companies that will be chosen must all follow the same criteria in order for any potential biases to be eliminated. The index that will be used for the market is the Standard and Poor's 500 (S&P 500). This will ensure a good representation of the entire stock market.
3. **Data collection:** The firm's stock price data will be gathered using a statistical algorithm based on yahoo.
4. **Estimation period:** This period is defined as the period prior to the event. The estimation period for the events is set to be 250 days and the event period is 25 days. The event window is long enough in order to be able to calculate meaningful estimates of the normal return.
5. **Analysis of data:** As mentioned before, this study is based on a market model. A market model is a "statistical model which relates the return of any given security to the return of the market portfolio" (Mackinlay, 1997, p.18). All measurements and equations are based on Mackinlay (1997) 'Event

studies in economics and finance'. Before the introduction of the abnormal return equation, some notions will be introduced to facilitate the measurement of abnormal return.

"Returns will be indexed in event time using t . Defining $t = 0$ as the event date, $t = T1 + 1$ to $t = T2$ represents the event window, and $t = T0 + 1$ to $t = T1$ constitutes the estimation window. Let $L1 = T1 - T0$ and $L2 = T2 - T1$ be the length of the estimation window and the event window, respectively. The post-event window will be from $t = T2 + 1$ to $t = T3$ and of length $L3 = T3 - T2$ " (Mackinlay 1997, p.19).

$$\hat{\beta}_i = \frac{\sum_{t=T_0+1}^{T_1} (R_{it} - \hat{\mu}_i)(R_{mt} - \hat{\mu}_m)}{\sum_{t=T_0+1}^{T_1} (R_{mt} - \hat{\mu}_m)^2} \quad [1]$$

$$\hat{\alpha}_i = \hat{\mu}_i - \hat{\beta}_i \hat{\mu}_m \quad [2]$$

$$\hat{\sigma}_{\hat{\alpha}_i}^2 = \frac{1}{L_1 - 2} \sum_{t=T_0+1}^{T_1} (R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt})^2 \quad [3]$$

Where

$$\hat{\mu}_i = \frac{1}{L_1} \sum_{t=T_0+1}^{T_1} R_{it} \quad [4]$$

And

$$\hat{\mu}_m = \frac{1}{L_1} \sum_{t=T_0+1}^{T_1} R_{mt} \quad [5]$$

R_{it} and R_{mt} are the return for the event in period t for security i . and let $R_{mt}, t = T, + 1, \dots, T2$, be the sample of $L2$ abnormal returns for firm i in the event window. This leads to the following abnormal return equation

$$AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt} \quad [6]$$

The cumulative abnormal return is equation is

$$CAR_i(T1, T2) = \sum_{t=T_1}^{T_2} AR_{it} \quad [7]$$

5.2 Quantitative Analysis Method Two: P-value

During a statistical test, the p-value is used to decide whether to support or reject a null hypothesis. For this research, a two-tailed test will be used to identify and test the p-value. A two-tailed test is a method that determines whether a mean is greater than or less than a specific range of values. For this scenario, an alpha value of 5% (.05) will be used. Meaning there is a 5% chance there is enough evidence to reject the null hypothesis. Since this is a two-tailed test, the significant level of 5% is divided into two, one at the beginning of the model and one at the end of the model, as seen in figure 1.

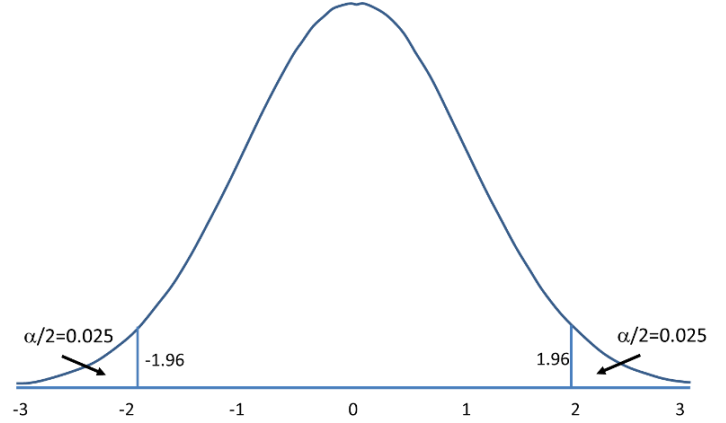


Figure 1: Two-Tailed Test

This indicated that if the p-value is below 2.5% or above 97.5% (100-2.5), then there is enough evidence to reject the null hypothesis. If the p-value is close to the significant level, for example (3% or 97%), then the evidence for the rejection of the null hypothesis is weak. However, if the p-value is far from the significance level, for example (25%, 44%, 66%) indicates strong evidence for the null hypothesis (Kock, 2015).

