

The Environmental Context of Corporate Sustainability Reporting

By
Alice Murphy

Undergraduate Honors Thesis, Organizational Studies Program
University of Michigan, Ann Arbor, MI

Faculty Advisor: Sara Soderstrom,
Assistant Professor of Organizational Studies
and Program in the Environment

March 13, 2015

I. Abstract

In light of the growth in public concern for and awareness of corporate environmental sustainability as well as an increase in sustainability reporting, this study looks at how American corporations use sustainability reporting as an accurate articulation of their actual environmental impact. Past research has shown that the context with which corporations discuss the natural environment plays a role in how their environmental initiatives take shape. Some companies focus more on the certainty of increasing efficiency and mitigating risk, a more nearsighted approach. Other companies take more uncertain measures such as innovation and investment, looking to make an impact in the longer run. As a result, it is expected that the former type of company would be naturally less invested in the environment, and therefore have a smaller positive impact than the latter type of company. This study looked at how different contexts in sustainability reports could be indicators of positive or negative environmental impacts. Previous research has also indicated that temporal perspective plays a role in how corporations value the natural environment, so the use of time reference in sustainability reports was studied as a potential indicator of environmental responsibility. The results suggest that temporal perspective of sustainability reporting does not directly relate to environmental performance for American corporations. However, the substantive context in which the natural environment is mentioned in these reports could potentially be an indicator of real environmental impact, particularly when the context includes reference to corporate opportunity.

II. Introduction

Defining CSR:

Corporate environmental sustainability is an area of growing importance in business. It exists within the broader realm of corporate social responsibility (CSR), and it is important to consider this context when discussing environmental sustainability. There are many theories that describe CSR. Some are optimistic, some critical, and they discuss a myriad of factors that influence corporate action in this realm. Definitions of CSR have a wide range, though in basic terms, CSR is a phrase used for corporate actions designed to minimize negative externalities in the workplace, the marketplace, and the natural environment (Crane, Matten, Spence, 2014). It can be argued that CSR in itself is a redundant term, and that companies that seek profit maximization also benefit social welfare in the process, meaning that CSR is just good business (Karnani, 2010). There are companies that push beyond this business case for social responsibility however, indicating that the incentive for CSR practice can be moral as well as monetary. The focus of this study is on CSR specifically with respect to the natural environment. With an increase in research and knowledge about climate change and increased transparency of company practices, corporate environmental sustainability has become more popular in business, both as a demonstration of corporate morals and as marketing tool for companies.

The Growing Importance of Corporate Environmental Sustainability:

Since 1960, there has been a trend of increased public awareness of environmental issues in the United States, and this trend was expressed in three waves of public pressures (Elkinton, 2004). The first wave peaked in the 1970s, as the understanding of the limitations of natural

resources and the excess of human demands became more apparent. This wave was associated with government regulation and environmental policy and the primary focus was on environmental protection. The second wave peaked later in the 1980s, and this was the wave that introduced the idea of sustainable development (Elkington, 2004). It was no longer enough to simply protect the environment, because regulation alone could not account for the vast impact for which humans are responsible. This wave sparked the idea of green consumerism, and consumers began to place pressures on corporations to be more sustainable. The third wave peaked in the early 2000s, and it focused on globalization and the value of supporting global sustainable development (Elkington, 2004). Though there are likely to be more waves to come and this is not necessarily the peak of public concern for the environment, it is clear that over the last 40-50 years, there has been a growing public pressure on corporations to increase sustainable development.

Due to this trend of growing awareness and public pressure, it has become competitively advantageous for corporations to boast sustainable development. As the public has become more supportive of greening initiatives, and the demographic of the population of environmentally concerned citizens has expanded (Mainieri et al, 1997), companies that want to attract employees and consumers of diverse backgrounds can do so by catering to their concern for the environment. While it is beneficial overall for environmental initiatives to be competitively advantageous, an issue has presented itself as a result. Since many environmental efforts would require significant investment on the part of the corporation, there is incentive for corporations to minimize what they are actually spending on sustainable development while still advertising as a “green” company. There are companies that claim to be environmentally responsible but actually do not have a very positive impact on the environment. A corporation’s environmental footprint

runs throughout its entire supply chain, so it can be difficult to track, and consumers are forced to rely on the company to inform them about the environmental footprint of the products and services. “Greenwashing” is a term used to describe a company putting forth an environmentally friendly façade, while in reality the actions of the company are not as “green” as they claim to be. When consumers have a limited capacity to differentiate between companies that are genuine in their environmental efforts and those that are not, it is difficult for those consumers to be explicit with their support of environmentally friendly companies, and greenwashing is difficult to combat. When anticipating this sort of misleading information, it would make sense to expect that corporations that overemphasize their impact on the environment may actually be referencing their impact so frequently to draw attention away from the fact that they actually do not take part in many substantive environmental efforts.

The focus of this study is on how companies use or do not use sustainability reports as accurate articulations of their environmental efforts. The goal is to study the way in which corporations talk about the environment when addressing their stakeholders, and how that relates to the substantive efforts that are being made. The next section of this paper will be an outline of the theory behind corporate sustainability efforts, and it will continue with a discussion of context to give background and descriptions of where the data comes from. Next will be an explanation of methodology, analysis, and results. The paper will conclude with a discussion of the implications of this study, conclusions to be derived from it, and suggestions for potential future research in this area.

III. Theory

Corporate Sustainability and Sustainable Competitive Advantage

Corporate environmental sustainability is becoming more common, though it poses a challenge to corporate strategy. The most basic goal for corporations engaging in business is to compete to achieve the most profit or to be the most successful among their peers.

Environmentally sustainable development brings a new challenge because it redefines what success could mean to corporations. Sustainability a more long-term goal, so current profit is not always the main focus. There is a difference between substantive competitive advantage and sustainable competitive advantage (Chaharbaghi and Lynch, 2006). Sustainable competitive advantage focuses more on long-term goals than short-term profit maximization. To put emphasis on long-term sustainable goals often means sacrificing profits in the short term. Company leaders have to strike a balance between short termism and long termism to remain substantively as well as sustainably competitive. There needs to be a balance between the strategy of sustainable competitive advantage and the necessity of substantive competitive advantage.

Types of Corporate Environmentalism

When it comes to corporate sustainable development, there are many different approaches that companies choose to focus their efforts on. As Elkington (2006) discussed, early on, the focus of the environmental movement was on regulation, and so many companies still concentrate on complying with regulations and anticipating future regulations. Other firms look at the business case for environmentalism, focusing on efficiency and innovation. Efficiency helps companies save money while benefiting the environment, while innovation helps

companies to be competitive by developing products and techniques that take advantage of the increased consumer and stakeholder focus on sustainability and environmentalism.

The types of approaches that different companies take depend on many things such as budget, industry, and regulatory environment. Culture and attitude of the corporation come into play as well. Carroll (1979) describes companies as ranging from reactive to proactive in their actions. Reactive firms respond to change after it has happened while proactive firms anticipate change. In the case of corporate environmentalism, reactive firms would be more likely to respond to regulatory codes rather than to invest in innovation and research efforts whereas proactive firms would be much more innovative and focus on longer-term payback of environmental efforts as opposed to simply complying with regulations. Proactive firms would be the ones that invest in renewable energy and carbon mitigation technologies. These categories that Carroll introduced are necessarily related to the way that corporations value time, and there has been extensive theoretical discussion on how time reference comes into play in the realm of corporate environmental sustainability as well.

