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Do Environmentally Friendly Companies Outperform Environmentally Unfriendly Companies in Financial Markets? An Analysis of Financial Performance & Corporate Social Responsibility

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By

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Abstract:

Over the last century, the ideology regarding the relationship between humans and the natural world has shifted from a period of major exploitation to a time of conservation and appreciation. Recent catastrophic events such as, Hurricane Katrina in 2005, a result of sea level rise and wetland degradation, have really opened the public's eyes to the negative impacts that humans have on the environment, and what will come if we do not change our ways. Implementing sustainability practices has become a norm, if not a necessity, in the corporate world if companies wish to prosper. Using cross-sectional data from Newsweek's 2015 Green Rankings List and a variety of online financial sources, this study examines the relationship between corporate sustainability efforts, specifically "green" efforts as reported by Newsweek, and performance in financial markets. Companies may strive for sustainability for its own sake, but they may also hope that their efforts will be rewarded by better financial performance and recognition by the consuming and investing public. To get at the former, this study examines the relationship between Newsweek's Green Ranking and a variety of financial indicators. To address the public perception, using a survey conducted within the Union College community, this study will evaluate how well recognized Newsweek's 2015 Green Ranking's environmentally friendly companies are among people with various demographic backgrounds, particularly the millennial age group. The survey will also evaluate how people perceive a company compared to its actual efforts as measured by Newsweek. If there is a relationship between sustainability efforts and financial performance, or public perception, then companies should incorporate environmentally friendly practices into day-to-day operations and learn to market these developments in a way that connects with consumers.

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Chapter 1: Introduction

Over the last century, the ideology around the relationship with and treatment of our natural world has shifted from a period of major exploitation to a time of conservation and appreciation. From the late 1700's to the early 1840's, the United States manufacturing business began the transition from human labor to the use of machines introducing, what soon became one of the most environmentally detrimental practices, mass production. By the time scientists realized the effects that human activities had on the environment, the consequences already began to appear. It was very difficult for scientists to get the public to support their findings because exploitation of the environment had been such a norm for numerous decades and even centuries.

However, with the help of a wide array of organizations that strive to educate about and conserve our environment for future generations, the environmental movement gained major credibility over the past few decades. These organizations, such as the Sierra Club and the National Audubon Society, date back to the early 1900's and include various local, national, and even international conservation groups. Environmental agencies like the National Wildlife Federation and the Intergovernmental Panel on Climate Change were established to raise awareness about the environmental issues that our world is currently facing.

These organizations, in conjunction with the public's growing consciousness of climate change are altering the decisions that consumers

are making when choosing where to purchase their goods and services. Companies that recognized this pattern have begun to implement Corporate Social Responsibility (CSR) and Corporate Sustainability (CS) practices into their daily operations. Certain firms have been going above and beyond environmental regulation compliance to reduce pollution and carbon emissions as well as implement renewable energy sources.

The century long practice of producing financial reports has recently been joined by CSR and CS reports that companies are constructing to validate the efforts that they are making towards sustainability. Using these reports, environmental analyst firms have judged the companies on their sustainability efforts in order to engineer environmental indices ranking companies on their improvements. Past studies have found skewed results when examining the relationship between environmental friendliness and financial performance. Companies that are successfully able to market themselves to consumers as environmentally friendly, meaning going beyond current environmental legislation, could experience improvements in performance in financial markets. While many previous studies look at whether or not financial markets value environmental reputation, very few studies look at the influences of a certain age demographic, specifically the millennial generation.

Using cross-sectional data from Newsweek's 2015 Green Ranking and MergentOnline financial data, this paper strives to find whether positive environmental image leads to increased financial performance. It will

specifically look at green marketing techniques and their success in portraying the environmental friendliness of the companies that implement these techniques. Furthermore, it will evaluate environmentally conscious firms from the dataset on their ability to market themselves as environmentally friendly to consumers.

The remainder of this thesis is organized as follows. Chapter 2 provides an in-depth timeline of the history of the U.S. 'Green Movement' from ancient times to present day. The next chapter defines what corporate sustainability means and discusses what companies currently do versus what they should be doing in terms of implementing corporate sustainability and green marketing techniques. Chapter 4 reviews existing literature regarding the link between environmental friendliness and financial performance. Chapter 5 discusses how this study measures both corporate sustainability and corporate financial performance, as well as explains the econometric methodology used in this analysis. Chapter 6 describes data collected from a survey conducted at Union College that evaluates the success of environmentally friendly companies in portraying their sustainability to consumers with varying demographic backgrounds. Chapter 7 provides the results of both econometric analyses and, finally, Chapter 8 presents the conclusions, discussions, and suggestions for future work.

Chapter 2: Green Movement

This chapter is going to provide a description of the evolution of the Green Movement in the United States. In particular, it is going to highlight key environment events that led to the acceptance of the Green Movement by the American public.

2.1 From Ancient history to WWII

While the Green Movement did not gain major support until recent times, there is evidence of concerns for the environment dating back to ancient times. Throughout the Bible and Koran, there are recommendations in the text to conserve the natural environment (Blazovich, Smith, & Smith 2013). In ancient times, influential figures like Moses and Mohammed spoke about small-scale concerns with the environment. Back in 1400 BC, Moses preached to his followers about the importance of allowing land to restore itself before re-cultivating and letting animals rest (*The Holy Bible* 1984). Later in 650 AD, Mohammed spoke to the members of his tribe about the importance of water and land conservation (Smith 2010). Unlike the environmental concerns we are facing today, Mohammed and Moses spoke from an appreciation for the natural world and not in the preventative manner in which we are faced with today. This is because it took a long time before people began to realize the impacts that daily human activities have on the environment.

As time moved on, the awareness of environmentalism in general progressed as more scholars and scientists began to understand the importance of the environment to our survival. In 1866, a German zoologist, Ernst Haeckel, coined the term 'ecology' as the study of the relationship between organisms and their environment (Blazovich, Smith & Smith 2013). In 1872, Yellowstone National Park was established as the first national park in the United States (Blazovich, Smith & Smith 2013). In 1896, Harriet Hemenway and Mina Hall wanted to end the killing of water birds for the designing and manufacturing of hats and started the Massachusetts Audubon Society to protect the water bird populations. In just two years, sixteen other states also established Audubon Societies dedicated to the preservation of water birds (History of Audubon and Science-based Bird Conservation 2016). President Theodore Roosevelt was a conservation enthusiast and loved the outdoors. From 1901 to 1909, he established national parks all across the country. Roosevelt brought nation-wide attention to environmentalism and having a president supporting a cause like this brought a lot of legitimacy to the movement (Smith 2010).

However, in between these environmental victories, the Industrial Revolution marks the beginning of using machines to take the place of humans and produce goods at a much higher frequency. During this period, modern forms of transportation were introduced such as steamships and the railroad (Jensen 1993). These combined with the establishment of high speed packaging systems, resulted in mass production in the late 19th century and

early 20th century, which leads into the second industrial revolution in America (Jensen 1993). Meanwhile philosophers, like Henry David Thoreau, in the 1800's had a lot of respect for the natural world and would write with statements such as, "Heaven is under our feet as well as over our heads" (Shabecoff 2012, 39). Mass production and purchasing personal automobiles were becoming more popular with the public and were seen as great innovations for the time. Conservationists like Thoreau were often ridiculed by their peers for their beliefs and discredited as radical because others were blind to the negative effects industrialization, specifically mass producing, had on the environment.

In 1909, the Boundary Waters Treaty was signed by the United States and Canada, which resulted in the establishment of the International Joint Commission. While Roosevelt and other conservationists made serious efforts for environmental awareness, the introduction of chemical warfare agents, known as CWA's, in World War I and the further development of CWA's in World War II (Chauhan et al. 2008) played a part in the environmental degradation of the 1900's. This time period represents the beginning of a movement that would soon become one of the most popular social movements of the 21st century.

2.2 WWII Era

Around the time of World War II, the American people's relationship with the environment shifted in a dramatic way (Stoll 2007). During these early expansionary times in North America, environmental campaigners spoke and acted out to preserve the natural environment from being severely exploited by industrialization (Stoll 2007). This was during the mid-twentieth century when there was a surplus of social movements, spanning a large variety of social injustices, popping up across our nation (Haq and Paul 2012). However, because of the volume of social movements being born, it was uncertain which of these movements would actually stick and result in change. Nevertheless, growing concerns over the consequences of the rapid industrialization that was occurring in the mid-1900's, pushed the environmentalism movement up in the ranks. The effects of industrialization in America were evident almost immediately. People began to make the switch from traveling from city to city by train to purchasing their own automobiles (Stoll 2007). **Table 2.1** below shows the increase in car-owning households from 1890 to 1980. In 1950, just over 40% of homes in the United States owned cars however, in only 40 more years that number would jump to just under 90% of homes owning cars. This seemed like a sign of great economic prosperity for our country as more families were able to purchase private automobiles. However, at the time, it was unknown to the public that this increase in personal automobiles would be a main factor in

the anthropogenic climate change that our world was experiencing a few decades later.