6. SUSTAINABILITY EVENTS DONE BY THE COMPANIES

Throughout this section, all the sustainability initiatives done by the companies that are being investigated will be listed. Sustainability initiatives, as explained before, could be a promotion, product, or a plan to reduce waste, etc. these events were identified based on articles and the annual reports of the companies.

Adidas presented the 4 Ps framework and rooted them into their marketing strategy in 2014, as seen in their 2015 annual report. The 4 P's are Product, Price, Place, and Promotion (Kumar, 2013). In this case, Adidas focused on the product part and they started to utilize their resources and invest in more research. Adidas started implementing a new technique for chemical management. Their goal was to have products free of PFC as well as other hazardous substances. This project also allowed them to develop new products like Drydye, which saved them 100 million liters of water. They introduced the first footwear made out of ocean plastic and promoted them worldwide.

Nike had two sustainability projects in the years 2010 and 2011. The first one was the redesigning of the shoe box. During that time, the corrugated cardboard for shoeboxes was Nike's biggest purchase. Hence, to lower the amount of waste caused by packaging Nike started rethinking the way they produce the box. The new shoebox they created uses 30% less material than the previous one. The box is made from recycled material and can be recycled after usage. The second act was to collaborate with other companies such as C&A to eliminate the discharge of hazardous chemicals in their supply chain. Moreover, through increased access to renewable energy Nike was able to lower its carbon dioxide levels and sustain that level through those years (Wang, 2018).

Inditex the biggest apparel company on the planet. In 2015 Inditex set its Strategic Environmental Plan that focused on the efficient use of resources -can be found in their 2015 annual report. The plan was implemented throughout their entire supply chain, from design and sourcing to manufacturing, logistics and sales. Implementing such a plan is not cheap. For example, two of their most important raw materials are cotton and polyester.

Instead of getting cotton at a lower price, they decided to source cotton that was organically grown. Inditex also increased the use of recycled polyester. Moreover, this plan includes the goal of reducing energy and water consumption. In order to reach their goals, constant improvements in their supply chain had to be carried out. This caused Inditex more costs on the management and monitoring aspect according to their annual financial report.

LVMH started one of its first sustainability programs in 2012, The LIFE Program. This program was created to advance and promote their environmental performance and enhance their image (Carcano, 2013). This program allowed LVMH to introduce new environmental management tools that enable better environmental management and new innovative sustainable practices to be implemented. This program had four main objectives:

1. To shrink the environmental footprint of product creation by 2020.
2. To monitor and trace where the raw material they get from their suppliers comes from in order to try preserving natural materials to the best of their capabilities.
3. To reduce CO2 emissions by 25% by 2020
4. Lastly, for all their sites to reach 10% better performance on their environmental performance indicators; this includes water and energy consumption.

H&M's Conscious collection is one of its biggest sustainability approaches. This collection launched in 2010 with one goal ahead: to be more sustainable in every way (less waste, less CO2, etc) (Shen, 2014). This was achieved through obtaining raw materials that were more sustainable such as organic cotton and recycled polyester. Not only did this new line in H&M use eco-materials, but it also offered the chance for people to bring their old clothes (from any brand in any condition) to H&M so it can be recycled. The owners of the donated clothes also receive a discount for their next H&M purchase.

7. HYPOTHESIS DEVELOPMENT

To analyze the data, the null hypothesis needs to be established.

H_0 : There is no significant impact on the stock value due to the organization's sustainability event.

H_A : There is a significant impact on the stock value due to the organization's sustainability event.

This null hypothesis suggests that there is no significant relationship between the sustainability initiatives done by the companies and their stock value. The results will show whether there is a significant relationship between the sustainability event and the stock value or not.

8. RESULTS AND DISCUSSIONS

8.1 Results

8.1.1 Adidas

As mentioned in section 5.2, Adidas introduced the 4 P's framework into their strategy. This allowed them to improve their chemical control system to reduce their PFC as well as other hazardous chemicals and develop new products that are more environmentally friendly.

8.1.1.1 P-value results

The outcome of the test was $p = .44$, which means that there is not enough evidence to reject the null hypothesis and it is assumed that this event had no impact on the value of the firm.