Environmental Sustainability and Time Perspective

Time perspective is inherent in the concepts of CSR and environmental sustainability. Carroll (1979) first defined the continuum of corporate social responsiveness as ranging from reactive and defensive to accommodating and proactive. Though it is not explicit in the terms, this continuum is largely related to time perspective, as those firms categorized as reactive are considered to be more nearsighted than those who are proactive.

Using Carroll's continuum as a backdrop, Slawinski and Bansal (2012) conducted case studies that considered corporate time perspectives relating to environmental efforts, categorizing firms as either focused or integrated based on the activities they took part in to

address climate change. The study concentrated on five Canadian corporations in the oil industry and considered in-depth case studies that looked at reports and interviews of employees and executives of the corporations. The companies that Slawinski and Bansal (2012) categorized as focused tended to concentrate their environmental efforts on mitigation techniques and efficiency, taking into account both current and impending regulations. Based on interviews, these firms had a low tolerance for uncertainty and they often conducted extensive economic modeling, leading them to place more of a premium on the present situation than future impacts. The corporations that were categorized as integrated put their efforts in investment in renewable energy and managing emissions research as well as collaborating to develop policy. Overall, they tended to focus more on future scenario analysis than economic modeling, and they had a much higher tolerance for uncertainty. These companies tended to place more value in future benefits than the focused firms. Based on the assertions of this study, it would be reasonable to expect that corporations that place emphasis on avoiding risk or promoting efficiency in relation to the natural environment would not have as positive an impact on the environment as the corporations that emphasize opportunity would. The analysis of these case studies illustrates that the types of efforts that a corporation values as well as the corporation's perspective on time plays a role on how they address environmental issues.

Liang et al (2014) also showed how time reference is relevant to how companies approach CSR on a more global scale. This study focused on the operating languages of corporations. Languages differ in prominence of future time reference (FTR), meaning that some languages have stronger differentiation between the present and the future than others. This study considered corporations all over the globe and compared the FTR of their operating language to their CSR and environmental efforts. Companies that use languages with strong FTR in their

operations often discount the future more, leading to a decrease in efforts toward environmental sustainability. Companies that have weaker FTR in their operating language consider the future and the present to be less differentiable, and thus have stronger substantive efforts toward environmental sustainability.

The conclusions about FTR that Liang et al (2014) made are related to the theory that Slawinski and Bansal (2012) developed because they expand on the concept of time perspective and corporate action, relating it to the global marketplace. In Slawinski and Bansal's study, the focus was on Canadian oil companies, all using the same language. The conclusion was that companies that took the past and future into account, viewing time as more cyclical, were more comprehensive in their environmental initiatives. The firms that were more linear in their view of time focused more on what would cause the greatest present benefit. The cyclical time perspective relates the present and the future within the English language in a way that a language with minimal FTR might do naturally. A linear view of time allows for very little connection between the present and the future, the way a language with strong FTR does naturally. Both studies draw conclusions to show that the way corporations view time overall plays an important role in the environmental efforts that the firm undertakes. Based on these studies, it would be logical to expect that corporations that reference a long-term temporal perspective in their sustainability reports would be more active with environmental initiatives than corporations that do not reference a temporal perspective or only reference a short-term temporal perspective.

IV. Context

Sustainability Reports

Many corporations release CSR reports and sustainability reports that discuss the company-wide impacts on the environment. The corporations voluntarily release these reports to the public. Unlike annual reports, sustainability reports are not required, and do not have any enforced regulations for what needs to be included (though most adhere to similar guidelines, as will be discussed later). The reports offer the company's view of CSR and environmental impacts year by year. These reports vary in length, format, and focus. Some companies make them very accessible while others are less accessible and some companies do not release these types of reports at all.

The motives for sustainability reporting vary from internal performance benchmarking to demonstrations of legitimacy (Herzig and Schaltegger, 2011). These reports arose over time, as sustainability and CSR became more important aspects of corporate strategy. Early in the 20th century, corporations focused primarily on financial reporting and economic effectiveness (Herzig and Schaltegger, 2011). In the 1970s however, income levels had risen, so the public began to care more about standard of living and value of life. Corporations started to report on social issues at this time, in response to this shift in societal attitude. From there, the 1980s and early 1990s brought an increase in environmental reporting. With the increase in regulations and concern about hazardous incidents, the focus of these reports was primarily on regulatory compliance and health and safety (Herzig and Schaltegger, 2011). In the later 1990s and 2000s, the interrelationships between social, economic, and environmental reporting became more commonly mentioned in these reports, which led to the concept of sustainability reporting, which brings all these aspects together.

In the late 1990s, the Global Reporting Initiative (GRI) was developed by Alan White and Robert Massie, who were both involved in non-governmental organizations in Boston (Brown et al, 2009). Robert Massie was associated with Ceres, an organization that promoted socially responsible investing and shareholder activism, and it became the parent organization for the GRI. These two innovators had a goal to improve the integrity and predictability of information on social and environmental issues. In the 1990s, there was a surplus of information available but very little organization, so there was demand for something like the GRI. With the growing popularity of the CSR and civil environmentalism movements as well as social activism in markets, accurate reporting served to benefit multiple interests. The focus of the GRI was not to audit or certify companies but rather to provide guidelines by which to report on environmental and social issues. The main principles of the initiative were inclusiveness, internationalism, transparency, and maximum uses of the Internet, which gave way to speed and efficiency (Brown et al, 2009). The initiative quickly gained support, and in 2000 the first edition of the guidelines was released. The GRI now serves as the best and most well known set of guidelines for sustainability reporting (Brown et al, 2009). It is widely recognized on an international level, and as a result of its prominence, the sustainability reports released and used in this study are likely to have used this framework.

The GRI does an excellent job of making sustainability reports more uniform in style, but there are still extensive challenges associated with sustainability reporting. Simply the fact that there is terminology disagreement across industries and companies makes it difficult to compare reports. The complexity of issues and the integrative properties of sustainability make it difficult to understand actual impacts of one specific company. Stakeholders often have to rely on these reports for their information on a company's actions, creating an information asymmetry, as it

would take a great investment of time and money for stakeholders to get their information any other way (Herzig and Schaltegger, 2011). There is potential within these reports for greenwashing, and this is a major concern for consumers and stakeholders. These, and many other challenges face corporations as they try to prove their legitimacy and maintain accountability for their actions.

Sustainability reports show the company's own take on its environmental initiatives. Comparing the language used in the reports to a third party rating system is a way to spot inconsistencies in the way corporations talk about the environment and their substantive efforts for the environment. This study considers what the context of environmental discussion in sustainability reports can reveal about corporate action.

KLD

The companies in this study have been evaluated by a third party database on their corporate social responsibility performance. This is one way in which they are held accountable for their actions. Asset4 is a company that was acquired by Thomson Reuters in 2009, but it has continuously since 2003 provided an up to date interface to view environmental, social, and governance scores for corporations. The information is collected based on KLD STATS, which is a database that is run by the RiskMetrics Group on Environmental, Social, and Governance Analysis. The data is collected using information from annual reports, NGOs, news organizations, and various other reporting and disclosure sources. Each company is evaluated based on areas of strength and concern in 7 major CSR categories: community, corporate governance, diversity, employee relations, environment, human rights, and product. Each category has various sub-categories of strengths and weaknesses, and the companies are evaluated using "1" and "0" respectively if they have a particular strength or weakness or not.

The Asset4 database aggregated all of the KLD statistics and scores related to the environment into an overall environmental performance score, listed as a percentage. The higher the score, the better that company's environmental performance. Based on the trend of increased corporate environmental reporting, it would be expected that over time, there would be a stronger relationship between the environmental mentions in reports and a company's score in a database like the Asset4 KLD database.