Table 2.1 Increases in Car Ownership from 1890-1980 in the US
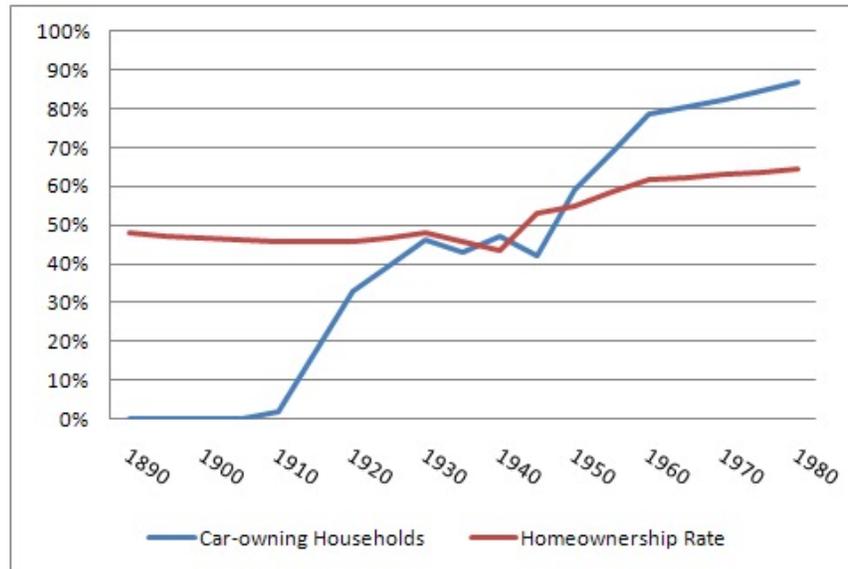
(Was the rise of car ownership responsible for the midcentury homeownership boom in the US? 2013)

2.3 1960's-1990's

Rachel Carson played a large role in raising awareness about the dangers to the natural world if our nation were to continue on in the manner in which it was moving. Her scholarly article, *Silent Spring*, was published in 1962 and was praised for catalyzing "a growing awareness that chemical pollution was threatening the natural world, killing wildlife, and entering the human food chain" (Allitt 2014, 4). Carson's paper criticizing the use of

pesticides, specifically DDT, was widely accepted by many Americans and defines various principles that represent the modern environmental movement (McGurty 2007). Carson's article could not come at a better time for the future of the Green Movement. Shortly after its publication, the Cuyahoga River in Ohio was so polluted in 1969 that the water itself caught on fire (EPA History 2015). Within the same year, there was an oil spill off the coast of Santa Barbara that is remembered for activating the debate over offshore drilling (Sanchez, Jesus 2008). Televised coverage of the oil spill and the effects it had on marine life and the local habitats lit the spark for environmental protests for protection of our environment (Sanchez, Jesus 2008). It was not difficult for the Green Movement to again acceptance in this time period that was already overflowing with social movements such as the Civil Rights Movement, Anti-Vietnam War Movement, and Gay Rights Movement.

The 1970's were an important expansionary time for most social movements, including the Green Movement. On April 22, 1970, over 20 million Americans participated in an event called 'Earth Day' that soon became an annual event that is still celebrated today with over 1 billion supporters worldwide (EPA History 2015). Using a technique from the anti-Vietnam War movement, about 1,500 colleges and universities across the country held teach-ins about the environment run by students and teachers (Protests in the 1960's 2017). The Cuyahoga River fire, the oil spill in Santa Barbara, and the resulting protests served as catalysts for the creation of the Environmental Protection Agency, which was officially formed in December 1970 by the Nixon

administration (EPA History 2015). However, change did not end with the founding of the EPA, these protests and environmental catastrophes prompted the establishment of the Clean Water Act and the Great Lakes Water Quality Agreement in 1972. In addition, President Jimmy Carter signed the new and improved Clean Water Act of 1977, stressing the importance of toxic pollution control (EPA History 2015). Then in 1978, residents of Love Canal, NY discover that they were exposed to chemical contamination that is linked to various cancers and birth defects (EPA History 2015). It was these types of environmental incidents that sparked the heavy protest that occurred during the 1970's that pushed environmental issues into the limelight.

The American public support for the Green Movement is extremely evident in the wide spread protests and the reluctance to surrender until change was not only promised but seen. The overarching support for environmental foundations created to educate about and protect the environment is portrayed by the increase in members of the Audubon Society from 41,000 in 1962 to 400,000 in 1980 (Protests in the 60's 2017). In the early 1980's, another protest erupted against a PCB landfill project proposed for a predominantly poor, African American community in North Carolina. This event promoted the start of a sub-section from the Green Movement, the Environmental Justice Movement (EPA History 2015). The Environmental Justice Movement asks for "fair treatment and involvement of all people, regardless of race or income, in decisions on development, implementation, and enforcement of environmental polices" (EPA History 2015).

In 1988, the Intergovernmental Panel on Climate Change (IPCC) was created with the purpose of analyzing and assessing climate change and its impacts (A brief history of climate change 2013). Today's task of the IPCC is to:

"Assess on a comprehensive, objective, open and transparent basis the scientific, technical, and socio-economic information relevant to understanding the scientific basis of risk-induced climate change, its potential impacts and options for adaptation and mitigating. IPCC reports should be neutral with respect to policy, although they may need to deal objectively with scientific, technical and socio-economic factors relevant to the application of particular policies" (IPCC Information Website).

The implementation of this panel was a big deal because it laid out the guidelines to establish the true effects of climate change from a bipartisan political approach. In addition to the IPCC reports on climate change, there is the United Nations Climate Change Conference, which is held annually representing the United Nations Framework Convention on Climate Change (UNFCCC). The UNFCCC was created in March of 1994 and currently has membership from 197 countries, which are called Parties to the Convention. The Convention adopted a fairly aggressive goal of "stabilizing greenhouse gas concentrations at a level that would prevent dangerous anthropogenic (human induced) interference with the climate systems" and to reach that level while "allowing ecosystems to adapt naturally to climate change, ensuring that food production is not threatened, and to enable economic development to proceed in a sustainable manner" (First steps to a safer future 2017).

2.4 2000's - Present

Recent catastrophic events such as the growing threat of climate change, major oil and chemical spills, and drinking water crises to name a few, opened the public's eyes to the impacts that humans have on the environment and what is to come if we do not change our harmful actions. There is no shortage of documentaries produced and studies conducted outlining the effects humans have on the environment and the future predictions for our natural world. Scientists claim that if we continue in the way in which we are, future generations will struggle to obtain the necessary resources to survive.

Organizations like the IPCC and UNFCCC take the concerns of the public and use it to draft plans for future environmental legislation and use of our limited resources. The UNFCCC is responsible for the Kyoto Protocol, which is the international agreement adopted in Kyoto, Japan in 1997 and enforced in 2005 (Kyoto Protocol 2017). The Kyoto Protocol recognized that developed countries were more to blame than developing countries for the incredibly high levels of Greenhouse Gas (GHG) emissions, which led to the GHG emission requirements for developed countries to be very progressive yet did not include and emissions targets for the developing countries in the world (Kyoto Protocol 2017). In 2001 during the Bush Administration, the United States dropped out of the Kyoto Protocol with the main critique that developing countries such as China and India are not held to the same GHG emissions targets as developed countries (CNN Library 2016). The issue with

China not being included in the emission cap is that, at the time, they were the second largest GHG emitter and were expected to surpass the United States between 2025 and 2030 (China Calls on the U.S. to Join Kyoto Protocol 2017).

The United States' refusal to commit to the requirements of the Kyoto Protocol led to the creation of the Asia-Pacific Partnership on Clean Development and Climate in 2006, which includes Australia, Canada, India, Japan, Korea, and the United States. The countries that make up this partnership represent "more than half of the world's economy, population, and energy use, and they produce about 65% of the world's coal, 62% of the world's cement, 52% of the world's aluminum, and more that 60% of the world's steel" (Asia-Pacific Partnership on Clean Development and Climate 2017). These attempts at getting all of the countries on-board with the same environmental efforts struggled however, the more recent UN conferences, like the Copenhagen Accord, have been more successful at firmly implementing policy changes.

The Copenhagen Accord is known for implementing very progressive climate policies for the 115 world leaders that showed up in 2009 (Copenhagen Climate Change Conference 2009). The meeting called for temperature increases no larger than 2 degrees Celsius beyond the temperatures from the pre-industrial time period. Issues with the Copenhagen Accord were that developing countries that felt the more severe impacts from climate change demanded for no more than 1.5 degrees Celsius increases in temperature and there was no plan of action brought forth that suggested how

countries go about limiting temperature increases (Copenhagen Climate

Change Conference 2009). While the Copenhagen Accord was unable to

result in much policy change due to lack of a firm agreement, the Paris Accord,

signed in December 2015, aims to achieve a universal consensus on climate

change and the temperature increases. The Paris Agreement creates an

unanimity amongst the nations to fight the threat of climate change by keeping

the temperature increase limited to 2 degrees Celsius with a suggestion to

strive for less than a 1.5 degrees Celsius increase (The Paris Agreement

2017). The difference between the outcomes of the Paris Accord and the

Copenhagen Accord is that the Paris Accord was able to get every country to

accept the scientific evidence that climate change is human induced and agree

to work together to combat the side effects.

Released in 2007, the film *An Inconvenient Truth* contains a slideshow

presentation from Al Gore outlining the catastrophic effects from

anthropogenic induced climate change, which he began showing back in 1989

(Gore, 2007). In the film, Al Gore presents the Keeling curve, which shows the

consistent pattern of increasing levels of carbon dioxide at the Mauna Loa

Observatory in the atmosphere since 1958 (Gore et al. 2007). This movie

helped to spark the modern environmental movement and influenced many of

its viewers about the dangers of human activities. Leonardo DiCaprio stars in a

2016 documentary, *Before the Flood*, where he travels around the world to the

places that are experiencing the worst and most severe repercussions from

climate change. The United Nations Secretary-General Ban Ki-moon awarded

Leonardo DiCaprio as a United Nations (UN) Messenger of Peace, focusing on climate change (Before the Flood, 2016). Electing a high-profile celebrity like DiCaprio has the potential to raise even more awareness about climate change and convert some non-believers.