8.1.1.2 Qualitative profit results

In 2014, Adidas jumped from 6.92 billion dollars in revenues to 8.16 billion dollars in revenues in 2015, according to their annual report. This suggests that they performed better financially after introducing the sustainability event; however, this does not mean that the sustainability event is directly the cause of that.

In figure 2, a slight increase in the stock value of the firm can be seen by the end of 2014 and the beginning of 2015.

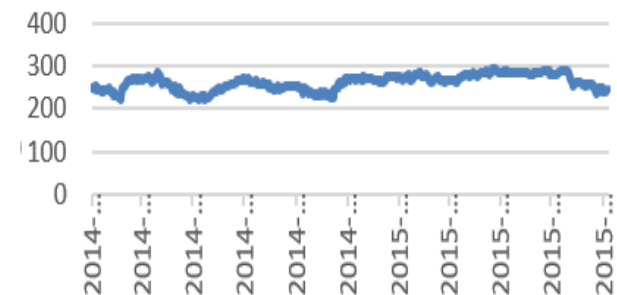


Figure 2: Adidas' stock prices from 2002 to 2020.

8.1.2 Nike Event 2010

Nike's first event analyzed is the redesigning of their shoebox in 2010.

8.1.2.1 P-value results

The p-value for this test was $p = .49$, which means that the null hypothesis is not rejected and it is assumed that this event had no impact on the value of the firm.

8.1.2.2 Qualitative profit results

Nike's annual income in 2010 was approximately 19, 014 million, which is only slightly lower than 2009's 19,176 million. It shows that the income was a little lower in 2010 than in 2009. However, the return on equity grew from 2009 to 2010 by 2.7%, suggesting a higher profit rate. The net profit in 2010 was 1.9 billion and in 2009 was only 1.4 billion. So even though the revenue was lower in 2010, Nike had higher profit and lower costs.

A slight increase in the stock value of the firm can be seen in figure 3. In this case, it is unsure of where the increase in profit came from. The test shows that it is unlikely for the event to have actually caused the increase in profit.

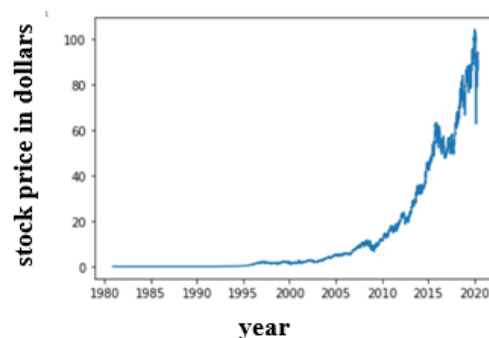


Figure 3: Nike's stock prices from 1980 to 2020.

8.1.3 Nike Event 2011

Nike's second sustainability event was a collaboration between them and other companies to reduce hazardous and harmful substances into the environment through their supply chain.

8.1.3.1 P-value Results

The test results from this event study show a p-value of .68, suggesting that there is not enough evidence to reject the null hypothesis. This indicates insufficient evidence to conclude that this event had a direct impact on the value of the firm.

8.1.3.2 Qualitative profit results

Nike's profit in 2011 was 2, 124 million dollars. In 2010 as mentioned previously, they only had 1,900 million, which means that Nike Profits kept on increasing even after the introduction of the sustainability event.

Moreover, as seen in figure 4, the stock price also kept on increasing during the year.

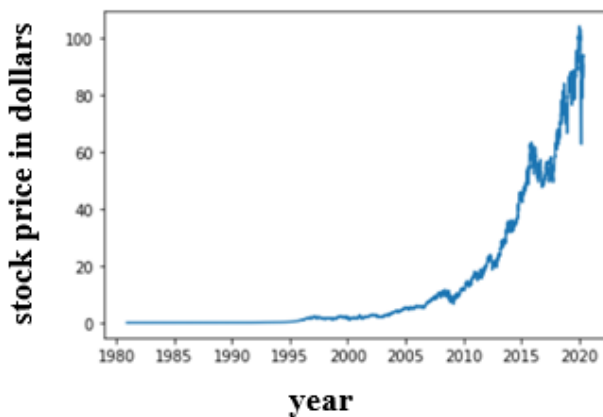


Figure 4: Nike's stock prices from 1980 to 2020.

8.1.4 Inditex

In 2015, Inditex planned to use their resources as efficiently as they can throughout their entire supply chain. This was done through its Strategic Environmental Plan.