Overview

Since the environmental score is a third party evaluation of corporate environmental efforts, it provides an external variable to compare to the contexts used to discuss the environment in the sustainability reports. This is the relationship that is discussed in this paper. This study strives to provide an understanding of the connection between how corporations talk about the natural environment and how they address environmental issues. Previous research has shown that corporations take different tactics in CSR and environmental sustainability, and that these tactics vary based on many variables, one of which is the way it values time. Based on Slawinski and Bansal's study of time perspectives within companies and how this comes into play in CSR activity, it was proposed that if companies mentioned time reference (particularly long term time reference) more often in their sustainability reports, then they would be more likely to have a more cyclical view of time, relating the present to the future, and this connection would lead to increased value of environmental initiatives, leading to a higher environmental score.

Hypothesis 1: Companies that reference time perspective in their sustainability reports will have a higher environmental score than those that do not reference time perspective, due to their more cyclical view of time and decreased discounting of the future.

Hypothesis 1a: Of the companies that mention time reference in their sustainability reports, companies that specifically mention long-term time reference more often than short-term time reference will have higher environmental scores than companies that mention the short term more often than the long term, because the former indicates lower levels of future discounting.

In addition to time perspective, the focus of environmental initiatives plays a role in applied corporate environmental action. Based on Carroll's (1979) discussion of proactive versus reactive firms as well as Slawinski and Bansal's (2012) work on focused versus integrated firms, certain environmental contexts are expected to apply to increased environmental efforts more than others. A reactive or a focused firm for example, would most likely discuss regulatory compliance and efficiency more often, whereas a proactive or integrated firm might focus more on opportunity and investment. Based on this understanding that firms with different views may have different areas of focus for their environmental initiatives, it was proposed that the frequency with which different environmental contexts are discussed in sustainability reports could indicate differences in corporate culture and values, which would be reflected in how environmental initiatives are or are not carried out, which would be seen in the company's environmental score.

Hypothesis 2: Where there is a higher level of focus on risk or efficiency in relation to the environment, environmental scores will be lower because focus on regulation and efficiency tends to indicate nearsightedness and more simplistic environmental efforts.

Hypothesis 3: Where there is a higher level of focus on opportunity in relation to the environment, environmental scores will be higher because focus on opportunity tends to indicate less future discounting and more innovative efforts.

While looking at publications that are issued by a corporation on behalf of the corporation, it is important to be mindful that misinformation could be at play. It has been shown that stakeholders of corporations often look for and value environmental policy statements, but the implementation of these statements does not always follow (Ramus and Montiel, 2005). While many companies make statements that indicate commitment to the natural environment, there is a lack of follow up in action, and this is a form of greenwashing. It could be that these types of non-committal statements are being made in corporate sustainability reports and for this reason, it was proposed that even if corporations discuss their general impact on the environment extensively, this will not correspond to increased environmental scores due to greenwashing. In fact, increased discussion of general environmental impact with no specifics related to it could have a negative affect on the environmental score due to overcompensation by companies that specifically do not have a positive impact on the environment.

Hypothesis 4: There will be a negative relationship between the frequency of mention of general environmental impact in a company's sustainability report and the company's environmental score because the mention of environmental impact does not correspond to substantive efforts.

Based on the trends of environmentalism and environmentally conscious consumer behavior, it is most logical that there would be an increase in mention of the environment in sustainability reports as time went on. It is also expected that there will be more connection between the reports and the quantitative scores either in the exact year or the next year over time due to an increase in stakeholder environmental awareness and a decrease in tolerance for greenwashing.

Hypothesis 5: The mention of the natural environment in the sustainability reports will increase over time, and there will be a higher correlation between discussion of the environment and the quantitative environmental score as time goes on due to an increase in awareness and environmental consumerism over time.

This study seeks to evaluate the variables discussed in these hypotheses, relating sustainability reporting to third party environmental scores. Understanding how to interpret the contexts of sustainability reports could help stakeholders and consumers who rely on these reports to make inferences about how corporations are addressing environmental issues.

V. Methods

Sample

A sample of American companies that were in the Fortune top 100 at any point from 2006 to 2012 were used in this study, totaling to 125 companies. This sample was chosen to control for any country-based variations in corporate environmental practices, as well as to control for relative success of the companies. Companies that are more economically stable (as those at the top of the Fortune 500 are) may be more likely to invest in environmental and sustainability efforts because they have the capacity to. All the sustainability reports that were published and publicly available for these companies were collected for the years 2006, 2009, and 2012, totaling to 46 reports in 2006, 61 in 2009, and 75 in 2012. The reports were converted to text files and a text extraction of the word “environment” was performed. In 2009, twelve of the reports collected did not include the word “environment,” and in 2012, five of the reports collected did not include the word, so nothing was extracted from these, though they were still

included in the total number of reports. The extractions that took place included the 30 words before and after the term for context. These extractions were then coded based on that context.

Independent Variables: Text Codes

The independent variables in this study were the results of coding of the text extraction of the word “environment” from the sustainability reports for each year. The context codes that were used were “long term,” “short term,” “impact,” “efficiency,” “opportunity,” “risk,” “other,” and “N/A.” These codes were derived based on motives that corporations often have for environmental action, as well as a consideration of how time reference may influence corporate behavior. The use of these codes is discussed below, and Figure 1 offers definitions of the codes as well as examples of their use from each year evaluated.

Since there has been extensive research and theory developed on the relationship between sustainability and time reference, such as the concepts introduced by Slawinski and Bansal (2012), time perspective was included in the codes to be observed. A line was coded as “long term” or “short term” if there was a time reference in the context relating to the word “environment.” If the code focused on the current time period or a time frame that was limited to ten years or less, it was considered a short-term time reference. A line was coded as “long term” if the time reference relating to the word “environment” extended further into the future. For each company, the number of “short term” and “long term” codes in a given year were added together to get a number for overall time reference.

The “impact,” “efficiency,” “risk,” and “opportunity” codes related the “environment” term to its informational context, meaning how the term “environment” was discussed besides in reference to time. If the term was used when discussing protection of, damage to, or influence on the environment (positive or negative), “impact” was used. If the term was used when discussing

the business case for environmental efforts, how it would be good for profits, or simply how to make various aspects of the business or products more efficient, the “efficiency” code was used. If the term was used relating to health, safety, or regulatory compliance, the “risk” code was used. If the term was used when discussing potential for innovation, partnering opportunities, or progress, the “opportunity” code was used. The codes that did not pertain to time reference focused more on the specific context of the mention of environment.

The “N/A” code was used when the term “environment” occurred but had no substantive context, temporal or otherwise, about corporate action. For example, if the term was part of a listed website URL or a page heading, it was coded as “N/A.” The “other” code was used when the context had to do with corporate interaction with the natural environment, but did not fit with the other codes. This category could then account for potential other contexts that were not taken into account in this study. Where a code applied, the extraction was assigned a value of 1 for that code.

[Insert Figure 1 about here]

After the codes were collected, they were totaled for each company, and those categorized as “N/A” was subtracted from the total amount so that the total number of substantive codes was determined. From there, the number in each category was divided by this substantive total to determine what proportion of the substantive code was accounted for by each individual code. These proportions were used as independent variables in addition to the raw counts of the codes, as they gave a more comparable description of the reports relative to each other than the basic counts did.

Dependent Variable: KLD

The dependent variable in this study was the environmental score calculated from the KLD data and presented in the Asset4 database. Since this data was compiled using specifically reported emissions, chemical disclosures, associated revenues, and other relevant metrics, it served as a quantitative explanation of how well corporations address environmental issues. Comparing this data to the analysis of the written environmental context in the sustainability reports shows any relationship between corporate environmental activity and the context with which corporations mention the environment, both in terms of informational content as well as time reference. Reports and KLD data were collected for the years 2006, 2009, and 2012, and KLD data was also collected for the years 2007, 2010, and 2013.