It is because of these countless efforts over the span of numerous decades, that people are accepting climate change as a legitimate issue that is cause by human activities. Now more than ever corporations are taking steps to comply with environmental laws and legislations and even going above and beyond to achieve corporate sustainability. In the article "The Challenge of Going Green", Clarke et al. 1994 comment that, "In the 25 years since the beginning of the modern environmental movement, the United States has spent more than $1 trillion to address environmental threats caused by commercial activities". It is common for companies like Coca-Cola and Ford Motor Company to launch such large-scale sustainability initiatives in order to increase their efforts as well as their company's character. However, it is difficult to determine whether or not the companies actually care about the environment or just care about financial opportunities.

Chapter 3: What is Corporate Sustainability?

This chapter is going to provide a definition of corporate sustainability and how companies can achieve corporate sustainability. In addition, it is going to analyze what companies report that they are doing to be sustainable compared to what they should be doing in terms of implementation of green practices and marketing techniques.

Only recently have companies begun to implement the concept of corporate social responsibility (CSR) into their mission statements. Corporate Social Responsibility has been defined in numerous ways by varying sources. Business News Daily defines CSR as "business practices involving initiatives that benefit society" (Caramela, Sammi 2016). McWilliams & Siegel (2001) define corporate social responsibility as "actions that appear to further some social good, beyond the interest of the firm and that which is required by law". This means implementing practices that work to improve the environment, community, and the lives of all of the stakeholders of a company. However, it is important to note that in order to be practicing corporate social responsibility, the company must be going above and beyond the social and environmental conditions required by law. More recently, Epstein and Buhovac (2014) have defined sustainability as "economic development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs". They, specifically, refer to 'corporate sustainability or 'corporate sustainability practice' by whether or not the company "is contributing to sustainable development of

society, which includes economic growth, environmental protection, and social progress" (Epstein and Buhovac 2014). CSR can include various practices ranging from the 'greening' of production to requiring employee participation in the local community to donating to a charity. It is very common for a company's website to include specific details about how their corporation and its processes are participating in CSR practices (Holbrook 2010). In more recent years, business executives have begun to claim that in order to achieve successful financial performance, it is essential for companies to partake in CSR (Holbrook 2010).

Most published definitions of corporate sustainability and corporate social responsibility build off of the idea behind the stakeholder theory (Searcy and Elkhawss 2012). The stakeholder theory refers to the idea that a company has stakeholders, meaning there are individuals and groups of people who have a stake in either the failure or success of the company (Freeman et al. 2010). Many of these definitions use the stakeholder theory to emphasize that companies are responsible for taking their stakeholders' concerns into consideration when making decisions, both financial and non-financial (Salzmann, Ionescu-Somers, and Steger 2005). According to the stakeholder theory, firms that create better relationships with its various stakeholders will experience stronger performances in financial markets (Darnall, Henriques, Sadorsky 2010). Recently, companies have been experiencing increasing pressure from internal and external stakeholders to incorporate more sustainable practices into their operations (Searcy & Elkhawas 2012). Stakeholders have the power to influence corporate

sustainability and this is a viable reason for why some companies do in fact choose to incorporate corporate sustainability into their business practices.

Milton Friedman once commented that a "firm's corporate social responsibility is to make as much for the stockholders as possible" (Friedman 2007) and this ultimately sparked the interest of other scholars in analyzing the topic of corporate social responsibility and the role it plays in corporate efforts. This caused professionals to strive to either prove or disprove a relationship between corporate social responsibility and corporate financial performance. However, this comment was made back in the late 1960's to early 1970's. Edwin Locke wrote an article for the *Boston Globe* called "Profit Whatever the Cost?" a few decades later in 1996 where he agrees with Friedman's comment but alters it to include that a business's only responsibility is to its shareholders. However, since the 20th century, shareholders have become more passionate about environmental sustainability and insist on its incorporation into business practices and therefore, when a company chooses to implement corporate sustainability, it is abiding by Edwin Locke's declaration of the responsibilities of firms.

Due to this pressure, companies have taken part in various sustainability initiatives. In 1994 alone, U.S. firms invested over $120 billion to comply with environmental laws and legislation, and many more billions on research (Vogan 1996). A growing number of U.S. companies are taking matters into their own hands and are implementing environmentally friendly practices that go beyond the requirements of environmental laws and legislation. In 1991 the EPA created a program called the 33/50 program,

where over 1,200 firms agreed to voluntarily cut various chemical emissions by 33% by 1991 and 50% and 1995 (Konar & Cohen 2010). The 33/50 program achieved its goal in 1994, which was one year ahead of schedule (33/50 Program The Final Report 1999) making the program a huge success due to the performance of the companies that accepted the EPA's invitation to the program. In the past, business executives have speculated over whether or not to invest in sustainable operations however, in today's times, the question has evolved to 'how' to implement corporate sustainability into everyday practices while maintaining the financial performance that is expected of the business (Epstein & Buhovac 2014). Researchers have been investigating why some firms embrace environmentally responsible initiatives on top of existing legislation while others, in similar situations, do not even comply with the mandatory legislation (Bansal & Roth 2000). The Harvard Business Review released an article stating, "Being green is no longer a cost of doing business; it is a catalyst for innovation, new market opportunity, and wealth creation" (Clarke et al. 1994).

3.1 What Companies Say vs. What Companies Do?

There has been a "Green Wave" sweeping through the business world (Esty & Winston 2006) that is associated with companies attempting to be more environmentally friendly to attract consumers who are sensitive to the impacts of climate change. About 80% of the world's largest and 73% of the

United States' largest companies now issue standalone CSR reports in addition to their annual financial reports (Holbrook 2010). In the past few decades, there are companies founded with the main purpose of assessing how socially and environmentally responsible firms are. Numerous companies have taken this responsibility into their own hands and have gone beyond the necessary environmental compliance. Gunningham, Kagan, and Thornton (2004) propose the idea that because environmental laws have only gotten stricter and more severe over the past few decades, many corporations assume that any hazards or harms that their firm produces will sooner or later fall under the future laws and legislation.

Green marketing is a new phenomenon that attempts to market companies as sustainable to their consumers. However, it is possible for green marketing attempts to fail for numerous reasons. Green marketing has not lived up to the hopes and expectations of many managers and activists. Dennis et al. 2006 and Ginsberg & Bloom 2004 both agree that the marketing teams as well as the production processes of these companies are to blame for the failure of achieving a green image. In order for green marketing to be effective, it must satisfy two different purposes: improved environmental quality as well as consumer satisfaction (Ottman, Stafford, & Hartman 2010). "Misjudging either or overemphasizing the former at the expense of the latter can be termed 'green marketing myopia'" (Ottman, Stafford, & Hartman 2010).

A deceitful green marketing technique is green harvesting. This refers to marketing departments realizing that they can cut costs by 'greening' their

production process in terms of energy and material input efficiencies and packaging reductions (Dennis et al. 2005). These types of possibilities provide economic incentives for companies to improve their environmental performances. Green spinning is a marketing technique used notoriously by companies in the most polluting industries like oil, chemicals, pharmaceuticals, and automotives. While some of the companies that fall under these categories may actually be environmentally friendly, consumers still perceive the companies as "dirty" companies (McDonagh and Prothero 2014). Another misleading marketing technique, green selling, refers to companies producing the same products but adding a green theme to the marketing campaigns to take advantage of the environmental concerns that any of the consumers may have (Dennis et al. 2006).

Organizations have made it their sole purpose to identify and announce when companies are not being truthful in their advertising of sustainability efforts. The University of Oregon teamed up with EnviroMedia Social Marketing to create the Greenwashing Index. The organization defines the process of greenwashing as "a company or organization spending more time and money claiming to be "green" through advertising and marketing than actually implementing business practices that minimize environmental impact" (About Greenwashing 2017). The motto of this organization is "Help Keep Advertising Honest" and encourage people to post about an environmental advertisement of a product or company in order to receive feedback of how

environmentally friendly said product or company truly is (About Greenwashing 2017).

3.2 What Companies Should Do?

There is no longer a question of whether or not to integrate corporate sustainability into day-to-day management practices; the new question is how to implement them efficiently and to maximize the financial benefits from the environmental investments (Epstein & Buhova 2014). With the speed in which the green movement is evolving, it can be difficult to stay ahead of all of the sustainability trends. When asked how to accomplish this, Coca-Cola CEO Muhtar Kent replies "You stay ahead by being absolutely truthful to yourself about the fact that you're doing these things not because they sound good but because they are part of your business philosophy. And the beauty of some of these things is that they're actually very good for business, too" (Kent, Muhtar and Ignatius, Adi 2011).

Nearly all global consumers expect companies to act responsibly, but half need to hear or see proof of a company's responsibility before they will believe it. Prothero (1990) states that increase in discussion of environmentalism and "green" issues now reflect an increase in awareness towards these issues. Cone Communications conducts a social impact study that surveys consumers based off their preferences for who they choose to do business with as well as where they desire to work. In their 2015 Global

Corporate Social Responsibility Study, they found that consumers, more often than not, they pay attention to two things: companies that are going above and beyond with CSR efforts and companies that are being called out for poor CSR performance. In particular, 90% of consumers would stop buying a company's products if they learned of a company's irresponsible or deceptive business practices (Cone Communications 2015 Global CSR Study). Kordshouli et al. 2015 found similar conclusions in their study that 80% of consumers said that they would refuse to buy products from companies accused of being polluters.

In a recent interview, Coca-Cola Enterprises' CEO Muhtar Kent comments "Today consumers are buying products not just for the quality but also because they believe in the character of the companies that produce those products" (Kent, Muhtar and Ignatius, Adi 2011). Cone Communications found that there was a decline from 77% in 2011 to 63% in 2015 of reported purchases of products with CSR benefit (Ford and Orta 2013). However, it has been suggested by Cone Communications that this is not due to a decrease in interest for products with CSR benefit but a lack of availability of CSR products. This is shown through the finding that "84% of consumer reported that they are still proactively seeking out socially and environmentally responsible products but the consumers report that the lack of availability of these responsible products is the largest barrier of purchase" (Cone Communications 2015 Global CSR Study).