8.1.4.1 P-value results

The test showed a p-value of .19. A p-value this high is not statistically significant and indicates strong evidence for the null hypothesis. This means that the null hypothesis is retained and not rejected. Hence, the event had no significant impact on the value of the firm.

8.1.4.2 Qualitative profit results

The end of the fiscal year report of 2014 shows the net profit for the company was 2.5 billion dollars. The end of the fiscal year report of 2015 showed 3.17 billion dollars in profits. Hence, there was a considerable increase in profit. Additionally, the price of

the stock of the company in those years also increased, as seen in the graph below.

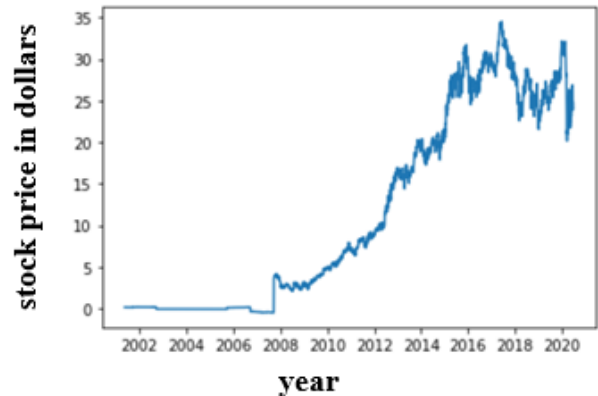


Figure 4: Inditex stock prices from 2002 to 2020.

8.1.5 LVMH

LVMH "The Life Program" was integrated across numerous departments throughout the company. Due to the fact that this is a huge company and the event in question is not just one event but a collection of multiple activities and actions, its harder to determine if this program had a direct impact on the value of the firm without extensive analysis of the company's financials.

8.1.5.1 P-value results

The test results showed a p-value of .61, meaning the null hypothesis is not rejected and the event had no significant impact on the value of the firm.

8.1.5.2 Qualitative profit results

The company's profits had increased in 2012 by roughly 12% when compared to 2011, making the profits go from 3,065 million in 2011 to 3,424 million in 2012, as seen in their 2012 annual report. As clearly shown below in figure 6, the stock price also increased during that time.

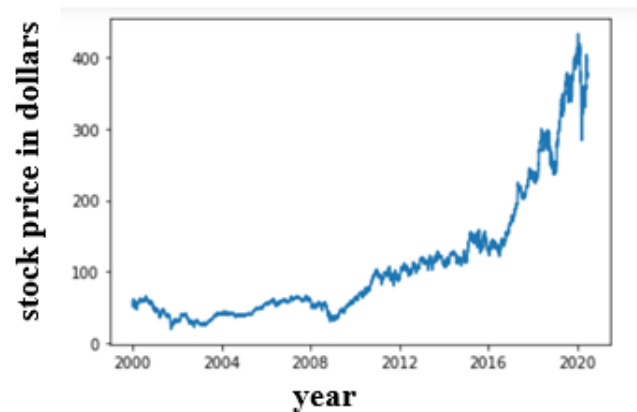


Figure 6: LVMH stock prices from 2000 to 2020

8.1.6 H&M

The last event that was researched in this thesis is the H&M Conscious collection.

8.1.6.1 P-value results

After conducting the test, a p-value of .35 was realized. Meaning the null hypothesis is not rejected and the event had no significant impact on the value of the firm.

8.1.6.2 Qualitative profit results

When this collection was introduced in 2011, according to their annual report for the year 2011 the profit decreased from 1.7 billion to 1.5 billion. Many reasons could have resulted in the decrease in profit; however, it was not clear in this research as it needs an extensive financial check of the company, which is out of this thesis' scope. Illustrated in the figure below, the stock prices for H&M can be seen. Between the years 2010 and 2011, a slight fluctuation in prices can be seen. However, by the end of the year 2011, H&M had a higher stock value than they did in 2010, as seen in table 7 in section 8.2.

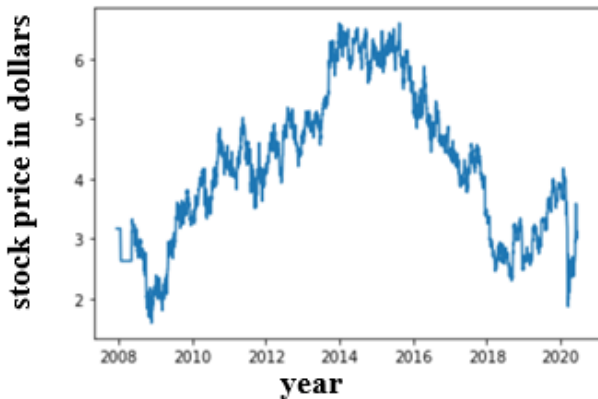


Figure 6: H&M stock prices from 2008 to 2020.