Controls

The control variables used in the study were profit, revenue, whether or not a report was issued, and industry sector. The corporations in this study are separated into six major industry sectors: basic materials (including oil, chemical, and mineral companies), consumer goods (including beverages, personal products, automotive, and rubber goods companies), finance (including banks, insurance, and investment brokerage companies), healthcare (including drug and health service companies), industrial goods (including aerospace and machinery companies), services (including home improvement, grocery, restaurant, and entertainment companies), and technology (including computer, telecommunications, and software companies). These industry sector controls help to explore how corporate sustainability efforts differ by the type of business a company engages in. There is research that indicates that different industry sectors focus on different aspects of CSR (Smith and Alexander, 2013). For example, manufacturing companies have been shown to mention the environment more than retail companies, which place more

emphasis on community and ethics. This concept also applies in the somewhat narrower realm of corporate environmentalism, as it has been shown that regulatory environment and corporate culture of different industries has an impact on the types of environmental policies that companies commit to and ultimately enact (Ramus and Montiel, 2005). In addition to industry, profit and revenue were used as control variables, as these financial variables could play an outside role on how corporations invest their money in initiatives and ventures that may be outside the direct line of business.

Regression

To determine the relationship between the text code results and the KLD scores, Stata Data Analysis Statistical Software was used to perform a time series cross sectional random effects analysis of the sustainability report text codes and the KLD scores for the exact years 2006, 2009, and 2012 as well as the KLD scores for the next years, 2007, 2010, and 2013. This is a similar method to what Liang et al (2014) used in their study on future time reference and CSR for corporations. Since Liang et al used a rating derived from the same KLD data as was used in this study in their consideration of how future time reference and company globalization affects CSR activity in corporations, a similar method was used to look at how the context of environmental discussion in sustainability reports plays a role in environmental responsibility. A dummy variable for industry was used, and the other controls were profit, revenue, and if a report was issued or not. This way it was possible to compare results across industries as well as see how monetary variables influenced corporate discussion of sustainability.

The model was run using the KLD scores for both the exact year of the report as well as the KLD scores for the year after the report was issued. This allowed for any relationships that may carry over into the next year to be considered. Since sustainability reports are not regulated

in the way that annual reports are, they could be released at any point during the year, so there may be more of a relationship between the coding data and the KLD data for the next year than for the exact year, and for this reason, the next year KLD scores were included in the regressions. Since the “N/A” code was not a substantive code, and since the “other” code was evaluated and did not reveal any significant codes that were left out by the other categories, these codes were left out of the regression analysis. The regressions served to reveal any relationships, positive, negative, or otherwise that exist between the contexts of the environment mentions in the sustainability reports and the corporations’ environmental scores.

IV. Results

Observations and Descriptive Analysis

There are observable patterns over time in the sustainability report text codes. By looking at the totals for all the reports, it is apparent that from 2006 to 2012, the number of reports increased, as did the overall number of mentions of the environment. The mentions of the environment per report also increased in that time frame. This increase was most significant from 2009 to 2012 however, as the number of mentions per report in 2009 was very close to the number of mentions per report in 2006, as seen in Figure 2. These observations indicate that overall, the natural environment became a more common topic in corporate sustainability reporting from 2006 to 2012. The patterns over time vary by industry. Finance, industrial goods, and technology all followed the same overall pattern of increased mentions of the environment per report from 2006 to 2009 to 2012. Services followed the opposite pattern, decreasing over time, and for consumer goods, the number of mentions per report in 2012 was higher than in 2009 but lower than in 2006. For basic materials and healthcare, the number of mentions per

report dropped from 2006 to 2009, but then increased again in 2012. Figure 2 outlines these patterns.

[Insert Figure 2 about here]

The substance of the text codes also changes across the three years. Though the number of mentions increases from 2006 to 2012, the proportion of mentions that are substantive (contexts that are not coded as “N/A”) decreases over time. The proportion of substantive mentions coded as “impact” is highest in 2006. The proportion of “efficiency” codes increases over time. The proportion of “opportunity” and “risk” codes is highest in 2009, and the proportion of “other codes” is highest in 2012. Figure 3 provides a more detailed look at these patterns of coding. Overall, there is a pattern where substantive codes were decreasing, but the proportion of codes focusing on efficiency were increasing, and there was perhaps some external factor or factors that led to a jump in opportunity and risk codes in 2009.

The time reference codes also exhibited an interesting trend that indicated there was something significant about the year 2009. Both the short term and long term code counts peaked in 2009, with 2012 being slightly higher than 2006. The year 2009 also had the highest proportion of both types of time reference, but in terms of proportion, 2012 was the lowest. In 2009 there was an increased discussion of time perspective in relation to the natural environment, but by 2012, this focus had lost prominence. This pattern can be seen in the graphs in Figure 4.

[Insert Figures 3-4 about here]

These independent variables can be compared to patterns in the dependent variable, the KLD aggregate environmental scores. Overall, the average of the KLD environmental scores follows the same pattern as the number of reports and the mentions per report, increasing from

2006 to 2012. When observed by industry however, there are some differences. For basic materials, consumer goods, finance, and technology, the highest average KLD scores are in 2009, while the scores in the other sectors follow an increasing pattern. Overall, the patterns in the KLD environmental scores indicate an increase in the environmental efforts of corporations over time. For certain industries however, the year 2009 appears to have been associated with a surge of increased environmental efforts, which then subsided somewhat by 2012. The patterns of KLD scores can be seen in Figure 5.

[Insert Figure 5 about here]

Statistical Analysis

The results of the time series cross sectional analysis showed that if companies issued a report in the exact years, it had a positive effect on the exact year KLD score, meaning that companies that issued a report in a particular year tended to have higher environmental KLD scores in that year than companies that did not issue a report. Companies that issued a report in 2006, 2009, or 2012 also had higher KLD scores in the next year (2007, 2010, or 2013). Revenue and profit had no significant effect on the KLD scores. From an industry perspective, the services industry had lower KLD environmental scores than all other industries overall.

Most of the substantive text codes did not have a statistically significant effect on the KLD environmental scores. There were no relationships between the raw count of the codes and the KLD scores, but when using the proportions of the substantive codes, a relationship was revealed. The proportion of opportunity codes had a positive effect on the next year KLD score. If a company had a higher proportion of opportunity codes out of the substantive codes for the report in the exact year, the KLD score for the next year was higher. With a coefficient of 15.078, an increase of 10% of proportion of opportunity codes corresponds with an increase of

1.5% in KLD scores for the next year. The statistical results of the regressions using the next year KLD scores can be seen in Figures 6 and 7. The results of the regressions using the exact year KLD scores do not appear because there were no significant results to be viewed.

[Insert Figures 6-7 about here]

Overall, the results show that though there was little relationship between the substantive codes and the exact year KLD scores, there was a relationship observed between proportion of opportunity codes and the next year KLD scores, which indicates that there is some connection between how corporations are addressing the environment in their reports and their environmental practices. The act of issuing a report had a positive effect on both the exact year and the next year KLD scores, but revenue and profit had no significant effect. There were patterns that indicate that 2009 was a year with a particular surge of corporate environmental awareness and environmental practice, as observed in both the KLD scores and the sustainability reports. There is also variation by industry in how the environment is discussed in the reports and how it is expressed in the environmental scores.