A common issue for companies is portraying its sustainability efforts in a way that is received positively by the consumers. Corporate sustainability has become a strategic business technique to push companies ahead of their competitors. Kaplan and Montiel (2016) use Geert Hofstede's cultural dimensions to study the differences between how Western and Eastern companies' present their corporate sustainability strategies to their stakeholders. Hofstede's cultural dimensions study looks at how what is valued in the workplace varied in different cultures. He evaluates the different ways in which Eastern and Western countries accept and implement cultural values. Kaplan and Montiel (2016) analyze Hofstede's findings in order to comment on which corporate sustainability strategies are the most recognized by stakeholders in East and West. Companies in both of these regions should use the findings from this comparison to get a better understanding of which sustainability efforts are of the most concern in the region in which they operate.

Most companies rely on their annual CSR progress reports to educate consumers on their efforts yet only a quarter of global consumers state that they have read a company's CSR report in the past 12 months (Ford and Orta 2913). Kordshouli et al. (2015) states that the marketer's best approach to portraying the environmentally friendly efforts of corporations is to deliver detailed information to consumers about the environmental credentials of a product or service. The table below, **Table 3.1**, shows the type of marketing

outlets that consumers prefer to use to receive information on a company's

sustainability efforts.

Table 3.1 Consumer Preference for Green Marketing Material

Information Source	% of Consumers Prefer
Interactive website	34
Video	31
Infographic	25
Comprehensive written report	21
Brief written summary	43
Game	10
None of these/they are not interested in learning about a company's CSR report	13

While green companies do need to focus on how to market themselves to their

consumers as environmentally friendly, it is important to ensure that the only

difference between their product and their environmentally un-friendly

competitors is being sustainable. Companies looking to use green marketing

techniques must be aware that consumers are not willing to sacrifice on

conventional product characteristics like price, accessibility, availability, quality,

or performance. This being said, it is imperative for green products to live up to

the same standards as traditional products in order for them to be considered as

a substitute for non-green products. Ginsberg and Bloom (2004) find when

consumers are forced to make trade-offs between product attributes or helping

the environment, the environment almost never wins. Most consumers simply will

not sacrifice their needs or desires just to be green. But, opinion surveys

conducted by Ginsberg and Bloom (2004) show that consumers would actually

prefer to choose a green product over one that is less friendly to the environment

when all other functions of the product remain the same. However, there are a

growing number of people willing to pay a premium for organic foods, because

despite whether or not this is true, they believe organic food to be healthier,

tastier, and safer. Similarly, with the ideology that consumers will save money on

energy and water bills in the long run, consumers are willing to pay an up-front

premium for energy-efficient, water-conserving washer and dryer units (Ginsberg

and Bloom 2004).

Chapter 4: Link Between CSR and Financial Performance

This chapter is going to review the existing literature that determines how to measure and report corporate social responsibility, specifically corporate "greenness". In particular, this chapter explores studies that examine the relationship between improved environmental sustainability and performance, whether positive or negative, in financial markets. This chapter will also explore whether or not there is a link between corporate social responsibility, specifically corporate greenness, and performance in financial markets. The hypotheses that I am testing will analyze the relationship between corporate social responsibility and multiple financial variables.

4.1 Financial Performance

Financial performance is measured and reported in a myriad of ways such as stock market performance, profit, costs/fines, and customer base. Employees are constantly receiving pressure from stakeholders such as (managers, stockholders, boards of directors, customers) to improve financial performance and increase profits. Business executives report that CSR is critical for financial success and contributes to bottom-line profitability (Holbrook 2010). There have been contradicting conclusions from past research over whether or not environmental reputation has an effect on

performance in financial markets. The findings from these studies have

provided conflicting results. Some have concluded that there is no relationship

between corporate sustainability while others suggest that being green

increases financial performance. Holbrook (2010) conducted a study that

examines the relationship between CSR and financial performance using

financial measures such as levels of accounting earnings (ROA, ROE, ROS),

two earning attributes (persistence and predictability), earning response

coefficients, and properties of analysts' forecasts. McPeak, Devirian, and

Seaman (2010) conclude that the answer to this question has not been

definitive but that the issue with past studies is that they have not given a long

enough time frame for the financial performance to react.

On the other hand, many studies also propose that consumers will

choose to purchase goods and services from environmentally friendly

companies rather than un-environmentally unfriendly companies. However,

Blazovich, Smith & Smith 2010 argue that it is unknown whether or not this

additional consumer base will offset the cost that the companies incur to

become more environmentally friendly (Blazovich, Smith & Smith 2010). Konar

and Cohen (2010) used S&P 500 companies, the largest publicly traded firms

in the United States, and eliminated all of the non-polluting firms which were

mostly comprised of insurance and banking companies. Their study included

312 of the largest publicly traded manufacturing companies in the U.S. and

concluded that having a poor environmental reputation has a "significant

negative effect on the intangible-asset value" (Konar & Cohen 2010). Clarkson

et al. (2011) supports the findings by Konar and Cohen and goes even further to say that companies that are progressive, significantly improve their environmental performance over time, and can experience certain economic benefits such as increases in profitability and cash flow compared to other similar firms who decide not to improve their environmental performances.

4.2 Why would companies seek to be green?

Stakeholders, groups and individuals who can affect or are affected by the achievement of an organization's mission (Maon, Lindgreen & Swaen 2009), hold a lot of power regarding the financial decisions that firms make and can be fairly influential towards the firm's practices. Saha and Darnton (2005) believe that stakeholder pressure can be a large reason for why companies decide to go green. Stakeholders have a few ways in which to influence companies, including threatening, cooperation, and directly affecting the business activities (Saha & Darnton 2005). Maon, Lindgreen, and Swaen (2009) agree that stakeholders are essential for the implementation of corporate social responsibility (CSR). Darnall, Henriques, and Sadorsky (2010) created a study that examines the relationship between stakeholder pressure as well as the size of the firm and the firm's implementation of proactive environmental operations. They conclude that "smaller firms are more responsive to value-chain, internal, and regulatory stakeholder pressures" (Darnall, Henriques, & Sadorsky 2010).

4.3 How does implementing CSR affect Financial Performance?

Because of the growing awareness of the threat that climate change has, the concept of environmental sustainability has become more prevalent when it comes to consumers and companies making business decisions. There have been numerous studies conducted evaluating the relationship between corporate social responsibility and corporate financial performance. Many of these studies use different approaches, data sources, and methodologies to evaluate this relationship. McPeak, Devirian, and Seaman (2010) examine whether or not environmentally friendly companies are rewarded in the financial markets for their efforts. Using the KLD Analytics dataset, they compare company stock price growth to the growth of the overall S&P 500 index allowing them to establish a company's performance compared to the overall market over a 2-year period ranging from 2005-2007. Konar and Cohen (2010) used S&P 500 companies, the largest publicly traded firms in the United States, and eliminated all of the non-polluting firms which were mostly comprised of insurance and banking companies. Their study included 312 of the largest publicly traded manufacturing companies in the U.S. Blazovich, Smith, and Smith (2013) use Newsweek's 2010 Green Rankings list to evaluate their two research questions that examine the impact of being green on financial performance and the relationship of being green to business risk. They find that a high green score was not significantly related to the firm's financial performance and that there is no relationship between green ranking and business risk (Blazovich, Smith, and Smith 2013).

Clarkson et al. (2011) take two different approaches to evaluating environmental and financial performance of companies. They ask "is a change in relative environmental performance preceded by a change in relative financial performance, consistent with the resource-based view of the firms" and "does a change in relative environmental performance lead to a change in subsequent financial performance, consistent with arguments that 'it pays to be green'" (Clarkson et al. 2011). Clarkson et al. (2011) uses longitudinal data from 1990 to 2003 of the four most polluting industries in the United States, including pulp and paper, chemical, oil and gas, and metals and mining to generate the pollution propensity.

There have been contradicting conclusions from past research over whether or not environmental reputation has an effect on performance in financial markets. Some previous studies conclude that being environmentally friendly does not have an effect on financial performance. McPeak, Devirian, and Seaman (2010) conclude that the answer to this question has not been definitive but that the issue with past studies is that they have not given a long enough time frame for the financial performance to react.

Other past studies propose that consumers will choose to purchase goods and services from environmentally friendly companies rather than un-environmentally friendly companies. While previous research suggests that some consumers prefer to purchase goods and services from green companies, it has not been determined whether or not this additional consumer base is enough to offset the costs of that the company incurs from their efforts to go green

(Blazovich, Smith & Smith 2013). On the other hand, the Cone Communications and Ebiquity "2015 Global CSR Study" indicates that 71% of consumer would be willing to pay more money for a socially and environmentally responsible product and 81% of consumers would consume or purchase less products in order to preserve natural resources. Konar and Cohen (2010) concluded that having a poor environmental reputation has a "significant negative effect on the intangible-asset value". Clarkson et al. (2011) supports the findings by Konar and Cohen (2010) and go even further to say that companies that are progressive, significantly improve their environmental performance over time, can experience certain economic benefits such as increases in profitability and cash flow compared to other similar firms who decide not to improve their environmental performances. The findings from Trumpp and Guenther (2015) support both Clarkson et al. (2011) and Konar and Cohen (2010). They used a sample of international companies from 2008-2012 and found that there is a nonlinear, U-shaped relationship between carbon performance and profitability as well as between profitability and waste intensity. In particular, Trumpp and Guenther (2015) find that companies that have low levels of corporate environmental performance experience a negative relationship between corporate environmental performance and corporate financial performance and companies that have high levels of corporate environmental performance experience a positive relationship between corporate environmental performance and corporate financial performance. These conflicting findings from previous studies

indicate that more research needs to be conducted comparing the relationship

between corporate social responsibility and performance in financial markets.