8.2 Discussion of Results

The null hypothesis in the research conducted stated that there is no significant impact on the stock of the value from the sustainability event. In all the tests above, the null hypothesis could not be rejected, stating that the event had no significant impact on the value of the firms. Nevertheless, the qualitative data gathered on the stock of the values showed that the average stock value of all firms increased in the years of the events.

To further illustrate this, below are the average stock prices of the firms by throughout the time of the studies, collected from Google Finance.

Table 2: Adidas

Name /Year	The year 2009	The year 2010
Adidas stock price	\$27.81	\$39.6

Table 3: Nike Event 1

Name/Year	The year 2009	The year 2010
Nike stock price	\$11.44	\$15.75

Table 4: Nike Event 2

Name/Year	The year 2010	The year 2011

Nike stock price	\$15.75	\$20.36

Table 5: Inditex

Name/Year	The year 2015	The year 2016
Inditex stock price	\$23.79	\$30.19

Table 6: LVMH

Name/Year	The year 2014	The year 2015
LVMH stock price	\$126.7	\$152.8

Table 7: H&M

Name/Year	The year 2010	The year 2011
H&M stock price	\$200.5	\$222.9

One of the limitations of this study is the uncertainty of the impact of the event in relation to each company's reputation, which will be elaborated on further in section 9. The reputation of a company could affect the demand for its stock, which in return, affects its value. One of the reasons a stock price increase or decrease is the demand for it. The demand is affected in response to new public information that causes traders to revise their beliefs (Madhavan, Richardson, 1997). The price of stock increases if there are more people wanting to buy the stock rather than selling it. The popularity of a stock is based on multiple things; one of them is the reputation of the company. If a company's reputation is poor, then it is likely that many people will not be interested in buying their stocks. Contrarily, if the reputation is good, then more people will be inclined to buy their stock, which will lead to an increase in demand leading to an increase in value (Eccles, et. All, 2007).

The stock prices and profits for most companies inclined after the introduction of the sustainability event. For example, Nike's share price in 2009 was around 11 dollars. Then after the introduction of the new shoebox, their share value was around 15 dollars. This can be linked back to the theories introduced in section 4 on how a sustainability event can cause a drop in costs and can help a company become increase its profits.

Referring back to the stakeholder theory, section 4.4, Businesses need to satisfy both internal and external stakeholders and not just their shareholders. Many businesses started becoming more sustainable because their stakeholders demanded it. Businesses who did not comply with their stakeholder's demands usually lost them. It affected their reputation in negatively driving the consumers and many more stakeholders away. Many businesses that did comply with these demands became more profitable (Lassala-Navarré, et al., 2017; Vithessonthi, 2009).

Nike's show box case, as mentioned previously, helped in reducing the amount of material they needed. Moreover, in that year alone, they saved approximately 200,00 trees from being chopped and used for the boxes (Wang, 2018). The decrease in costs because of this event caused an increase in profit. The RBV can be used to describe what Nike did in this situation. They adapted their resources to the changing environment. The old box materials were expensive and not sustainable, which lead them to work with their suppliers to find a different material to use. This different material lead to reduced costs in manufacturing and a positive impact on the environment.

The second case this can be seen in is the DryDye. Adidas created a new dye that does not need water but uses carbon dioxide instead. Not only does this new method enables Adidas to suspend the use of water in the dyeing process, but also allows them to use 50% less energy and 50% fewer chemicals than the traditional dye. According to their financial report, the costs have dropped significantly, causing a rise in profit. This method could be based on the RBV theory. The company was able to identify its scarce resource (water) and eliminate it from the equation, making it cheaper and sustained for the long term (Vadicherla & Saravanan, 2015).

In 2010, LVMH introduced 5 new principles for their code of conduct, basing some of them on CSR. The third principle in particular, talks about brand image enhancement. LVMH believes that enhancing their image to the public is the best way to go forward (LVMH Moët Hennessy - Louis Vuitton, 2015). One of the ways they tried doing so by is the life program they introduced in 2012 to improve their sustainability image as well as their performance. After this event was introduced, an increase in stock price and profit can be seen. The relation between these two occurrences is weak; however, according to the theory of CSR and stakeholder theory, the event could be one of the reasons why both numbers increased. (Djuliardhie, et al., 2016).