V. Discussion and Implications

Discussion of Patterns

Overall, there was an increase in number of reports and mentions per report from 2006 to 2012, and KLD scores also increased from 2006 to 2009 to 2012. This indicates that as public environmental concern and awareness were increasing over time, corporations were increasingly addressing environmental issues as a part of business. Despite this overall upward trend, when the data is broken down by industry or by individual code, the patterns change. For basic materials, consumer goods, finance, and technology, the highest average KLD scores are in

2009. The proportion of opportunity and risk codes are highest in 2009, across all industries. All of these patterns indicate that 2009 was a significant year for corporate sustainability reporting in the United States. A potential explanation for the significance of this trend is the shift in politics in the country. In 2008, a democratic president replaced a republican president, and President Obama emphasized climate change and the environment in his campaign. He also had the support of a democratic legislature. The shift in corporate sustainability reporting to an increased mention of risk in 2009 could have been related to anticipation of potential regulations due to a democratic majority in the government. The shift to increased mentions of opportunity in 2009 could have been due to proactive corporations taking advantage of having political support for environmental initiatives after the election. This is a potential hypothesis for further research into how and why corporate focus on environmental efforts seemed to surge in 2009.

The industry trends have different patterns than the overall trends. For basic materials and consumer goods, 2009 is the lowest year for mentions per report, but that year also has the highest KLD scores for those industries. For the services industry, as the number of reports and the KLD scores went up from 2006 to 2009 to 2012, the number of mentions per report went down. These patterns indicate that the companies that were making the most substantive efforts in a particular year were not necessarily the companies that were mentioning the environment the most, and that more mentions per report do not correspond with more environmentally responsible activity. This implies that the text of sustainability reports is not a reliable source for determining environmental impact, especially for individual companies. In fact, increased discussion of environmental impact in the cases of these particular industries appears to be correlated with relatively lower KLD scores. While it is possible to use overall trends to discuss

general corporate environmental awareness, industry trends are more varied and cannot be described using overall trends.

The services industry stands out in the statistical analysis as well, as it was consistently the lowest scoring industry in environmental KLD scores. This could have to do with the regulatory environment of the industry. For example, basic materials is likely to have much more universal environmental regulation since many of those companies involve oil or mineral extraction, having a large impact on the natural environment. Since services is more varied in the types of companies it involves, and since the nature of the services industry has an inherently lower impact on the environment than some other industries, it may be more complicated to quantify or evaluate the environmental impacts in this industry. This potential reasoning for the lower scores is not very consequential, as it assumes that it is merely the nature of the industry to have a low score and also a low overall impact. Ramus and Montiel (2005) concluded however, that the services industry is less likely than other industries to follow through on commitment to environmental policies, so the patterns seen in the KLD scores align with this assertion as well. This explanation is more problematic, because when corporations commit to environmental policies but do not follow through on this commitment, it becomes difficult to hold them accountable. Looking at the KLD environmental scores for the services industry reaffirms the importance of taking industry differences into consideration when discussing trends in environmental activity and reporting.

Regression Analysis

The results of the cross sectional data analysis indicate that reporting has a positive impact on environmental efforts. That is, corporations that publish sustainability reports tend to make more substantive efforts for the environment. This implies that corporations that put

resources into thinking about and articulating on their environmental efforts tend to have a more positive environmental impact. If reporting were required or more regulated, the companies that had not previously taken this voluntary step may naturally improve their environmental impact as a result of being required to think about it. In terms of the monetary controls, revenue and profit had no significant effect on KLD scores. This is likely due to the sample used, as all the companies were in the top Fortune 100 at some point in the years indicated, and therefore may not have had a broad level of variation in profit and revenue.

There is no statistical support for the first hypothesis. Though there were mentions of time reference within the sustainability reports, there was no statistically significant relationship between the level of time reference and the KLD environmental scores, as the hypothesis suggested. It is possible that time reference does play a role, but is not expressed through the context of mentioning of the term “environment” in sustainability reports. Time reference may be expressed more prominently through different contexts or different media. It may also be that time reference is not something that differs enough among American corporations to change the way they address the environment. Time reference may be more relevant at a global level with language differences, as Liang et al (2014) discussed.

There is no statistical support for the second hypothesis, as the frequency of risk and efficiency codes had no statistically significant effect on the KLD scores for the exact or the next year. There was statistical support for the third hypothesis however. There was a positive effect on next year KLD score for companies with a higher proportion of opportunity codes in their exact year report. This could be explained by the concepts of focused versus integrated companies as discussed by Slawinski and Bansal (2012). Companies that talk more about efficiency and regulation tend to be more focused, meaning that they only make environmental

efforts that are necessary or good for business, having more of a nearsighted view of the issues. Companies that talk more about opportunity and innovation tend to be more proactive, going beyond mere regulation and the business case for sustainability, to take advantage of opportunities presented by environmental efforts. In the case studies by Slawinski and Bansal, it was observed that companies that were categorized as integrated were more likely to collaborate or to make investments in new technologies. The opportunity code most closely aligns with this description. A line was coded as “opportunity” if it discussed a new technology, some investment in research, or collaboration within or among companies. It would make sense that an integrated company, having a higher proportion of mentions of opportunity, would have a higher KLD score because their efforts are more comprehensive. These results also indicate that where corporations focus more on opportunity, there is less potential greenwashing taking place. The fact that the proportion of opportunity mentions had a significant positive impact on the substantive environmental score of corporations implies that discussion of opportunity in relation to the natural environment is more applicable to actual results than the other contexts included in this study. This information is valuable to stakeholders and consumers, as it could provide a guideline for interpretation of sustainability reporting.

The statistical results do not support the fourth hypothesis that the number of mentions relating to impact would have a negative effect on the KLD scores. Though the impact code was applied most frequently, there was no statistically significant relationship between the impact code and the KLD environmental score. This shows that even if companies frequently mention their impact on the natural environment in their sustainability report, it does not imply that any substantive action is taking place. It is not evidence for greenwashing either however, because a high frequency of mentions related to impact does not have a negative effect on the KLD scores.

This indicates that there is little relationship between how corporations discuss their impact on the environment in their sustainability reports and what actions they take to address this impact, implying that the text of sustainability reports may not be the best resource for understanding a company's environmental activity.

Though the mention of the natural environment in the sustainability reports increases over time as the fifth hypothesis states, there is no statistical evidence to support the assertion that the relationship between the KLD scores and the sustainability reports increases over time. Since there is very little statistically significant relationship at all between the coding results and the scores, it is not possible to look at the change in relationship over time.

VI. Summary and Conclusions

Summary of Results

This study focused on the relationship between mentions of the natural environment in corporate sustainability reporting and substantive efforts corporations make toward environmental action. The independent variables were the coded text of sustainability reports that defined the context of the word "environment" in the reports. The dependent variable was the environmental scores from KLD, an outside party CSR scoring database. From the reports, it can be concluded that over time, more companies issue public sustainability reports and mention the environment more often. It should be noted that the proportion of substantive mentions of the environment has gone down over time, so it appears that even as more companies talk about the environment, the context in which it is mentioned is not necessarily one that promotes direct action. There is variation in both the coding of the reports and the KLD scores by industry, and

the services industry scores particularly low in the KLD environment database, indicating that industry differences play a role in how corporations affect the environment.

Though there were no specific results showing how time reference came into play in sustainability reporting or definitively indicating greenwashing as was originally expected, there was evidence to support the idea that a certain corporate environmental focus can lead to increased substantive results. Specifically, companies that focus relatively more on the opportunities available in relation to the natural environment tend to have a higher environmental score. This is an important finding because it could potentially allow stakeholders and consumers to infer that companies that focus on environmental opportunity may be more environmentally friendly than companies that do not. It also offers a preliminary finding that could be expanded on with further research on how corporations publicly discuss the environment.