Chapter 5: Data & Methodology

This chapter describes the economic model used in the analysis of corporate sustainability performance and corporate financial performance. In addition, this chapter reviews the data sources used in this analysis, as well as discusses the independent and dependent variables used to test the four hypotheses.

In order to examine the relationship between corporate sustainability and corporate financial performance, this study is going to use the Newsweek's "Top Green Companies in the U.S. 2015" list as well as MergentOnline financial data to conduct this analysis. This study will specifically use the U.S. 500 green list, which ranks the 500 largest publicly traded businesses in the United States. In order to compile this list, Newsweek collaborated with Corporate Knights Capital and HIP Investor. Corporate Knights is an investment research company that conducts corporate sustainability rankings. HIP Investor rates companies and investments on both their costs and benefits to society. The financial data used in this study comes from the reputable MergentOnline, which is used to find the price-to-earnings ratio, return on equity, return on investment, and change in market capitalization for 200 companies from the year 2016.

5.1 Newsweek's 2015 Green Ranking List

The 500 companies are ranked according to their performance on eight different indicators:

1. Combined energy productivity score has a weight of 15% of the final score. The combined energy productivity score is calculated using data from 2013 and involves a three-step process where revenue (USD)/total energy consumption (gigajoules). Then the change in energy productivity score from 2011 to 2013 is determined and the percentage is compared to all of the same Industry Group companies (Heaps and Yow 2015). Finally, the values found in the first and second steps are summed to find the combined energy productivity score of all 500 companies.

2. Combined greenhouse gas (GHG) productivity is calculated similarly to the combined energy productivity indicator and also has a weight of 15%. There is an additional step for companies that disclosed their Scope 3 GHG emissions in 2013. If a company did, then a score of 100% is awarded and multiplied by 0.1 yet if a company did not then a score of 0% is given (Heaps and Yow 2015).

3. Combined water productivity has a weight of 15% and is also calculated similarly to combined energy productivity score. Except for combined water productivity, the first step's equation is revenue (USD)/total water use (m3) (Heaps and Yow 2015).

4. Combined waste productivity indicator is also generated in the same manner as the combined energy productivity score. Except instead of revenue/total energy consumption, the equation is revenue (USD)/ [total waste generated (metric tonnes) - waste recycled/reused (metric tonnes)] (Heaps and Yow 2015). Combined waste productivity also carries a weight of 15%.

5. Green Revenue Score has the largest weight of 20%. HIP Investor calculates the Green Revenue Score by "breaking down a given company's revenue into its various segments to determine the percentage of a company's revenue that is green-- i.e., derived from products and services that contribute positively to environmental sustainability and societal health" (Heaps and Yow 2015).

6. Sustainability Pay Link has a weight of 10%. The methodology of this indicator is a mechanism to link the "remuneration of any member of a company's senior executive team with the achievement of environmental performance targets" (Heaps and Yow 2015). The existence of such a link awards a company the full 10% and if there is no such link then the company receives 0%.

7. Sustainability Board Committee, weighs 5% and the methodology behind this indicator is: an "existence of a committee at the Board of Directors level whose mandate is related to the sustainability of the company, including but not limited to environmental matters" (Heaps and Yow 2015).

8. Audited Environmental Metrics, has a weight of 5% and a company will receive 5% if it can prove that their latest environmental metrics report was audited by a third party (Heaps and Yow 2015).

The green ranking lists the top 500 largest publicly traded companies in the United States based on their environmental friendliness, not just the top 500 environmentally friendly companies in the United States, regardless of size. This being said, this study will use the top 100 companies and the bottom 100 companies on the list to represent environmentally friendly companies and environmentally un-friendly companies, respectively.

The table below (**Table 5.1**) shows the total number of all 500 companies in each GICS sector. The table also shows the number of companies from each GICS sector that are in both the top 100 companies, the environmentally friendly companies, and the bottom 100 companies, the environmentally unfriendly companies.

As you can see, there are the most companies overall in the Consumer Discretionary and Financials sectors and the least number of companies in the Telecommunication Services sector. Information Technology, Industrials, and Consumer Staples are the sectors that have the most companies that are considered environmentally friendly. On the other hand, the Telecommunications Services and the Energy sectors have the least amount of environmentally friendly companies. The Energy, Financials, and Consumer Staples sectors have the most companies that are considered environmentally unfriendly whereas, the

Telecommunications Services, Utilities, Healthcare, and Consumer Staples

sectors have the least number of environmentally unfriendly companies.

Table 5.1 # of companies in GICS Sectors

GICS Sector	All 500	Top	Bottom
Consumer Discretionary	86	10	21
Consumer Staples	40	16	2
Energy	55	2	34
Financials	85	10	23
Health Care	56	12	2
Industrials	57	16	11
Information Technology	67	19	3
Materials	22	7	3
Telecommunication Services	7	1	0
Utilities	25	7	1
Grand Total	500	100	100

The table below (**Table 5.2**) shows the average green rank that the

companies in each of the sectors received. As you can see, the Consumer

Staples sector had the lowest average ranking of 164, which means that the

companies in that sector received the highest green score, making Consumer

Staples the most environmentally friendly sector. The Energy sector had the

highest average ranking of 382, which means that the companies in the Energy

sector received the lowest average green scores out of all of the other sectors.

This makes the Energy sector the least environmentally friendly sector.

Table 5.2 Average Rank of Each GICS Sector

GICS Sector	Average of Rank
Consumer Staples	164
Materials	181
Telecommunication Services	192
Utilities	196
Information Technology	211
Industrials	222
Health Care	227
Consumer Discretionary	272
Financials	280
Energy	382

5.2 MergentOnline Financial Performance Data

Mergent, Inc. has been providing business and financial data to academic,

corporate, and financial research institutions and professionals across the globe

for over 100 years. Mergent reports data on both public and private companies

worldwide. In order to make this data accessible to subscribers, MergentOnline

was created. This study will specifically be using the U.S. Company Data from

2016, which contains a database of over 15,000 public U.S. companies, both active and inactive, that are listed on the NASDAQ, NYSE, and AMEX exchanges. The degree of corporate financial performance in this study is measured using price-to-earnings ratio (P/E ratio), return on equity (ROE), return on investment (ROI), and change in market capitalization. For eight different companies, MergentOnline did not have the ROE values. They were listed as "Avg<0" which is automatically given to any companies that report an annual ROE that is less than zero. These companies include Mead Johnson Nutrition Company, DIRECTV, Philip Morris International Inc., Wynn Resorts, Limited, TransDigm Group Incorporated, Moody's Corporation, AutoZone, Inc., and Lorillard, Inc. The ROE values for Mead Johnson Nutrition Company, Philip Morris International Inc., Wynn Resorts, Limited, TransDigm Group Incorporated, Moody's Corporation, and AutoZone, Inc. were found at YCharts.com whereas, the values for DIRECTV and Lorillard, Inc. were found at Macroaxis.com. In addition, MergentOnline did not have a numerical value for the P/E ratio for Vertex Pharmaceuticals Incorporated. This value was found using Yahoo Finance. In total, there were nine values used in this study that were found from a different source than MergentOnline. MergentOnline does not have the historical data that is needed to calculate change in market capitalization. In order to calculate this measure, this study uses the reported market capitalization from the year 2016, found on MergentOnline, as well as from 2007, found at stockrow.com.

Price-to-earnings ratio is "a widely-used measure of the expected performance of companies, and is has almost invariably been calculated as the ratio of the current share price to the previous year's earnings" (Anderson and Brooks 2006). In particular, the P/E ratio reflects the willingness of investors to pay for a company's earnings. In most cases, a high P/E ratio reflects optimism that the company is going to perform well in the future. On the other hand, if a company has too high of a P/E ratio, then it can be assumed that the company already experienced major growth and will hit a plateau making it unattractive to potential buyers. A low P/E ratio can portray that investors are pessimistic that the firm will do well in the future. However, it is common for a lower P/E ratio to be viewed by many fund managers as a sign of the attractiveness of certain stocks for potential investment. An attractive firm that has a low P/E ratio can be seen as a good deal and plays into the concept of buy low, sell high that shareholders use.

The second financial measure used is return on equity (ROE) which "reflects the profitability of the firm by measuring the investors' return" (Griffin and Mahon 1997). ROE is commonly used to measure corporate financial performance because the investors, or shareholders, can easily understand the metric. The ROE of a company portrays the company's capacity to generate profits from shareholders' equity. Shareholders can look at a company's ROE to determine the ability of the company to use its investments in order to create growth (Griffin and Mahon 1997). This being said, ROE is a good measure to compare the profitabilities of various companies.

Return on investment (ROI) is a measure that is used to assess the efficiency of an investment or a group of investments. In particular, ROI measures an investment's gain or loss in relation to the initial investment. Jacobson (1987) conducts a study looking at the validity of ROI as a measure of business performance and finds that ROI is one of the best available indicators of business performance. The advantages of using ROI as a corporate performance measure are that it is widely accepted and used to assess overall business performance and it allows for comparisons to be made between companies of different sizes (Jacobson 1987).

The fourth financial measure used in this study is change in market capitalization over a period of ten years from 2007 to 2016. Investopedia defines market capitalization as "the total dollar market value of a company's outstanding shares" (Market Capitalization 2017). Market capitalization can be calculated by finding the sum of a company's outstanding shares by the current market price of one of the company's shares. Market capitalization, alone, would only provide information on the size of the company for the year of the value. However, this study is going to use the change in market capitalization over the course of ten years to determine the increase in size of the company in order to evaluate the financial performance of the company.