Reverting to section 4.3, SPM theory could be used by LVMH as their sustainability initiative is a program to keep track and advance their environmental performance and enhance their image. They can set new KPIs to their new goals and keep track of them using this theory.

Furthermore, some of these sustainability events did impact the environment in a positive way, as shown in the Nike and Adidas cases. This shows that companies can reduce their harmful environmental practices and still make money. These cases are a big deal since Nike and Adidas are considered to be leading companies in their field. These companies becoming more environmentally friendly could cause other companies to do the same.

The results suggest that even though the tests indicate the likelihood of the events having no significant impact on the value of the firms. There might be a chance that there was an indirect slight positive impact on the value of the firms by enhancing the companies' reputations on the market and cutting costs in some functions in the company.

9. LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

In order to fully comprehend the impact of one event on a company's value, all other aspects must be analyzed simultaneously. The profit is not the only factor that determines the value of a stock. The demand for the stock is also another factor, as mentioned before in section 8.2. Demand could increase based on the promises, reputation and actual profits realized of the firm, causing a rise in the value of a stock (Madhavan, Richardson, 1997).

Moreover, the financials of the company must be explored and analyzed in the same time frame as the event. This is to determine if the profits came from a significant increase in sales or from a reduction of costs or a bit of both. If it came from the reduction of costs, then it could link to the event. This could only be figured out through a complete analysis of costs and revenues, which is not the scope of this thesis.

The tool that was used to collect the data only tested for a specific time frame. This time frame does not include many more events that occurred that may or may not have affected the company's

stock value or the results of the research. Namely, in order to get a perfect result out of the tool that was used, all other things related to the company beside the event had to be constant, which was not the case.

Lastly, a limitation of this study is that statistical inferences may not always be correct. There is a possibility that a type 2 error has occurred, which is a false negative. This implies that the alternative hypothesis is true; however, it was not shown in the study.

10. CONCLUSION

Companies were chosen from around the world to see if the impact of sustainability events on the companies will be the same. Apparent to the results, all conclusions were similar. The results showed no significant relationship between the sustainability events and the stock value of the firms.

However, after introducing these events, almost all companies had an increase in their profit and all companies had an increase in their stock value. This entails that even if it can not be statistically proven in this study that the events did significantly impact the company in a positive way, it is likely that the event did not impact the company in a negative way; otherwise, their stock prices would have dropped. Nevertheless, due to the limitation of the tool that was used to collect the data, it is hard to say if the increase in stock value and profit solely depends on the introduction of the sustainability events.

The theories introduced in this thesis (RBV, CSR, SPM and stakeholder theory) are reflected in the events introduced. Companies can be seen implementing these theories to become more sustainable and more profitable. These sustainability practices affected the company's image in a positive way. Consumers nowadays relate more to companies who are becoming more environmentally sustainable rather than companies who are not. If a company is becoming more sustainable, consumers will most likely support them rather than supporting companies that harm the environment.

The sustainability events can be seen to have a direct positive impact on the environment. Since companies are trying to reduce their waste and carbon footprint while manufacturing.

11. ACKNOWLEDGMENTS

I would like to thank Dr.ir. W.J.A. van Heeswijk and Dr. A. for their constant feedback and support throughout the duration of this thesis.

12. REFERENCES

- Abhishta, A., Nieuwenhuis, L. J. M. (2017). Analysing the Impact of a DDoS Attack Announcement on Victim Stock Prices. *Euromicro International Conference on Parallel, Distributed and Network-based Processing*. pp 354-362.
- Barber, M., and John D. (1997), 'Detecting long-run abnormal stock returns: The empirical power and specification of test statistics', *Journal of Financial Economics*, Vol. 43, pp. 341-372.
- Baumgartner, R. J. (2014). Managing corporate sustainability and CSR: A conceptual framework combining values, strategies and instruments contributing to sustainable development. *Corporate Social Responsibility and Environmental Management Journal*, 21(5), 258-271.
- Brusseau, J. (2012) *The Business Ethics Workshop* \. Vol. 1, Open Textbook Library.
- Bragdon, J. H., Marlin, J. (1972). Is pollution profitable? *Risk Management Journal*, 19(4): 9-18.
- Carcano, L. (2013). Strategic Management and Sustainability in Luxury Companies. *Journal of Corporate Citizenship*, 52.