Future Research

This study offers a basic introduction to research on the substance of corporate sustainability reporting. It shows that text analysis of sustainability reporting can offer significant information about how corporations address or fail to address environmental issues. It is also important because it shows that where corporations discuss certain issues regarding the environment, it may not necessarily translate into substantive action. This research, along with the theories discussed, opens up potential for future research in this area.

The text coding was an important part of this particular study, and future studies could look to coding for other aspects of the text. This study focused on the context of the word “environment” while other studies could look to the contexts other words that focus on corporations and sustainability to gain further information. This could potentially reveal more about time reference and corporate values. In addition to coding the same reports for other

contexts, the coding of other publicly available information on the company could reveal interesting patterns. Doing a text extraction of a company's website or its annual report could show some other patterns that are not apparent in the sustainability reports. Different coding and different sources of information could reveal patterns in how companies talk about the natural environment that were not available in this study.

Further research could also go into the temporal aspect of this study. As shown by previous research, time reference can be a very important factor in environmentalism and sustainability. The way that people and companies view time can change how they view environmental issues. This study looked at time reference within the sustainability reports, but it is possible that this is not where time perspective of a company is most revealed, and more could be learned from looking at annual reports, interviews, or even discussion of baseline sustainability goals elsewhere in the sustainability reports. This study also focused only on three years, but it would be interesting to take more years into account and to potentially study patterns of environmental issues over a span of time, looking at the years before, after, and in between the years considered here to see if there were any temporal patterns that were not revealed due to the limits of this study.

Conclusion

The purpose of this study was to gain an understanding of how the text of sustainability reports translates into corporate environmental action. Past research and the results of the report coding in this study have shown that environmental responsibility is becoming a more popular topic to address in sustainability reports. Corporate transparency and CSR are becoming more and more prominent. It is necessary for stakeholders and consumers to learn how to take in this increasingly available information however. Context matters. As this study has shown, in

sustainability reports, the context of opportunity indicates more positive environmental impacts. As past research has shown, long term and cyclical time perspectives within corporate culture lead to more proactive environmental initiatives. When learning about or supporting corporations based on their reputation for environmental sustainability, it is important to understand the corporate culture and the context in which they address the natural environment. When looking to resources such as sustainability reports however, it is also important for stakeholders to be aware that more discussion of the environment does not necessarily correspond with more environmental initiative. An increase in discussion of corporate impact does not have a positive or negative effect on the actual corporate impact, and past studies have indicated that policy implementation does not always follow statements of intent.

Despite the vagueness of the environmental context of sustainability reporting, the fact that reporting at all is becoming more prominent indicates a shift toward increased valuing of the natural environment. Corporations have the resources and potential to have a vast impact on efforts to address climate change in the world by respecting and protecting the environment. It is possible that corporations have more potential for societal change in this area than government systems, non-governmental organizations, or any other type of organization because they are so powerful and so all encompassing, especially in the United States. Understanding how corporations are using or not using this potential is important for society to understand where corporations stand in terms of environmental efforts, and that is the reason for this study. Future research should continue to explore the connections between corporate action and corporate reporting on the natural environment. These reports exist to inform, and stakeholders and consumers have a responsibility to be informed.

VII. Appendix

Code	Definition	Example (2006)	Example (2009)	Example (2012)
Long Term	The context of the extract includes reference to time, specifically in a way that considers the long term future, either by explicitly or implicitly referencing a time frame greater than ten years into the future	revise any forward-looking statements. Environmental Statement A healthy environment, locally and globally, is vital to our business and to the communities where we operate. We view protection of the <i>environment</i> as a journey, not a destination. We began that journey over 100 years ago and it continues today. Each associate of The Coca-Cola Company has responsibility for stewardship of our	...At AT&T, when we talk about "sustainability," we're not just talking about the <i>environment</i> . We're talking about a broad array of initiatives that will make our business and communities stronger well into the future. Yes, it's protecting the environment by consuming less...	...flight on June 1, 2012. In aviation, the most significant environmental improvements occur when they are designed into a product from the beginning. This forward-thinking approach, which we call Design for <i>Environment</i> , includes analyzing a product's environmental footprint over its operational life cycle from raw materials, through manufacturing, into service and, finally, at the end of use. ecoDemonstrator Over the next...
Short Term	The context of the extract includes reference to time, specifically in a way that considers the short term future, either by explicitly or implicitly referencing a time frame less than ten years into the future	Sustainability is deeply rooted within K-C. We have long recognized that simply responding to customers' requests for sustainability improvements is not enough. We have established a design for the <i>environment</i> program as part of our Vision 2010 program. This aims to develop environmentally sound processes, products and packaging and to consider environmental factors at every stage of the design process. In	...and cans used by 2015 ¥ Source 25 percent of our PET plastic from recycled material by 2015 WATER STEWARDSHIP ¥ Improve our water efficiency by 20 percent by 2012, compared with a 2004 baseline ¥ Return to the <i>environment</i> , at a level that supports aquatic life, the water we use in our system operations by the end of 2010 through comprehensive wastewater treatment...	...and services. We encourage the same high standards from our suppliers, and their suppliers, that we practice every day with regard to ethics, labor standards, health and safety, and the <i>environment</i> . In 2012, we continued to improve our sustainability practices throughout our supply chain, including a cross-functional committee to review our practices as they relate to industry standards, and provide ongoing...
Impact	The context of the extract focuses on a company's protection of, damage to, or other influence (positive or negative) on the natural environment	...its responsibility to: ¥ Solve its own environmental pollution and conservation problems. ¥ Prevent pollution at the source wherever and whenever possible. ¥ Develop products that will have a minimum effect on the <i>environment</i> . ¥ Conserve natural resources through the use of reclamation and other appropriate methods. ¥ Assure that its facilities and products meet and sustain the regulations of all federal, state and local environmental...	...and more than 500,000 tons of cargo a year, AMR promotes commerce, trade, and economic prosperity, as well as a sense of global community and citizenship. Our business also affects the <i>environment</i> around us, and we are committed to being good stewards by minimizing our environmental footprint With more than 88,000 employees worldwide, we understand that our responsibility as a global citizen begins...	...technologies have unlocked new supplies of oil and gas, we understand they must be managed responsibly to minimize environmental impacts. Well Integrity Proper well construction is essential to protecting the <i>environment</i> , particularly fresh water aquifers. Steel casing and cement are used in the well bore to create physical barriers and protect drinking water resources. During well construction, we use industry best practices and comply with state rules that apply to drilling an...
Efficiency	The context of the extract focuses on profitable business practices or making any aspect of the business or product use fewer materials or save money	and safety goals. In the area of emission reductions, we launched our Green Fleet program to increase fuel efficiency because it makes business sense and because it's good for the <i>environment</i> . We reduced hazardous waste within our manufacturing sites and facilities by nearly six percent. And, we rolled out our Moving to Zero Injuries program to create an even safer workplace...	...the company's commitment to environmentally progressive design innovation. Incorporating four innovative technologies new engines, increased use of lightweight composite materials, high-efficiency systems applications, and modern aerodynamics the 787 is designed for the <i>environment</i> with an impressive 20 percent improvement in fuel use and an equivalent reduction in CO2 emissions compared to today's similarly-sized airplanes. The 747-8 offers a 16 percent improvement in fuel use and...	...a Load Off, a campaign designed to show consumers how using a product like Tide Coldwater can help take a load off the energy grid, their wallets, and the <i>environment</i> . In just four weeks, the campaign generated significant traditional and social media coverage, translating into strong consumer engagement and over 35,000 commitments to...
Opportunity	The context of the extract focuses on company prospects for innovation, partnership, or progress	help from the John Deere marketing division in Ormes, a donated 60-kilowatt John Deere 4045T engine was installed in the train. The upgraded train improves the visitor experience and the <i>environment</i> . The engine produces 75 percent less pollution than the engine it replaced. The small train takes visitors on a 3-kilometer tour around the site. The Parc is one of France's 10 most-	...and our suppliers in the area of environmental protection. As a frequent sponsor and participant in many industry forums, Boeing encourages the sharing of ideas and actions that help the <i>environment</i> . We are now increasing these efforts in two ways: ¥ Expanding targeted collaboration with selected suppliers. ¥ Providing new forums to enhance broader general sharing of ideas and advanced practices among supply...	...Neb. weather offices. Raytheon's environmental solutions, coupled with our company research and technology capabilities, provide a broad set of powerful tools that can help manage the uncertainties about our planet's <i>environment</i> . For example, the NASA National Preparatory Project spacecraft uses Raytheon's Visible Infrared Imager Radiometer Suite (VIIRS) sensor to produce weather images depicting Earth and its weather systems in unprecedented sharpness...
Risk	The context of the extract focuses on safety or regulation	&T 2006 Social Responsibility Report 34 35 Compliance Compliance is a critical element of AT&T policy. All employees must comply with all applicable laws, regulations and AT&T standards and practices governing <i>environment</i> , health and safety. Furthermore, we incorporate these considerations into the Code of Business Conduct. We proactively create processes designed to maintain compliance, and if problems nevertheless occur, we implement	...every participating chemical company continuously improve its health, safety and environmental performance. Dow will make continuous progress toward the vision of no accidents, no injuries and no harm to the <i>environment</i> and will publicly report our global health, safety and environmental performance. As a participant of Responsible Care®, we will lead in ethical ways that increasingly benefit society, the economy and...	...perspectives obtained through outside consulting relationships, benchmarks against other organizations risk profiles, and active participation in roundtable risk committee sessions. Below we discuss the major risk categories related to the <i>environment</i> that we assess in the ERM program. For more complete information regarding the program and risk factors affecting UPS, you can: ¥ Visit the UPS investor relations website (investors.ups.com)...