5.3 Green Score vs. Financial Measures

The methodology of this study is best divided into four different equations, consisting of one independent variable and one dependent variable for each equation that allow this thesis to evaluate the relationship between corporate sustainability and corporate financial performance. The four hypotheses that this study will analyze are as follow:

1) *H_A= Firms with higher green scores will have stronger price-to-earnings ratio*

In order to support this hypothesis, this thesis will test for a statistically significant p-value between green score and P/E ratio at the 10% level. In this regression, green score is the independent variable and P/E ratio is the dependent variable.

2) *H_A= Firms with higher green scores will have better returns on equity*

In order to test this hypothesis, this thesis will be using a simple, two-variable regression. To be able to support this hypothesis, this study will test for statistical significance between green score and returns on equity at the 10% level. In this test, green score is the independent variable and ROE is the dependent variable.

3) *H_A= Firms with higher green scores will have better returns on investment*

The third hypothesis is testing the relationship between a company's green score and the returns on investment that the company experiences. To support this hypothesis, this study will be testing for a statistically significant p-value at the 10% level. In this regression, green score is the independent variable and ROI is the dependent variable.

4) H_A= Firms with higher green scores will have a positive, larger change in market capitalization

The fourth and last hypothesis will be supported if the regression shows statistically significant p-values at the 10% level. This hypothesis tests the relationship between a company's green score and the change in market capitalization over a period of 10 years from 2007 to 2016.

In order to test these four hypotheses, the following equation will be used to run a basic regression:

$$y_1 = \alpha + \beta x_1 + \varepsilon_1$$

where ε_1 is the error term. Using this equation, this study will analyze the relationship between corporate sustainability and corporate financial performance in four different regressions.

Table 5.3 shows the descriptive statistics for the 200 companies by green score and measures of financial performance. There were three statistics that

were interesting. First, the average green score for the companies in this sample is just over 0.35. Biogen, Inc. is awarded the highest green score of 0.892. On the other hand, Antero Resources Corporation received the lowest green score of 0.01. Biogen, Inc. is involved in the Biotechnology industry whereas, Antero Resources Corporation is a part of the Oil, Gas, & Consumable Fuels industry. The difference between the green scores for these two companies is 0.882, or 88.2%, which represents a large difference in sustainability efforts for these companies. Next, the average change in market capitalization is just over $350 million. It is interesting that the difference between the maximum, $1.9 billion, for Pharmacyclics, Inc. and minimum, $-67.2 million, for Staples, Inc. is so large as well as both companies' change in market capitalization being very far away from the average change. Pharmacyclics, Inc. is in the top 100 environmentally unfriendly companies whereas, Staples, Inc. is in the top 100 environmentally friendly companies. This being said, these statistics are not in line with the predictions of this study. Finally, the average return to equity (ROE) from this sample is just over 44. Both the minimum and maximum ROE's are extremely far apart this value and each other. The highest ROE, just over 3603, belongs to Energy Transfer Equity, L.P. of the Oil, Gas, & Consumable Fuels industry. The lowest ROE belongs to Wynn Resorts, Limited of the Hotels, Restaurants, & Leisure industry. Energy Transfer Equity, L.P. is in the 100 environmentally unfriendly companies in this sample whereas, Wynn Resorts, Limited is in the 100 environmentally friendly companies in this sample. These statistics are inconsistent with the predictions of this study.

Table 5.3 Descriptive Statistics

	ROE	ROI	P/E Ratio	Δ Market Cap	Green Score
Mean	44.276	18.445	42.504	351.708	0.365
Median	16.465	14.975	25.288	92.559	0.335
Maximum	3603.03	146.64	1119	19251.23	0.892
Minimum	-186.7	1.08	-190.65	-67.265	0.01
Std. Dev.	259.975	16.799	96.345	1466.008	0.25
Observations	200	200	200	200	200

Chapter 6: Union College Corporate Sustainability 2017 Survey

This chapter is going to discuss the data collected from an independent survey that was issued to the Union College campus to see how various demographic backgrounds view corporate sustainability. In addition to discussing each of the dependent and independent variables, this chapter will describe the methodology used to conduct this analysis. In particular, this chapter attempts to assess whether or not various consumers perceive certain companies as environmentally friendly or unfriendly.

6.1 Overview of the survey

This study was sent out to the entire Union College community, including students, faculty, and staff. The information was collected through Google Forms and it was necessary to sign in with a Union College issued email addresses to ensure that only the Union community was taking the survey. In its completion, there were 224 respondents total. The survey asks a variety of questions asking respondents to comment on various demographic characteristics as well as political views and opinions on corporate sustainability.

6.2 Union College Survey Questions

1. What is your gender?
   a. Male
   b. Female
   c. Prefer not to say
   d. Other
2. What is your age?
   a. 0-18
   b. 19-39
   c. 40-60
   d. >60
3. What is your occupation? If student, please indicate that you are a student.
4. What is your highest completed education? (or currently completing)
   a. Less than high school
   b. High school
   c. Some college
   d. Bachelor's Degree
   e. Master's Degree
   f. Doctoral Degree
5. Do you associate more with one political party than another?
   a. Yes
   b. No
6. If you answered "Yes" above, please indicate which one.
7. Are you optimistic about the next 4 years under Trump's presidency?
   a. Yes
   b. No
8. Do you believe that companies should take efforts to be environmentally sustainable?
   a. Yes
   b. No
9. Do you take corporate sustainability into consideration when you purchase a good or service?
   a. Yes
   b. No
10. Would you be willing to spend more money on a product that is a "green product" than a conventional product?
    a. Yes
    b. No
    c. Unsure
11. On a scale from 1-5, how necessary do you think it is that we combat climate change?
    a. 1 being not necessary
    b. 5 being very necessary

12. Based on what you know about the company, please indicate Yes, No, or Unsure to whether or not the following companies are environmentally friendly. (Answer to the best of your ability)

Apple	Chipotle	Starbucks	Wal-Mart Stores, Inc.	Bed, Bath & Beyond
Tyson	Exxon-Mobil	Citibank	Under Armour	McDonald's Corporation
Whole Foods	Nestle	Home Depot	Pfizer	Microsoft
Monsanto	The Coca-Cola Company	Shell	The Walt Disney Company	Dow Chemical Company
Philip Morris	British Petroleum (BP)	Best Buy	Campbell Soup Company	Goldman Sachs
Nike	CVS	Tesla Motors	Koch Industries	Netflix

6.3 Useful Data

This study used various questions from the survey to characterize numerous demographic characteristics such as age, gender, occupation, and political preferences. The question regarding education level was omitted from the analysis due to a confusion over the explanation of how to answer the question accurately. The list of companies in question 12 includes ten companies from the top 100 green companies on the Newsweek's 2015 Green Rankings List, ten companies from the bottom 100 green companies on the list, and ten companies that were not on the list at all. The companies were selected based upon whether or not the company would be commonly known by the respondents. The analysis conducted in this study excluded the ten companies that were not on the Newsweek's 2015 Green Rankings List because it was

realized that without having a green score associated with the company, it was

difficult to determine how environmentally friendly the company was. Using the

demographic attributes and the top and bottom ten companies, this study is

going to conduct an analysis using Eviews to determine how different

demographic groups acknowledge corporate sustainability efforts.

6.4 Variables

Dependent Variables

Total Ungreen Correct	number of correct responses for the 10 environmentally unfriendly companies in the survey from all 224 respondents
Total Correct	number of correct responses for all 20 companies in the survey from all 224 respondents
Total Green Correct	number of correct responses for the 10 environmentally friendly companies in the survey from all 224 respondents

Independent Variables

Age	0 if the respondent is between the ages 0-39; 1 if the respondent is > 39
Corporate Responsibility	1 if the respondent believes companies should take efforts to be sustainable; 0 if otherwise
Gender	1 if the respondent is male; 0 if otherwise
Green Purchasing	1 if the respondent takes corporate sustainability into consideration before purchasing a good or service; 0 if otherwise
Occupation	1 if the respondent is a student; 0 if otherwise
Party	1 if the respondent is liberal; 0 if otherwise
Pay More	1 if the respondent is willing to pay more for a product that is a 'green product' than for a conventional product; 0 if otherwise
Support Trump	1 if the respondent is optimistic about the next four years under Trump's presidency; 0 if otherwise

From the responses of the survey, this study generated three dependent

variables and eight independent variables. The three dependent variables are

Total Ungreen Correct, Total Correct, and Total Green Correct. The eight independent variables include Age, Corporate Responsibility, Gender, Green Purchasing Decisions, Occupation, Political Party, Pay More for Green Product, and Support Trump.

The first dependent variable, *Total Ungreen Correct*, indicates the number of respondents that correctly identified any of the ten environmentally unfriendly companies in the survey. The next dependent variable, *Total Green Correct,* represents the number of respondents that correctly identified any of the ten environmentally friendly companies. The final dependent variable, *Total Correct,* is the sum of *Total Ungreen Correct* and *Total Green Correct*. Separating *Total Green Correct* and *Total Ungreen Correct* allows this study to analyze whether various demographic backgrounds are keener to knowing when a company excels in corporate sustainability efforts and when they are lacking in efforts.