- Chapy, P. (2009). "Le sens du développement durable pour l'entreprise. L'apport de la perspective stratégique", *Cahier du LIPSOR, Serie Recherche*, Vol. 9.
- Chen, H. (2006). Burns, D.L. Environmental analysis of textile products. *Cloth. Text.* 24,248–261.
- Cotton, B (2018). H&M And Zara, the 'Sustainable' Fashion Brands Killing the Environment: Business Leader News. *Business Leader*
- Crasto, S., Kee, D., Xin, C., Juin, H., Man, L., Pandey, D. (2020). Product innovation by Adidas Group through Sustainability. *Journal of the community development in Asia*, 3(1), 1-7.
- Danciu, V. (2013). Sustainable-Company-New-Challenges-Strategies-More-Sustainability. *Theoretical and Applied Economics Journal*, vol. 9, , pp. 7–26.
- Djuliardhie, R., Borosi, D., and Saztura, R. (2016) Business Ethics, CSR & Market Segmentation: A Qualitative Study in Lvmh Moët Hennessy - Louis Vuitton. *Journal of Finance & Accounting*, Vol. 04, No. 02,
- Eccles, R. G., Newquist, S. C., & Schatz, R. (2007). Reputation and its risks. *Harvard Business Review*, 85(2), 104.
- Epstein, M and Roy, J. (2003). Improving sustainability performance: specifying, implementing and measuring key principles. *Journal of General Management*, Vol. 29, No. 1, pp.15–31.
- Freeman, R. (1984). Strategic Management: A stakeholder Approach, *Pitman, Boston*
- Freeman, R., Harrison, J., Wicks, A., Parmar, B., De Colle, S. (2010). Stakeholder theory: The state of the art. *Cambridge University Press*.
- Gadonne, D., Mia, L., Sands, J., Winata, L., Hooi, G. (2012). The influence of sustainability performance management practices on organisational sustainability performance. *Journal of Accounting & Organizational Change*.
- Garc, A. (2016). Inditex net profit up by 15% in 2015. *Market Watch*.
- Ghera, S. (2010). Stratégies de développement durable: Combiner les parties prenantes et les ressources et compétences de l'entreprise. *Revue française de gestion*, 204(5), 141-153.
- Golicic, S. L., Smith, C. D. (2013). A meta-analysis of environmentally sustainable supply chain management practices and firm performance. *J. Supply Chain Manage Journal*. 49, 78–95
- Grant, R. M. (1991). The resource-based theory of competitive advantage. *California Management Review*, 33(3): 114-135.
- Gunasekaran, A., Alain, S. (2012). Sustainability of Manufacturing and Services: Investigations for Research and Applications. *International Journal of Production Economics*. 140. -. 10.1016/j.ijpe.2011.05.011.
- H&M. (2011), annual report 2011. Available at: Conscious Action Sustainability Report 2011. Available online: http://about.hm.com/content/dam/hm/about/documents/en/CSR/reports/Conscious%20Actions%20Sustainability%20Report%202011_en.pdf
- Hanbury, M. (2018). 20 companies dominate the world's fashion industry. Here's who makes the list. *Business insider*
- Haanaes, K. Micheal, D. Hurgens, J. Randan, S. (2013). Making sustainability profitable. *Harvard Business Review*
- Hauff, M., Kleine, A. (2009). "Nachhaltige Entwicklung. Grundlagen und Umsetzung", *Oldenbourg Wissenschaftsverlag GmbH, Munchen*
- Inditex. (2015) annual report 2015. Available at: http://static.inditex.com/annual_report_2015/en/our-priorities/efficient-use-of-resources/
- IUCN. (2017), "Invisible Plastic Particles from Textiles and Tyres a Major Source of Ocean Pollution – IUCN Study."
- Joseph, T., Rajendran, J. (1992). The resource-based view within the conversation of strategic management. *Strategic management journal*, 5(13), 363-380.
- Klettner, A., Clarke, T., Boersma, M. (2014). The governance of corporate sustainability: Empirical insights into the development, leadership and implementation of responsible business strategy. *Journal of Business Ethics*, 122(1), 145-165.
- Kock, N. (2015). One-tailed or two-tailed P values in PLS-SEM?. *International Journal of e-Collaboration (IJeC)*, 11(2), 1-7.
- Kotler, P. (2011). Reinventing marketing to manage the environmental imperative. *Journal of Marketing*, 75, 132-135.
- Kumar, R. (2013). Green Marketing and the 4P's: A Discussion.
- Lassala-Navarré, C., Apetrei, A., Sapena, J. (2017). Sustainability Matter and Financial Performance of Companies. *Sustainability Journal*. Vol. 9. 1498. 10.3390/su9091498.
- Machado, C., Hue, S., Berrsaneti, F., Quintanilha, J. (2018). An overview of shared mobility. *Sustainability (Switzerland)*, Vol. 10.
- Mackinlay, A., C. (1997). Event Studies in Economics and Finance. *American Economic Association Journal*, vol. 35, pp. 13–39.
- Madhavan, A., Richardson, M. (1997). Why Do Security Prices Change? A Transaction-Level Analysis of NYSE Stocks, *The Review of Financial Studies*, Volume 10, Issue 4, pp. 1035–1064,
- Mathalon, A., Hill, P. (2014) Microplastic fibers in the intertidal ecosystem surrounding Halifax Harbor, Nova Scotia. *Mar Pollut Bull* 81:69–79
- McKenzie, S. (2004). Social sustainability: towards some definitions. *Hawke Research Institute Working Paper Series*, no. 27.
- Rattner, N. Feuer, W. (2019). Amazon is responsible for most Big Tech job growth since 2000, CNBC.
- Remy, F., Collard, F., Gilbert, B., Compère, P., Eppe, G., Lepoint, G. (2015) When Microplastic is not Plastic: The Ingestion of Artificial Cellulose Fibers by Macrofauna Living in Seagrass Macrophytodebris. *Environ Sci Technol* 49. pp. 11158–11166
- Robertson, L. (2020) "How Ethical Is H&M?" Good On You, goodonyou.eco/how-ethical-is-hm/.