Figure 1: Definitions and examples of the context codes

A.

Reports	2006	2009	2012
Total	46	61	76
Basic Materials	9	8	11
Consumer Goods	6	10	10
Financial	5	7	10
Healthcare	2	7	8
Industrial Goods	8	9	10
Services	8	12	16
Technology	7	8	10

B.

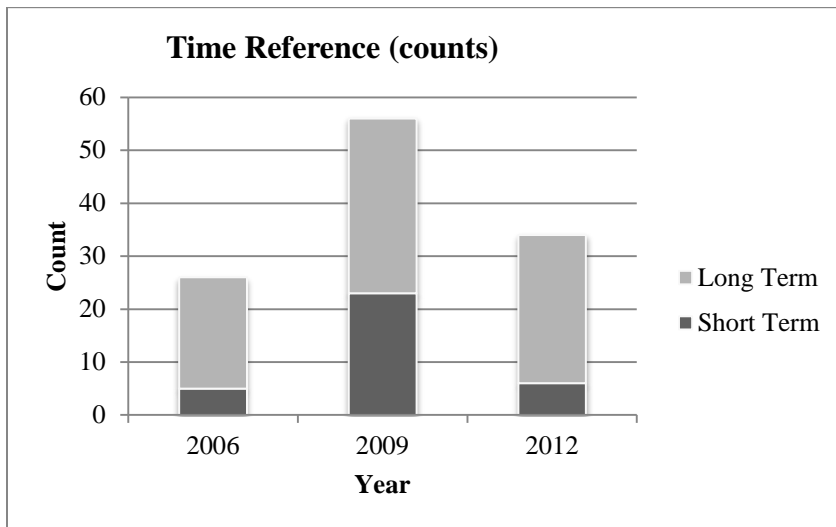
Mentions per Report	2006	2009	2012
Total	23.15	22.08	30.57
Basic Materials	26.56	14.88	38.73
Consumer Goods	24.33	14.00	16.40
Financial	15.80	17.43	18.20
Healthcare	17.00	13.57	18.50
Industrial Goods	13.25	25.78	27.20
Services	25.25	23.92	20.13
Technology	29.57	50.25	79.80

Figure 2: Table A lists the total number of reports for each year, separated out by industry. Table B lists the number of mentions of the word “environment” per report for each year, separated out by industry.

	2006	2009	2012
N/A	579	853	1511
Short Term	5	23	6
Long Term	21	33	28
Time Reference	26	56	34
Impact	289	265	460
Efficiency	36	67	113
Opportunity	19	47	31
Risk	35	45	40
Other	64	64	153
Total	1048	1397	2342
Total Substantive Codes	469	544	831
Proportion Short Term	0.0107	0.0423	0.0072
Proportion Long Term	0.0448	0.0607	0.0337
Proportion Time Reference	0.0554	0.1029	0.0409
Proportion Impact	0.6162	0.4871	0.5535
Proportion Efficiency	0.0768	0.1232	0.1360
Proportion Opportunity	0.0405	0.0864	0.0373
Proportion Risk	0.0746	0.0827	0.0481
Proportion Other	0.1365	0.1176	0.1841

Figure 3: This table shows the overall raw counts as well as the overall proportions of each code used in each year.

A.



B.

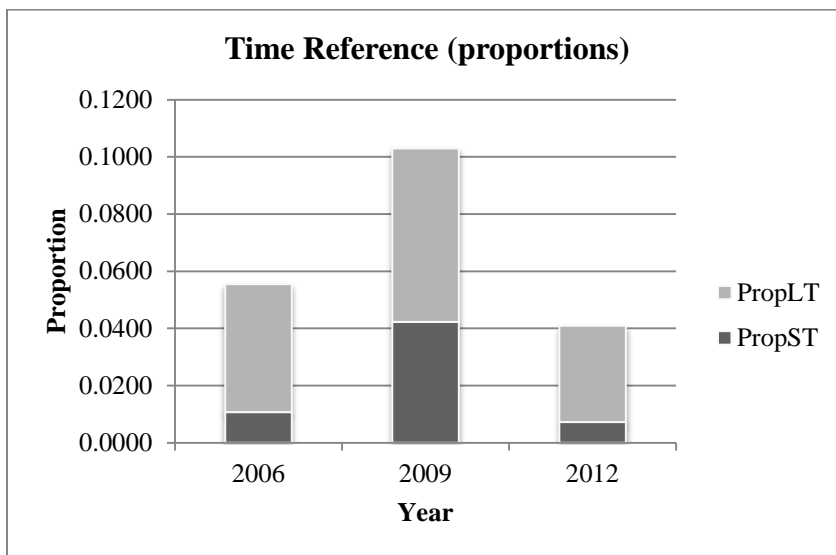


Figure 4: Chart A shows the raw counts of time reference codes, indicating the amount of short term and long term codes for each year. Chart B shows the proportions of time reference codes, indicating the proportions of short term and long term codes for each year.

Sector	Average KLD 2006	Average KLD 2009	Average KLD 2012
Total	66.48	74.98	76.77
Basic Materials	71.04	82.72	79.66
Consumer Goods	81.35	87.99	85.62
Financial	53.29	75.04	71.75
Healthcare	58.49	66.05	69.36
Industrial Goods	75.60	87.34	89.17
Services	58.26	60.05	63.37
Technology	83.34	91.52	90.25

Figure 5: Average KLD environmental scores by year and industry. These scores are the aggregate of the various ratings collected and evaluated to form the KLD database. The scores are percentages, and the higher the score, the better the environmental rating.