The independent variables represent the demographic characteristics of the Union College respondents that were recorded from the survey. They will be used to analyze how different demographic characteristics placed companies as environmentally friendly and unfriendly on question twelve on the survey. All eight of the independent variables were made into dummy variable, taking the value of either 1 or 0. *Age* was originally represented as 1= 0-18, 2= 19-39, 3= 40-60, 4= >60. However, *Age* was manipulated into young (0-39) = 0 and old (>39) = 1 in order to distinguish the difference between the two treatment groups. *Corporate Responsibility* was generated using the answers to question eight from the survey. Respondents answered either yes or no to the following question: 'do

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you take corporate sustainability into consideration when you purchase a good or service?' The yes answers were awarded the value of a 1 and the no answers received a value of 0. For *Gender*, respondents were given the options of male, female, other, and prefer not to say. Answers were coded in the following manner: male= 1, female=0, prefer not to say and other were left blank. *Green Purchasing Decisions* uses the answers to question ten (would you be willing to spend more money on a product that is a "green product" than a conventional product?). The yes answers received a value of 1 and the no answers earned a value of 0.

Occupation allows this study to analyze the way in which students view corporate sustainability efforts compares to faculty and staff. Any responses from students were given a value of 1 and any responses from other (faculty and staff) received a value of 0. The variable *Political Party* refers to question six, which determines the political affiliation of the respondents. If respondents answered democrat, progressive, socialist, or green party, a value of 1 was awarded. If respondents answered republican or other, the responses were given a value of 0. *Pay More for Green Product* is used to evaluate how well the people who replied that 'yes' they would pay more for a green product in fact, were able to differentiate environmentally friendly and unfriendly companies. In order to do this, the yes responses were given a value of 1 and the no responses have a value of 0. The variable *Support Trump* allows this study to analyze the way that respondents who are optimistic of the next four year under Trump's presidency

view corporate sustainability efforts. If a respondent answered yes to being optimistic, their answer was awarded a 1 and an answer of no was given a 0.

6.5 Descriptive Statistics

For all of the dependent variables, the maximums and minimums are 1 and 0, respectively, because they are all binary variables. This being said, the means can be used to tell us which demographic characteristics are in the majority. A few descriptive statistics suggested interesting information. The mean of the variable *Gender* is 0.362, which suggests that the majority of the respondents of this survey consider themselves as female because the mean is closer to the value that female responses took, 0, than the value of male responses, 1. *Political Party* has a mean of 0.716 which proposes that the majority of the respondents consider themselves to be more liberal minded. This idea correlates with the mean of the variable *Support Trump*, 0.241. It is understandable that the majority of the respondents are not optimistic about the next four year under Trump's presidency because the majority of respondents identify as liberal.

For the independent variables, *Total Ungreen Correct, Total Correct,* and *Total Green Correct,* which were not binary variables, the maximums and minimums show surprising results. For *Total Ungreen Correct*, the respondent who answered the most environmentally unfriendly companies correctly was able to identify all ten of the unfriendly companies on the survey. The average number

of environmentally unfriendly companies recognized is about 3.5. For *Total Green Correct*, the respondent who was most successful was able to identify seven of the ten environmentally friendly companies. The average number of green companies pinpointed is about 2.2 companies. For all twenty companies on the list, the respondent with the most correct identifications answered thirteen companies, both environmentally friendly and unfriendly, correctly. The average number of all twenty companies that were recognized is about 5.6 companies. For all three variables, the fewest number of correct identification is zero.

Table 6.1 Descriptive Statistics

	Mean	Median	Maximum	Minimum	Std. Deviation	Observations
Age	0.219	0	1	0	0.414	224
Corporate Responsibility	0.987	1	1	0	0.115	224
Gender	0.362	0	1	0	0.482	221
Green Purchasing Decisions	0.54	1	1	0	0.499	224
Occupation	0.723	1	1	0	0.448	224
Political Party	0.716	1	1	0	0.452	169
Pay More for Green Product	0.859	1	1	0	0.348	164
Support Trump	0.241	0	1	0	0.429	224
Total Ungreen Correct	3.482	3	10	0	3.016	224
Total Green Correct	2.214	2	7	0	1.553	224

Chapter 7: Results

This chapter presents the results of the two different regression analy

that this study conducted. It is divided into two sub-sections. The first sub-se

will discuss the effect that corporate sustainability efforts has on corporate

financial performance. The second sub-section will discuss the relationship

between demographic attributes and awareness of corporate sustainability

efforts. This sub-section will be divided into three sub-sub-sections which wi

describe the findings from the regressions conducted analyzing this relation

7.1 Corporate Sustainability Performance vs. Corpora Financial Performance

This sub-section will describe the findings from four different regressi

The independent variable for all four regressions is *Green Score*. Each

regression uses one of four dependent variables including *P/E ratio*, *returns*

equity (ROE), *returns on investment (ROI)*, and *change in market capitaliza*

(Δ Market Cap).

Table 7.1: Regression Analyses 1, 2, 3, & 4

Independent Variable	(1) Regression Dependent Variable: P/E Ratio	(2) Regression Dependent Variable: ROE	(3) Regression Dependent Variable: ROI	(4) Regression Dependent Variable: Δ Market Cap
Green Score	-35.738	-69.45	-5.207	**-740.795***
Std. error	(27.446)	(74.229)	(4.793)	(417.47)
R-Squared	0.008042	0.004284	0.005898	0.015235
Observations	200	200	200	200

*Significant at the 0.10 level

7.1.1 Findings

Regression 1, *Green Score* and *P/E Ratio*, generated insignificant results. The R-squared is very low signifying the lack of variability of the response data around the mean of 42.504. Very similar results are found for Regression 2, *Green Score* and *ROE*, and Regression 3, *Green Score* and *ROI*. The only statistically significant relationship was found in Regression 4, which measured *Green Score* and *Δ Market Cap.* The coefficient for Regression 4 is -740.795, which indicates a negative relationship between a company's green score, as provided by Newsweek, and the change in the company's market capitalization from 2007 to 2016. However, the R-squared of this regression is low which suggests that the relationship between the model and the dependent variable is not too strong.

Table 7.2 shows the correlation between all five variables used in this analysis. None of the variables have a high enough correlation with another variable to have an influence of the results.

Table 7.2 Correlation Matrix

	Δ Market Cap	Green Score	ROE	ROI	P/E Ratio
Δ Market Cap	1	-0.126	-0.011	-0.016	0.272
Green Score	-0.126	1	-0.067	-0.08	-0.09
ROE	-0.01	-0.067	1	-0.007	-0.037
ROI	-0.016	-0.08	-0.007	1	-0.15
P/E Ratio	0.27	-0.09	-0.04	-0.15	1

7.2 Union College Demographics vs. Corporate Sustainability Efforts

This sub-section is going to describe the results found in the regression analyses conducted to evaluate the relationship between various demographic characteristics of the Union community and knowledge of corporate sustainability efforts. The sub-section will be broken up into seven sub-sub-sections representing the seven independent variables in this analysis.

7.2.1 Findings

7.2.1.1. Demographic Variables and Total Companies Answered Correctly

The first set of regressions looks at how well various demographic background were able to identify all twenty of the companies included in the survey correctly. There were only three analyses that proved to be statistically significant, including *Green Purchasing Decisions, Political Party,* and *Support Trump.* Respondents who consider the environmentally friendliness of companies before they purchase goods and services were able to identify 0.894 more companies correctly than respondents who do not consider the environmentally friendliness of a company when making purchasing decisions. The respondents who identify themselves as more liberal minded were able to answer 1.149 more companies correctly than those who identified as conservative. Respondents who are optimistic about the next four years under Trump's presidency were less successful than those who are pessimistic about the next four years. Trump supporters answered 0.942 companies less correctly than respondents who are pessimistic about Trump did.

Table 7.3 Regression Analyses 1-24

Independent Variables:	Dependent Variable: Total Correct	Dependent Variable: Total Ungreen Correct	Dependent Variable: Total Green Correct
Age	-0.761	-0.539	-0.222
Std. error	(0.546)	(0.487)	(0.251)
R-squared	0.0087	0.0054	0.0035
Observations	224	224	224
Corporate Responsibility	-0.646	-0.187	-0.459
Std. error	1.972	1.757	0.904
R-squared	0.00	0.00	0.001
Observations	224	224	224
Gender	0.657	**0.696***	-0.039
Std. error	(0.476)	(0.423)	(0.217)
R-squared	0.008	0.012	0.00
Observations	221	221	221
Green Purchasing Decisions	**0.894****	**1.27*****	**-0.376***
Std. error	(0.451)	(0.396)	(0.207)
R-squared	0.017	0.0443	0.015
Observations	224	224	224
Occupation	0.606	0.31	0.296
Std. error	(0.505)	(0.451)	(0.232)
R-squared	0.006	0.002	0.007
Observations	224	224	224
Political Party	**1.149****	**1.396*****	-0.247
Std. error	(0.564)	(0.496)	(0.257)
R-squared	0.024	0.045	0.005
Observations	169	169	169
Pay More for Green Product	0.532	0.708	-0.177
Std. error	(0.778)	(0.705)	(0.354)
R-squared	0.003	0.006	0.001
Observations	164	164	164
Support Trump	**-0.942***	**-1.197*****	0.254
Std. error	(0.526)	(0.465)	(0.243)
R-squared	0.0142	0.029	0.004
Observations	224	224	224

*Significant at the 0.10 level
**Significant at the 0.05 level
***Significant at the 0.01 level

7.2.1.2. Demographic Variables and Total Environmentally Unfriendly Companies Answered Correctly

The second set of analyses looks into the way in which various demographic backgrounds answered the ten environmentally unfriendly companies in the survey. There were four different statistically significant relationships from this set of regressions including *Gender, Green Purchasing Decisions, Political Party,* and *Support Trump.* Male respondents were able to identify 0.696 more environmentally unfriendly companies correctly than female respondents. Similar to the first set of regressions, people who consider the environmentally friendliness of companies before they purchase goods and services were able to identify 1.27 more companies as environmentally unfriendly than respondents who do not consider environmental friendliness. Once again, liberal minded respondents answered 1.39 companies more correctly when trying to identify environmentally unfriendly companies. Lastly, Trump supporters were less likely to be able to identify the ten environmentally unfriendly companies in the survey. Those who do not support Trump were able to recognize 1.197 more of the environmentally unfriendly companies.