- Russo, M. V., Fouts, P. A. (1997). A Resource-Based Perspective On Corporate Environmental Performance And Profitability. *Academy of Management Journal*, 40(3), 534–559. doi: 10.2307/257052
- Schaltegger, S., Wagner, M. (2006). Integrative management of sustainability performance, measurement and reporting. *International Journal of Accounting, Auditing and Performance Evaluation*, 3(1), 1-19.
- Schulte, J., Hallstedt, S. (2018). Company Risk Management in Light of the Sustainability Transition. *Sustainability*, 10(11), 4137; <https://doi.org/10.3390/su10114137>
- Shen, B. (2014). Sustainable fashion supply chain: Lessons from H&M. *Sustainability*, 6(9), 6236-6249.
- Singh, S., Khajuria, R. (2018). Chapter 11 - Penicillium Enzymes for the Textile Industry. *New and Future Developments in Microbial Biotechnology and Bioengineering*. 201-215.
- Srivastava, S. (2007). Green supply-chain management: A state-of-the-art literature review. *International journal of management reviews*. volume 9, issue 1. (pg. 54)
- Tan, M., Ayhan, E. (2016). Sustainability and cleaner production: case of textile and clothing sectors in Bingöl. *The Journal of MacroTrends in Energy and Sustainability*, 4(1), 22-33.
- Teece, J., Pisano, G., Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509-533.
- Temin, P. (1998). Prodcut Quality and Vertical Integration in the Early Cotton Textile Industry. *The Journal of economics history*, 48(4), 891-907 doi:10.1017/s0022050700006665
- United Nations Brundtland Commission. (1987). *Report of the World Commission on Environment and Development: Our Common Future*. Retrieved from London/New York/Oxford: Oxford University Press.
- Vadicherla, T., Saravanan, D. (2015). Sustainable measures taken by brands, retailers, and manufacturers. In *Roadmap to Sustainable Textiles and Clothing* (pp. 109-135). Springer, Singapore.
- Vithessonthi, C. (2009). Corporate Ecological Sustainability Strategy decisions: The Role of Attitude Towards Sustainable Development. *Journal of Organisational Transformation and Social Change*, 6(1), 49–64
- Wainwrigth, S. (2010). Putting price on global environmental damage. Trucost ESG Analysis
- Wang, W. (2018). "Top Ten Sustainability Initiatives of Nike", *Cleantechies*.
- Zoogah, D. B. (2014). Dynamic Analysis and Strategy in Africa Management', *Advancing Research Methodology in the African Context: Techniques, Methods, and Designs. Research Methodology in Strategy and Management*, vol 10. (pp. 99-132). Emerald Group Publishing Limited.