<i>DV KLD_NextYear</i>	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Time Reference			-0.107 (0.46)	0.000 (0.40)				
Impact			0.0912 (0.14)		-0.033 (0.11)			
Efficiency			-0.957* (0.41)			-0.653 (0.34)		
Opportunity			0.744 (0.56)				0.291 (0.44)	
Risk			-0.183 (0.51)					0.048 (0.42)
Healthcare	-18.398** (-7.019)	-20.378* (8.32)	-7.387 (5.57)	-6.447 (5.49)	-6.493 (5.44)	-7.316 (5.53)	-6.380 (5.44)	-6.465 (5.47)
Basic Materials	-14.495 (7.34)	-15.541 (8.67)	-9.668 (5.30)	-8.809 (5.22)	-8.781 (5.18)	-9.659 (5.25)	-8.668 (5.18)	-8.820 (5.19)
Financial	-16.88 (6.78)*	-19.513* (8.01)	-1.725 (5.58)	-0.845 (5.51)	-0.911 (5.46)	-1.494 (5.53)	-0.846 (5.46)	-0.823 (5.48)
Services	-23.266*** (5.84)	-26.411*** (6.88)	-13.637** (4.46)	-13.216** (4.41)	-13.182** (4.37)	-13.489** (4.42)	-13.154** (4.37)	-13.196** (4.39)
Consumer Goods	-3.191 (6.96)	-4.528 (8.22)	-1.210 (5.18)	-0.212 (5.11)	-0.222 (5.07)	-0.942 (5.32)	-0.169 (5.07)	-0.194 (5.09)
Technology	1.921 (7.68)	2.600 (9.09)	3.695 (3.36)	3.707 (5.30)	3.771 (5.25)	4.121 (5.31)	3.479 (5.26)	3.683 (5.27)
Revenue	0.031 (0.00)	0.000* (0.00)	0.000* (0.00)	0.000 (0.00)	0.000 (0.00)	0.000* (0.00)	0.000 (0.00)	0.000 (0.00)
Profit	0.883 (0.00)	0.000 (0.00)	-0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	-0.000 (0.00)	-0.000 (0.00)	0.000 (0.00)
Report	9.113*** (2.24)							
Constant	77.857*** (5.07)	83.170*** (5.79)	87.407*** (3.51)	86.717*** (3.45)	86.869*** (3.44)	87.528*** (3.47)	86.612*** (3.41)	86.698*** (3.42)
rho	0.665	0.773	0.807	0.797	0.792	0.807	0.793	0.794

* p<0.05, ** p<0.01, *** p<0.001

Figure 6: Time series cross sectional analysis using the raw counts of the codes as the independent variables.

<i>DV KLD_NextYear</i>	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14
Prop Time Reference	-0.204 (5.71)	0.852 (5.76)				
Prop Impact	-1.814 (2.48)		0.598 (1.88)			
Prop Efficiency	-7.771 (4.77)			-5.652 (3.93)		
Prop Opportunity	11.275 (7.09)				15.078* (6.14)	
Prop Risk	-1.646 (6.91)					-0.143 (6.33)
Healthcare	-6.754 (5.36)	-6.400 (5.31)	-6.513 (5.51)	-6.888 (5.52)	-6.316 (5.49)	-6.446 (5.49)
Basic Materials	-8.893 (5.16)	-8.811 (5.09)	-8.884 (5.23)	-9.255 (5.25)	-8.612 (5.22)	-8.797 (5.23)
Financial	-0.532 (5.40)	-0.238 (5.35)	-0.905 (5.52)	-0.885 (5.53)	-1.198 (5.51)	-0.846 (5.50)
Services	-10.902* (4.40)	-11.270** (4.33)	-13.381** (4.44)	-13.332** (4.42)	-13.232** (4.41)	-13.218** (4.41)
Consumer Goods	0.181 (5.01)	-0.115 (4.97)	-0.246 (5.12)	-0.410 (5.13)	-0.034 (5.11)	-0.216 (5.11)
Technology	3.622 (5.19)	3.578 (5.14)	3.656 (5.30)	3.893 (5.31)	3.321 (5.30)	3.710 (5.29)
Revenue	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	0.000* (0.00)	0.000 (0.00)	0.000 (0.00)
Profit	0.000 (0.00)	0.000 (0.00)	-0.000 (0.00)	-0.000 (0.00)	0.000 (0.00)	0.000 (0.00)
Report						
Constant	87.882*** (3.69)	86.700*** (3.36)	86.475*** (3.52)	87.241*** (3.46)	86.177*** (3.44)	86.724*** (3.44)
rho	0.772	0.761	0.798	0.803	0.809	0.796

* p<0.05, ** p<0.01, *** p<0.001

Figure 7: Results of time series cross sectional analysis using code proportions as the independent variables.

VIII. References

- Bansal, P. & Desjardine, M. 2014. Business Sustainability: It is About Time. *Journal of Strategic Organization*, 12:1, 70-78.
- Brown, H.S., de Jong, M., & Lessidrenska, T., 2009. The Rise of the Global Reporting Initiative: A Case of Institutional Entrepreneurship. *Environmental Politics*, 18:2, 182-200
- Carroll, A. B. (1979). A three-dimensional conceptual model of corporate performance. *Academy of Management Review*, 4, 497–505.
- Chaharbaghi, K. & Lynch, R. 1999. Sustainable Competitive Advantage: Toward a Dynamic Resource-Based Strategy. *Management Decision*, 37:1, 45-50.
- Crane, A., Matten, D., and Spence, L.J. 2013. Corporate Social Responsibility in a Global Context, 2/e, 3-26.
- Dehning, B., & Stratopoulos, T. 2003. Determinants of a Sustainable Competitive Advantage Due to an IT-Enabled Strategy. *Journal of Strategic Information Systems*, 7-28.
- Elkington, J. 2004. Enter the Triple Bottom Line. 1-16.
- Herzig, C. & Schaltegger, S..2006. Corporate Sustainability Reporting: An Overview. *Sustainability Accounting and Reporting*, 21, 301-324.
- Karnani, A. 2010. The Case Against Corporate Social Responsibility. *The Wall Street Journal*.
- Liang, H., Marquis, C., Renneboog, L., Sun, S.L. 2014. Speaking of Corporate Social Responsibility. 1-41.
- Mainieri, T. Barnett, E.G., Valdero, T.R., Unipan, J.B., & Oskamp, S. 2010. Green Buying: The Influence of Environmental Concern on Consumer Behavior. *The Journal of Social Psychology*, 137:2, 189-204.
- Montiel, I. & Delgado-Ceballos J. 2013. Defining and Measuring Corporate Sustainability: Are

- We There Yet? Organizations and the Natural Environment, 27:2, 113-139.
- Ramus, C.A. & Montiel, I. 2005. When are Corporate Environmental Policies a Form of Greenwashing? *Business and Society*, 44:4, 377-414
- Searcy, C. & Buslovich, R. 2014. Corporate Perspectives on the Development and use of Sustainability Reports. *Journal of Business Ethics*, 121:2, 149-169.
- Slawinski, S. & Bansal, P. 2012. A Matter of Time: The Temporal Perspectives of Organizational Responses to Climate Change. *Journal of Organizational Studies*, 33:11, 1537-1563.
- Smith, K.T. & Alexander, J.J. 2013. Which CSR-Related Headings do Fortune 500 Companies Use on Their Websites? *Business Communication Quarterly*, 76:2, 155-171.
- Wagner, M. 2010. The Role of Corporate Sustainability Performance for Economic Performance: A Firm-Level Analysis of Moderation Effects. *Ecological Economics*, 69:7, 1553-1560.