7.2.1.3. Demographic Variables and Total Environmentally Friendly Companies Answered Correctly

The final set of regressions shows the relationship between various demographic characteristics of people and the way in which they perceive

environmentally friendly companies. There is only one statistically significant

relationship between *Green Purchasing Decisions* and *Total Green Correct.*

Unlike the previous regressions, the coefficient for *Green Purchasing Decisions*

is negative meaning people who consider the sustainability efforts of companies

before purchasing answered 0.376 environmentally friendly companies less

correctly than people who do not consider sustainability efforts before

purchasing.

    Table 7.4 shows the correlation between all five variables used in this

analysis. None of the variables have a high enough correlation with another

variable to have an influence of the results.

Table 7.4 Correlation Matrix

	Age	Corporate Responsibility	Gender	Green Purchasing	Occupation	Party	Pay More	Total Ungreen Correct	Total Correct	Total Green Correct	Support Trump
Age	1	-0.136	0.127	0.096	-0.862	0.144	0.034	-0.037	-0.05	-0.04	-0.115
Corporate Responsibility	-0.136	1	-0.089	0.111	0.108	0.136	0.119	0.0001	-0.022	-0.051	-0.167
Gender	0.127	-0.089	1	-0.062	-0.048	-0.127	-0.159	0.192	0.12	-0.119	0.125
Green Purchasing	0.096	0.111	-0.062	1	-0.114	0.465	0.425	0.236	0.155	-0.129	-0.514
Occupation	-0.862	0.108	-0.048	-0.114	1	-0.181	-0.077	0.086	0.095	0.043	0.099
Party	0.144	0.136	-0.127	0.465	-0.181	1	0.373	0.216	0.153	-0.09	-0.607
Pay More	0.034	0.119	-0.159	0.425	-0.0769	0.373	1	0.108	0.107	0.024	-0.384
Total Ungreen Correct	-0.037	0.0001	0.191	0.236	0.086	0.216	0.108	1	0.902	0.017	-0.197
Total Correct	-0.05	-0.022	0.12	0.155	0.095	0.154	0.107	0.902	1	0.447	-0.155
Total Green Correct	-0.04	-0.051	-0.119	-0.129	0.043	-0.091	0.024	0.017	0.447	1	0.051
Support Trump	-0.115	-0.167	0.125	-0.514	0.1	-0.607	-0.384	-0.197	-0.155	0.051	1

Chapter 8: Conclusions & Future Suggestions

8.1 Summary of Findings

Using cross-sectional data from the Newsweek's 2015 Green Rankings List and a variety of credible financial sources, this study investigates whether companies with higher sustainability efforts perform better in financial markets than less sustainable companies. What differentiates this study from previous studies is that it also includes a survey conducted on the Union College campus to analyze the way in which people with various demographic characteristics perceive companies as environmentally friendly and unfriendly.

This study finds that companies identified as environmentally friendly by the Newsweek 2015 Green Ranking do not perform better in financial markets than companies that are environmentally unfriendly. The findings of this study suggest that environmentally unfriendly companies have a larger, more positive change in market capitalization over the period of ten years from 2007 to 2016.

This study also found that men were more successful at identifying environmentally unfriendly companies than female respondents. Interestingly, people who consider a company's sustainability efforts before making purchasing decisions were able to identify more of the environmentally unfriendly companies as well as more of the twenty total companies correctly but were more unsuccessful at correctly pinpointing the environmentally friendly companies

alone. Liberal respondents identified more of the environmentally unfriendly companies correctly as well as a greater majority of the twenty total companies than the respondents who identified themselves as conservative. Understandably, respondents who support Trump, mostly conservative respondents, were able to identify neither more of the environmentally unfriendly companies nor the majority of the twenty total companies listed in the survey.

8.2 Understanding the Findings

The results of the two analyses in this study prove to be surprising. With the size of the green movement and the necessity of having corporate sustainability efforts today, one would assume that companies that are 'green' are experiencing increases in financial performance because of their increased efforts. However, the results showed that this is not true. In most cases, there is no relationship between the two, which means that the way in which companies perform in financial markets is unrelated to their sustainability status. Additionally, in terms of change in market capitalization, companies who were green performed worse overall when compared to environmentally unfriendly companies.

The findings from the survey in this thesis could serve as a potential explanation for why there is no relationship between corporate sustainability efforts and corporate financial performance. The highest number of correct identifications of the twenty companies on the survey was thirteen while the lowest number was zero. There is a big discrepancy between these numbers. It

would be difficult to determine if this is due to a lack of interest in corporate sustainability efforts definitively or if the marketing techniques of the companies are not reaching consumers in the way in which they intend. However, 98.7% of respondents answered that 'yes' companies should take efforts to be environmentally sustainable which suggests that it is not due to a lack of interest.

In regards to the failure of corporate marketing techniques, it is possible that either the marketing materials are not reaching the consumers or the consumers do not believe what they are seeing. Because the survey was conducted online through an email address, it is suggested that the majority of respondents have daily access to a computer or phone with Internet. With the prevalence of technology today, one can assume that most students, teachers, and staff use the Internet to at least once a day to stay updated with campus events and emails. This being said, there are many online outlets that companies can use to connect with people on college campuses about their sustainability efforts.

History has made it evident that student involvement in social movements can be make a large impact in terms of acceptance across the country (History Has Good News for Today's Student Protestors 2015). Companies can capitalize on the desire of students, or millennials in general, to be involved in a movement such as the Green Movement, to showcase their sustainability efforts to the millennial age group. Environmentally friendly companies can gain financial prosperity by using this theory by applying the right marketing techniques and targeting their efforts towards a demographic group such as millennials, people

willing to pay more for green products and services, or political affiliation who will welcome the efforts.

8.2.1 Coca-Cola Case Study

This case study of Coca-Cola Enterprises strives to support the ideology that the marketing techniques of environmentally companies is not reaching the consumers in an effective manner. Coca-Cola Enterprises received a green score of 75.2% out of a possible 100%, ranking them as number eight on the Newsweek's 2015 Green Rankings List. In addition, Forbes ranks the company as the thirteenth most sustainable company in the world in 2016. The company has been negatively associated with health issues due to the production of sugary drinks and environmental exploitation due to the number of resources the production processes consume because of the sheer size of the company. In order to combat these connotations, the company has launched a sustainability innovative to portray the true character of the company to consumers. Muhtar Kent, the CEO of Coca-Cola, states, "We believe wholeheartedly that we cannot have a sustainable business and a growing business unless we have sustainable communities, whether it's a village in Kenya or a metropolis like Mexico City. That's what we believe, and those are the values of the Coca-Cola system" (Shapiro, Andrew 2010).

The company is attempting to reduce their packaging and recycling as well as growing their company while trying to maintain the same carbon footprint (Kent, Muhtar and Ignatius, Adi 2011). They are the first beverage company to develop

and implement a plant-based bottle where "up to 30% of the bottle uses a resin made from sugarcane, not fossil fuels" (Kent, Muhtar and Ignatius, Adi 2011). Coca-Cola established various sustainability goals including going 'water-neutral', meaning they return any water that they use in the production process back to the earth, "reducing its absolute carbon footprint for manufacturing operations by 5% in developed countries", and recovering all of the packaging materials to be reused instead of ending up in landfills (Shapiro 2010). In 2011, Coca-Cola teamed up with the World Wildlife Foundation to produce a billboard in the Philippines to absorb carbon dioxide from the air. The billboard is constructed using over three thousand Fukien tea plants in pots made from recycled bottles that contain organic fertilizers (Dooling, Annemarie 2011). This touches upon only a few of the sustainability efforts that the corporation have implemented in their 'Live Positively' campaign.

In the survey conducted for this thesis, Coca-Cola Enterprises was one of the environmentally friendly companies chosen for evaluation. While Coca-Cola is a very environmentally friendly company, only 24 out of 224 respondents identified Coca-Cola as environmentally friendly, meaning 200 respondents are either unsure about the company's status or think Coca-Cola is environmentally unfriendly. This suggests that these respondents do not believe that the sustainability efforts of the company are enough to consider it a green company or they are unaware of the company's efforts in general. Either way, it suggests the idea that Coca-Cola's marketing techniques are failing to reach consumers or are not persuasive enough for consumers to believe them. Companies like Coca-

Cola that make sustainability part of their company's character should use surveys such as the one in this review to see which marketing techniques are substantial enough to convince consumers. If these results are unknown, then companies may be missing an opportunity to perform better in financial markets due to their perceived environmental reputation.

8.3 Suggestions for Future research

Due to the recentness of corporate sustainability compared to other various business practices, there are many questions and contradictions surrounding the idea that increased environmental reputation of a company leads to increased performance in financial markets. While this study fails to prove this relationship, it is possible that if certain aspects of this study were different, then the findings would vary.

First, this study was limited in terms of finding data that ranks corporate sustainability. This study uses Newsweek's Green Ranking list, which ranks the top 500 largest publicly traded companies in the United States on their environmental efforts not the most environmentally friendly companies, regardless of size, in the country. Therefore, this study does not include smaller private companies that are also environmentally friendly. If this study was conducted again, it is suggested to use the top environmentally friendly companies in the United States, independent of size, in order to generate the most accurate results. Second, the financial measures used in this study may not have been the top measures of financial performance. Future studies should look

at other ways to evaluate a company's performance such as liquidity, solvency,

or profitability. These can include current ratio of assets to liabilities, debt to

assets ratio, or return to assets. Using more accurate sustainability data and a

great number of financial measures allows researchers to get a better

understanding of the relationship between corporate sustainability efforts and

corporate financial performance.

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